Section 7-l Definitions

(1) Best available control technology (BACT): Those techniques and methods of controlling emission of pollutants from an existing or proposed open burning source which limit those emissions to the maximum degree which the Department determines, on a case-by-case basis, is achievable for that source, taking into account impacts on energy use, the environment and the economy, and any other costs, including cost to the source. Such techniques and methods may include the following: scheduling of burning during periods and seasons of good ventilation; applying dispersion forecasts; utilizing predictive modeling results performed by and available from the Department to minimize smoke impacts; limiting the amount of burning to be performed during any one period of time; using ignition and burning techniques which minimize smoke production; selecting fuel preparation methods that will minimize dirt and moisture content promoting fuel configurations which create an adequate air to fuel ratio; prioritizing burns as to air quality impact and assigning control techniques accordingly; and, promoting alternative treatments and uses of materials to be burned. For essential agricultural open burning or prescribed wildland open burning during September, October, or November, BACT includes burning only during the time periods specified by the Department of Environmental Quality, which may be determined by calling 1-800-225-6779. For prescribed wildland open burning during December, January, or February, BACT includes burning only during the time periods specified by the department, which may be determined by calling (406)454-6950.

(2) Essential agricultural open burning: Any open burning conducted on a farm or ranch to:

(a) Eliminate excess vegetative matter from an irrigation ditch when no reasonable alternative method of disposal is available;

(b) Eliminate excess vegetative matter from cultivated fields after harvest has been completed when no reasonable alternative method of disposal is available;

(c) Improve range conditions when no reasonable alternative method is available; or

(d) Improve wildlife habitat when no reasonable alternative method is available.

(3) Major open burning source: Any person, agency, institution, business or industry conducting any open burning that, on a statewide basis, will emit more than 500 tons per calendar year of carbon monoxide or 50 tons per calendar year of any other pollutant regulated under ARM Title 17, Chapter 8, except hydrocarbons.

(4) Minor open burning source: Any person, agency, institution, business, or industry conducting any open burning which is not a major burning source.

(5) Open burning: Combustion of any material directly in the open air without a receptacle, or in a receptacle other than a furnace, multiple chamber incinerator, or wood waste burner, with the exception of small recreation fires, construction site heating devices used to warm workers, or safety flares used to combust or dispose of hazardous or toxic gases at industrial facilities such as refineries, gas sweetening plants, oil and gas wells, sulfur recovery plants or elemental phosphorus plants.

(6) Prescribed wildland open burning: Any planned open burning, either deliberately or naturally ignited, which is conducted on forest land or relatively undeveloped range land to:

(a) improve wildlife habitat;

(b) improve range conditions;

(c) promote forest regeneration;

(d) reduce fire hazards resulting from forestry practices, including reduction of log deck debris when the log deck is located in close proximity to a timber harvest site;

(e) control forest pests and diseases; or

(f) promote any other accepted silvicultural practices.

(7) Salvage operation: means any operation conducted in whole or in part to salvage or reclaim any product or material, except the silvicultural practice commonly referred to as a salvage cut.

(8) Trade wastes: Solid, liquid, or gaseous material resulting from construction or the operation of any business, trade, industry, or demolition project. Wood product industry wastes

such as sawdust, bark, peelings, chips, shavings, and cull wood are considered trade wastes. Trade wastes do not include wastes generally disposed of by essential agricultural open burning and prescribed wildland open burning.

(9) Wood waste burner: A device commonly called a teepee burner, silo, truncated cone, wigwam burner, or other similar burner commonly used by the wood products industry for the disposal of wood.

Section 7-2 Prohibited Open Burning - When Permit Required

(1) The board hereby adopts and incorporates by reference 40 (CFR) Part 261, identifying and defining hazardous wastes. A copy of 40 CFR Part 261 may be obtained from the Department of Environmental Quality, 1520 E Sixth Ave., PO Box 200901, Helena, Montana 59620-0901, or from the Superintendent of Documents, US Government Printing Office, Washington, D.C. 20402.

(2) The following material may not be disposed of by open burning:

(a) any waste, which is moved from the premises where it was generated, including waste moved to a solid waste disposal site, except as provided for in Section 7-7 or Section 7-8;

(b) food wastes;

(c) styrofoam and other plastics;

(d) wastes generating noxious odors;

(e) wood and wood byproducts other than trade wastes that have been treated, coated, painted, stained, or contaminated by a foreign material, such as papers or cardboard or painted or stained wood, unless a public or private garbage hauler or rural container system, is unavailable, or unless allowed under Section 7-9;

(f) poultry litter;

(g) animal droppings;

(h) dead animals or dead animal parts;

(i) tires, except as provided in 7-6;

(j) rubber materials;

(k) asphalt shingles, except as provided in Section 7-6 or Section 7-9;

(l) tarpaper, except as provided in Section 7-6 or Section 7-9;

(m) automobile or aircraft bodies and interiors, except as provided in Section 7-6 or Section 7-9;

(n) insulated wire, except as provided in Section 7-6 or Section 7-9;

(o) oil or petroleum products, except as provided in Section 7-6 or Section 7-9;

(p) treated lumber and timbers;

(q) pathogenic wastes;

(r) hazardous wastes as defined by 40 CFR Part 261;

(s) trade wastes, except as provided in Section 7-7 or Section 7-8;

(t) any materials resulting from a salvage operation;

(u) chemicals, except as provided in Section 7-6 or Section 7-9;

(v) asbestos or asbestos-containing materials;

(w) standing or demolished structures except as provided in Section 7-6 or Section 7-9

(3) Except as provided in Section 7-3, no person may open burn any non-prohibited material without first obtaining an air quality open burning permit from the department.

Section 7-3 Minor Open Burning Source Requirements

(1) Unless required to obtain an open burning permit under another provision of this chapter, a minor open burning source need not obtain an air quality open burning permit.

(2) A minor open burning source must:

(a) conform with BACT;

(b) comply with any requirements or regulations relating to open burning established by any municipal or county agency responsible for protecting public health and welfare;

(c) notify the fire control authority for the area of the burn of the intent to burn, giving location, time, and material to be burned, and comply with proper fire safety directions given by the fire control authority, including obtaining a burning permit from appropriate city or county fire control authority if required.

(3) During September, October, or November to conduct essential agricultural open burning or prescribed wildland open burning, a minor open burning source must adhere to the time periods set for burning by the Montana Department of Environmental Quality that are available by calling l-800-225-6779;

(4) During December, January, or February to conduct essential agricultural open burning or prescribed wildland open burning, a minor open burning source need only notify the department by telephone of any burning and obtain a burning permit from the Cascade County Sheriffs Department, City of Great Falls Fire Department, or any other municipality within Cascade County depending on burn location, prior to ignition. Burning is allowed when ventilation conditions are good or excellent. Forecasts of ventilation conditions may be obtained by calling the department at (406) 454-6950.

(5) During March through August, subject to (2) above, a minor open burning source may conduct open burning not prohibited under Section 7.2.

Section 7-4 Major Open Burning Source Restrictions

The major open burning source permitting program administered under the Cascade County Air Pollution Control Program has been repealed. A major open burning source, as defined in section 7.1(3) of this rule or section 17.8.601(5) of the Administrative Rules of Montana, that desires to conduct open burning in Cascade County is subject to state open burning permit requirements, and should contact the Montana Department of Environmental Quality at (406) 444-3490.

Section 7-5 Special Burning Periods

(1) The following categories of open burning may be conducted during the entire year:

(a) prescribed wildland open burning;

(b) open burning to train firefighters under Section 7-6;

(c) open burning authorized under the emergency open burning permit provisions in section 7-8; and

(d) essential agricultural open burning.

(2) Open burning other than those categories listed in (1) of this section may be conducted only during the months of March through November.

Section 7-6 Firefighting Training

(1) The department may issue an air quality open burning permit for open burning of asphalt shingles, tarpaper, or insulated wire which is a part of a building, oil or petroleum products, and automobile or aircraft bodies and interiors for training firefighters if:

(a) the fire is restricted to a building or structure, a permanent training facility, or other appropriate training site in a site other than a solid waste disposal site;

(b) the material to be burned will not be allowed to smolder after the training session has terminated, and no public nuisance will be created;

(c) all asbestos-containing material has been removed;

(d) asphalt shingles, flooring material, siding, and insulation, which might contain asbestos have been removed, unless samples have been analyzed by a certified laboratory and shown to be asbestos free;

(e) all prohibited material that can be removed safely and reasonably has been removed;

(e) the open burning accomplishes a legitimate training need;

(g) clear educational objectives have been identified for the training;

(h) burning is limited to that necessary to accomplish the educational objectives;

(i) the training operations and procedures are consistent with nationally accepted standards of good practice; and

(j) emissions from the open burning will not endanger public health or welfare or cause or contribute to a violation of any Montana or Federal ambient air quality standard.

(2) The department may place any reasonable requirements in an air quality firefighter training open burning permit that the department determines will reduce emissions of air pollutants or will minimize the impact of emissions, and the recipient of a permit must adhere to those conditions.

(3) The applicant may be required, prior to each burn, to notify the department of the anticipated date and location of the proposed training exercise and the type and amount of material to be burned. The department may be notified by phone, fax, or in writing.

(4) An application for an air quality firefighter training open burning permit must be made on a form provided by the department. The applicant shall provide adequate information to enable the department to determine whether the application satisfies the requirements of this rule for a permit.

(5) Proof of publication of public notice, consistent with this rule, must be submitted to the department as part of any application. An applicant for an air quality firefighter training open burning permit shall notify the public of the application for a permit by legal publication, at least once, in a newspaper of general circulation in the area affected by the application. The notice must be published no sooner than 10 days prior to submittal of an application and no later than 10 days after submittal of an application. The form of the notice must be provided by the department and must include a statement that public comments may be submitted to the department concerning the application within 20 days after publication of notice or filing of the application, whichever is later. A single public notice may be published for multiple applicants if the public notice lists all covered applicants.

(6) When the department approves or denies the application for a permit under this rule, a person who is jointly or severally adversely affected by the department’s decision may request a

hearing before the board. The request for hearing must be filed within 15 days after the department renders its decision and must include an affidavit setting forth the grounds for the request. The contested case provisions of the Montana Administrative Procedure Act, Title 2, chapter 4, part 6, MCA, apply to a hearing before the board under this section. The department's decision on the application is not final unless 15 days have elapsed from the date of the decision and there is no request for a hearing under the section. The filing of the request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and the issuance of a final decision by the board.

Section 7-7 Conditional Air Quality Open Burning Permits

(1) The department may issue a conditional air quality open burning permit if the department determines:

(a) alternative methods of disposal would result in extreme economic hardship to the applicant; and

(b) emissions from open burning will not endanger public health or welfare or cause or contribute to a violation of any Montana or Federal ambient air quality standard.

(2) The department must be reasonable when determining whether alternative methods of disposal would result in extreme economic hardship to the applicant.

(3) Conditional open burning must conform with BACT.

(4) The department may issue a conditional air quality open burning permit to dispose of:

(a) wood and wood byproduct trade wastes by any business, trade, industry, or demolition project; or

(b) untreated wood waste at a licensed landfill site, if the department determines that:

(i) the proposed open burning would occur at an approved burn site, as designated in the solid waste management system license issued by the Montana Department of Environmental Quality pursuant to ARM Title 17, chapter 50 subchapter 5; and

(ii) prior to issuance of the conditional air quality open burning permit, the wood waste pile is inspected by the department or its designated representative and no prohibited materials listed in Section 7-2, other than wood waste, are present.

(5) A permit issued under this rule is valid for the following periods:

(a) Wood and wood byproduct trade wastes - one year, annually renewable; and

(b) untreated wood waste at licensed landfill sites - single burn. A new permit must be obtained for each burn.

(6) A permit granted under (4)(a) above is a temporary measure to allow time for the entity generating the trade wastes to develop alternative means of disposal.

(7) The department may place any reasonable requirements in a conditional air quality open burning permit that the department determines will reduce emissions of air pollutants or will minimize the impact of emissions, and the recipient of such a permit must adhere to those conditions. For a permit granted pursuant to subsection (4) (a) above, BACT for the year covered by the permit will be specified in the permit; however the source may be required, prior to each burn, to receive approval from the department of the date of the proposed burn to ensure that good ventilation exists and to assign priorities if other sources in the area request to burn on the same day. Approval may be obtained by calling the City-County Health Department at (406)454-6950.

(8) An application for a conditional air quality open burning permit must be made on a form provided by the department. The applicant shall provide adequate information to enable the department to determine that the application satisfies the requirements for a conditional air quality open burning permit contained in this rule. Proof of publication of public notice, as required in subsection (9) of this rule, must be submitted to the department as part of any application.

(9) An applicant for a conditional air quality open burning permit shall notify the public of the application by legal publication, at least once, in a newspaper of general circulation in the area affected by the application. The notice must be published no sooner than 10 days prior to submittal of an application and no later than 10 days after submittal of an application. The form of the notice must be provided by the

department and must include a statement that public comments may be submitted to the department concerning the application within 20 days after publication of notice or filing of the application, whichever is later. A single public notice may be published for multiple applicants if the public notice lists all covered applicants.

(10) When the department approves or denies the application for a permit under this rule, a person who is jointly or severally adversely affected by the department's decision may request a hearing before the board. The request for hearing must be filed within 15 days after the department renders its decision and must include an affidavit setting forth the grounds for the request. The contested case provisions of the Montana Administrative Procedure Act, Title 2, chapter 4, part 6, MCA, apply to a hearing before the board under this section. The department's decision on the application is not final unless 15 days have elapsed from the date of the decision and there is no request for a hearing under the section. The filing of the request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and the issuance of a final decision by the board.

Section 7-8 Emergency Open Burning Permits

(1) The department may issue an emergency air quality open burning permit to allow burning of a substance not otherwise approved for burning under this rule if the applicant demonstrates that the substance to be burned poses an immediate threat to public health and safety, or plant or animal life, and that no alternative method of disposal is reasonably available.

(2) Oral authorization to conduct emergency open burning may be requested from the department by telephone at (406)454-6950. The applicant must provide the following information:

(a) facts establishing that alternative methods of disposing of the substance are not reasonably available;

(b) facts establishing that the substance to be burned poses an immediate threat to human health and safety or plant or animal life;

(c) the legal description or address of the site where the burn will occur;

(d) the amount of material to be burned;

(e) the date and time of the proposed burn; and

(f) The date and time that the spill or incident giving rise to the emergency was first noticed.

(3) Within 10 days of receiving oral authorization to conduct emergency open burning under (2) above, the applicant must submit to the department a written application for an emergency open burning permit containing the information required above under (2)(a-f)

Section 7-9 Commercial Film Production Open Burning Permits

(1) The department may issue an air quality open burning permit for open burning of otherwise prohibited material as part of a commercial or educational film or video production for motion pictures or television.

(2) The department may issue an air quality open burning permit under this rule if the department determines that emissions from open burning will not endanger public health or welfare or cause or contribute to a violation of any Montana or Federal ambient air quality standard.

(3) An open burning permit issued under this rule is valid for a single production.

(4) Open burning under this rule must conform with BACT.

(5) The department may place any reasonable requirements in an air quality permit issued under this rule that the department determines will reduce emissions of air pollutants or minimize the impact of emissions, and the recipient of a permit must adhere to those conditions.

(6) An application for an air quality permit under this rule must be made on a form provided by the department. The applicant shall provide adequate information to enable the department to determine whether the application satisfies the requirements of this rule for a permit. Proof of publication of public notice, as required in subsection (7) of this rule, must be submitted to the department before an application will be considered complete.

(7) An applicant for an air quality commercial film production open burning permit shall notify the public of its application by legal publication, at least once, in a newspaper of general circulation in the area affected by the application. The notice must be published no sooner than 10 days prior to submittal of an application and no later than 10 days after submittal of an application. Form of the notice must be provided by the department and must include a statement that public comments may be submitted to the department concerning the application within 20 days after publication of notice or filing of the application, whichever is later. A single public notice may be published for multiple applicants if the public notice lists all covered applicants.

(8) When the department approves or denies the application for a permit under this rule, a person who is jointly or severally adversely affected by the deportment’s decision may request a hearing before the board. The request for hearing must be filed within 15 days after the department renders its decision and must include an affidavit setting forth the grounds for the request. The contested case provisions of the Montana Administrative Procedure Act, Title 2, chapter 4, part 6, MCA, apply to a hearing before the board under this rule. The department’s decision on the application is not final unless 15 days have elapsed from the date of the decision and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department’s decision until conclusion of the hearing and issuance of a final decision by the board.

Section 7-10 Fees

The department may charge an appropriate permit fee for a firefighting training permit, conditional air quality open burning permit, emergency open burning permit, or commercial film production open burning permit.

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Stimson Lumber Company, Libby, Montana with National Ambient Air Quality Standards for Particulate Matter and Montana Ambient Air Quality Standards for PM-10	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND STIMSON LUMBER COMPANY

The Department of Health and Environmental Sciences ("Department") and Stimson Lumber Company of Libby, Montana ("Stimson") have filed with the Board of Health and Environmental Sciences ("Board") a Joint Petition seeking a Board Order approving and adopting proposed additional emission controls, applicable to Stimson, for attainment and maintenance of the National Ambient Air Quality Standards for particulate matter ("PM-10 NAAQS") and the Montana Ambient Air Quality Standards for PM-10 ("PM-10 MAAQS") in the Libby area.

Pursuant to public notice, and on December 16, 1994, at the Board's hearing in Billings, Montana, the Board conducted a hearing on the Joint Petition. At the hearing testimony and evidence were presented by the Department and an opportunity was provided to all other interested parties to present testimony and evidence concerning the Joint Petition. Based on the record in this proceeding and the Stipulation entered into between the Department and Stimson, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. That on July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers). The annual standard for particulate matter (PM-10) of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration) were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, et seq., as amended by the Clean Air Act Amendments of 1990 ("Act").

2. That on April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean) and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821.

3. That Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for particulate matter, the State of Montana is required to submit to EPA an implementation plan for particulate matter.

4. That, pursuant to the 1990 Federal Clean Air Act Amendments, Libby was designated to nonattainment for PM-10

by operation of law. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Libby area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as moderate, the State was required to submit to EPA an implementation plan no later than one year from enactment of the 1990 amendments. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Libby nonattainment area") generally includes the City of Libby and that portion of Lincoln County within the vicinity of the boundaries of the City of Libby.

5. That results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Libby nonattainment area of the 24-hour and annual standards contained in both the PM-10 NAAQS and the PM-10 MAAQS.

6. That on November 25, 1991 Governor Stephens submitted to EPA an implementation plan for Libby, Montana demonstrating attainment of the PM-10 NAAQS. The implementation plan relied upon receptor modeling known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dust emissions from roadways, emissions from residential woodburning, and industrial emissions from then Champion International (the predecessor to Stimson Lumber Company).

7. That on October 7, 1992, EPA conditionally approved the Libby implementation plan pending fulfillment of certain commitments, including a contingency plan, in the event of

continued PM-10 nonattainment. Governor Racicot submitted the contingency plan on May 24, 1993. EPA subsequently notified the Department of deficiencies in the plan on May 27, 1994.

8. That the Department and Stimson have agreed to additional emission controls, which would be applicable to Stimson in the event that: (a) the Department or EPA determines that Libby has failed to attain or maintain the PM-10 standards, and (b) Stimson is found to be a significant contributor to such nonattainment. The additional controls agreed to by the Department and Stimson are described in Exhibit A, which is attached to this Order and incorporated herein by reference.

9. That it is the intent of the parties that the additional emission controls described in Exhibit A, after adoption and incorporation by Board Order, shall be submitted to the Environmental Protection Agency for review and approval as a part of the State Implementation Plan for the attainment and maintenance of the PM-10 NAAQS.

10. That, as provided in the Stipulation of the parties, the Board may issue an appropriate Order to adopt the emission control strategy described in Exhibit A as enforceable measures applicable to Stimson.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. All parties have been provided with appropriate notice and an opportunity to participate in this matter. Title 2, chapters 3 and 4, MCA. The public notice requirements set forth in 40 CFR section 51.102 have been fulfilled.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to achieve and maintain such levels of air quality as will protect human health and welfare. Section 75-2-111(3), MCA.

4. A revision of the Montana State Air Quality Control Implementation Plan is necessary to assure attainment and maintenance of the PM-10 NAAQS in the Libby area.

5. Adoption of the additional emission controls described in Exhibit A is necessary to assure attainment and maintenance of the PM-10 NAAQS and PM-10 MAAQS in the Libby area.

6. The Board has authority to issue an appropriate Order that adopts the additional emission controls described in Exhibit A as enforceable measures applicable to Stimson.

7. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED:

1. That the additional emission controls set forth in Exhibit A are adopted by the Board and are incorporated

herein as part of this Order.

2. That Stimson shall implement the emission control strategy as adopted in this Order.

3. That this Order shall be enforceable by the Department.

4. That this Order shall become effective immediately upon issuance.

5. That modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

6. That a copy of this Order as executed by the Board be provided to a representative of each party to this proceeding.

DATED this 16 day of Dec, 1994

By: Raymond W Gustafson
RAYMOND W. GUSTAFSON
Chairman, Board of Health and
Environmental Sciences

25.9.3.2 BOARD ORDER AND ASSOCIATED STIPULATION BETWEEN THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES AND ASARCO FOR REVISION OF THE MONTANA STATE AIR QUALITY CONTROL IMPLEMENTATION PLAN.

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions from the Lead Smelter Located at East Helena, Montana, owned and operated by Asarco Incorporated	FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

On February 25, 1994, the Department of Health and Environmental Sciences ("Department") filed with the Board of Health and Environmental Sciences ("Board") a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area.

Pursuant to public notice, and on March 18, 1994, at the Cogswell Building, Helena, Montana, the Board conducted a hearing on the Petition filed by the Department. At the hearing testimony and evidence were presented by the Department and Asarco Incorporated, ("Asarco"). The Department and Asarco also presented to the Board for its consideration a Stipulation, dated March 15, 1994 ("Stipulation"). An opportunity to be heard was provided to all interested parties at the hearing. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. That on September 14, 1973, the United States Environmental Protection Agency ("EPA") promulgated both primary and secondary National Ambient Air Quality Standards ("NAAQS") for sulfur oxides (measured as sulfur dioxide, "SO_2"). These standards were promulgated by EPA pursuant to the federal Clean Air Act, 42 U.S.C. §§ 7401, et seq., as amended by the Clean Air Act Amendments of 1990 ("federal Act").

2. That primary NAAQS define levels of air quality which are determined by EPA to be necessary, with an adequate margin of safety, to protect the public health. Secondary NAAQS define levels of air quality which are determined by EPA to be necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

3. That the primary annual SO_2 NAAQS is 80 micrograms per cubic meter (0.03 parts per million) of SO_2, annual arithmetic mean (40 CFR § 50.4(a)). The primary 24-hour SO_2 NAAQS is 365 micrograms per cubic meter (0.14 ppm) of SO_2, maximum 24-hour concentration, not to be exceeded more than once per year (40 CFR § 50.4(b)).

4. That the secondary SO_2 NAAQS is 1300 micrograms per cubic meter (0.5 ppm) of SO_2, maximum 3-hour concentration, not to be exceeded more than once per year (40 CFR § 50.5).

5. That in August, 1980, the Board adopted Montana Ambient Air Quality Standards ("MAAQS") for sulfur dioxide, including: an annual standard of 0.02 ppm (annual average); a

24-hour standard of 0.10 ppm (24-hour average), not to be exceeded more than once per year; and an hourly standard of 0.5 ppm (one-hour average), not to be exceeded more than 18 times in any consecutive 12 months (ARM 16.8.820).

6. That in March, 1978, EPA designated the area of East Helena, Montana, as nonattainment for SO_2 based on historical ambient monitoring data showing violations of the primary 24-hour SO_2 NAAQS. The EPA nonattainment designation encompassed that portion of East Helena and vicinity located within a 0.67 kilometer radius centered on the sinter storage building at the Asarco primary lead smelter ("East Helena facility").

7. That section 110 of the federal Act (42 U.S.C. § 7410), requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since standards have been promulgated for sulfur oxides, the State of Montana is required to submit an implementation plan for sulfur dioxide to EPA.

8. That on February 14, 1975, the Department and Asarco stipulated to a final control plan for the control of sulfur dioxide emissions from the East Helena facility, which was approved by the Board on May 16, 1975. On September 19, 1975, EPA approved a proposed SO_2 control strategy for the East Helena facility that incorporated the final control plan adopted by the Board. This control strategy was incorporated into the Montana State Air Quality Control Implementation Plan ("SIP").

9. That in April, 1979 the Department submitted a revision to the SIP for the East Helena area, which was designed to achieve compliance with the SO_2 NAAQS. EPA proposed to approve this revision in July, 1983 (48 Fed. Reg. 30696), but final action was not taken pending litigation concerning the federal stack height regulations.

10. That in November 1990, the federal Act was significantly amended, and required that any SIP lacking full approval be resubmitted under new guidelines contained in the amended Act (42 U.S.C. § 7514(b)). The federal Act established May 15, 1992, as the deadline to submit a sulfur dioxide control plan for the East Helena area to EPA (42 U.S.C. § 7514), and requires that the new SIP provide for attainment of the primary SO_2 NAAQS no later than November 15, 1995 (42 U.S.C. § 7514a(b)).

11. That the Department and Asarco have reevaluated the ambient air quality impacts of the Asarco East Helena facility utilizing established protocols, dispersion modeling techniques, and detailed emission inventories approved by the Department and EPA.

12. That using both the RTDM (Rough Terrain Dispersion Model) and ISCST (Industrial Source Complex Simple Terrain) models, and utilizing current allowable emissions from the Asarco East Helena facility, modeling analyses predicts violations of the primary SO_2 NAAQS (both annual and 24-hour standards) in areas of elevated terrain outside of the area formally designated as nonattainment by EPA in 1978.

13. That the Department has filed with the Board a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area. Specifically, the Department proposed the following: that Chapter 5 of the SIP be revised by completely deleting the existing control strategy for the SO_2 NAAQS in the East Helena area; and, that the proposed primary SO_2 NAAQS control strategy for East Helena be adopted and incorporated into the SIP as a new Chapter 25.

14. That since the filing of the Department's Petition, the Department and Asarco have presented to the Board a Stipulation which includes a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area (Exhibit A to the Stipulation, entitled "Emission Limitations and Conditions - Asarco Incorporated").

15. That the control strategy attached to the Stipulation as Exhibit A contains specific limitations, conditions and requirements that are proposed to be applicable to the Asarco East Helena facility. The control strategy proposed by the Department and Asarco (Exhibit A to the Stipulation, entitled "Emission Limitetions and Conditions - Asarco Incorporated", hereafter "East Helena control strategy"), including the Stipulation, is attached to this Order as Appendix A and by this reference is incorporated herein as part of this Order.

16. That using both the RTDM and ISCST models, and

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utilizing the East Helena control strategy, compliance with both the 24-hour and the annual SO_2 NAAQS is demonstrated. The 24-hour standard has proven to be more difficult to achieve in the East Helena area, and has the most influence upon the modeling and control strategy.

17. That the East Helena control strategy establishes a fixed emission limitation for the acid plant stack, crushing mill baghouse stack #1, crushing mill baghouse stack #2, and concentrate storage and handling building, while performance requirements (work practices) have been established for other minor SO_2 sources. Emissions from the blast furnace stack and the sinter plant stack are allowed to vary in accordance with a series of equations that are based upon a dispersion modeling analysis (Exhibit B to the Stipulation, entitled "Modeling Analysis in Support of Compliance Demonstration for SO_2 Primary NAAQS at East Helena, Montana"). Asarco agrees that it will need to implement production and process controls which will insure that the limitations are not exceeded on a daily or annual basis.

18. That as part of the emission limitations and conditions applicable to the Asarco East Helena facility, the East Helena control strategy contains methods for determining emission limits for the blast furnace and sinter plant stacks, and the requirements by which all such emission limitations and conditions are made quantifiable and enforceable by the Department.

19. That the emission limitations and conditions and the

testing and reporting requirements contained in the East Helena control strategy are intended to achieve and maintain compliance with the primary SO_2 NAAQS.

20. That in order to demonstrate compliance with the primary SO_2 NAAQS using the RTDM and ISCST models, the Asarco East Helena facility must be subject to the emission limitations and conditions set forth in the East Helena control strategy.

21. That the Department and Asarco agree that, given Finding No. 20, above, the Board may issue an appropriate Order that adopts the limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation), and requires the same as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law.

22. That the East Helena control strategy does not address compliance by the East Helena area with either the federal secondary SO_2 NAAQS or the SO_2 MAAQS. Further action by the Board in the future will be necessary to address concerns regarding compliance with these requirements, and additional controls and limitations may be necessary at the Asarco East Helena facility.

23. That Asarco remains concerned with the reliability of the RTDM model, does not in any way acknowledge the reliability of the RTDM model, and entered into the submitted Stipulation in the spirit of cooperation. Notwithstanding Asarco's concerns with the RTDM model, the Department and Asarco agree

that the emission limitations, conditions and requirements set forth in the East Helena control strategy shall remain in full force and effect after adoption by the Board, unless expressly modified or replaced by a subsequent Board Order.

24. That pursuant to section 110 of the federal Act, any limitations, conditions and other requirements that are contained in a control strategy designed to achieve and maintain compliance with the NAAQS must be enforceable by both the Department and EPA.

25. That the limitations, conditions and requirements contained in the East Helena control strategy are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

26. That the East Helena control strategy, after adoption and incorporation by Board Order, must be submitted to the Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena.

27. That the Department and Asarco are proposing, except as described below in Finding No. 28 relating to catalyst screening, that the requirements contained in the East Helena control strategy supersede the following: all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena; any less stringent corresponding requirements set forth in any existing air quality permit

currently issued to Asarco for the East Helena facility; and any less stringent corresponding requirements set forth in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

28. That the Department and Asarco are proposing that the East Helena control strategy be subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds (approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984); provided, however, that the Board's prior approval of such criteria and procedures in 1982, as described above, shall terminate and no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date.

29. That the Department and Asarco are proposing that the limitations, conditions and requirements contained in the East Helena control strategy become effective immediately upon the issuance of this Order, except as follows: the specified emission monitoring requirements become effective on July 1, 1994; the reporting requirements apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of

the control strategy, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates.

30. That the Department and Asarco agree that it would be appropriate for the Board to issue an Order in this proceeding that incorporates the terms of the Stipulation and adopts the limitations, conditions and requirements contained in the East Helena control strategy as enforceable measures applicable to the Asarco East Helena facility.

31. That public notice of the Board hearing of March 18, 1994, concerning the issuance of an Order addressing the matters herein was published in the following newspaper on or before February 15, 1994: Independent Record

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapter 3 and 4, MCA. The public notice requirements set forth in 40 CFR section 51.102 have been fulfilled.

2. The Department of Health and Environmental Sciences is charged with the responsibility to "prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state". Section 75-2-112(c), MCA.

3. Under Sections 75-2-101 et seq., MCA, the Montana

Board of Health and Environmental Sciences is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the State. This responsibility includes the adoption of ambient standards (Section 75-2-202, MCA) and emission standards (Section 75-2-203, MCA), and the issuance of orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA (Section 75-2-111, MCA).

4. The limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation) are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

5. Given Finding No. 20, above, a revision of the Montana State Air Quality Control Implementation Plan is necessary for the East Helena nonattainment area to achieve and maintain the primary SO_2 NAAQS.

6. Upon finding the limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation) to be necessary for the East Helena nonattainment area to achieve and maintain the primary SO_2 NAAQS, the Board has jurisdiction to issue an appropriate Order that adopts such limitations, conditions and requirements and requires the same as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law, Sections 75-2-111, -203, MCA.

7. All Findings of Fact are hereby incorporated and

restated herein as Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED:

1. That the control strategy proposed by the Department and Asarco in this proceeding (Exhibit A to the Stipulation, entitled "Emission Limitations and Conditions - Asarco Incorporated", hereafter "East Helena control strategy"), including the Stipulation presented to the Board, is attached to this Order as Appendix A, is adopted by the Board, and is incorporated herein as part of this Order.

2. That consistent with this Order, Asarco Incorporated implement the limitations, conditions and requirements contained in the East Helena control strategy that are applicable to its East Helena facility.

3. That except as described below in Order Paragraph No. 4 relating to catalyst screening, the requirements contained in the East Helena control strategy supersede the following: all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena; any less stringent corresponding requirements set forth in any existing air quality permit currently issued to Asarco for the East Helena facility; and, any less stringent corresponding requirements set forth in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

4. That except as described below in Order Paragraph No. 5, the East Helena control strategy is subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds (approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984).

5. That the Board's 1982 approval of the criteria and procedures for maintenance of Asarco's acid plant catalyst beds, as described above in Order Paragraph No. 4, shall terminate and no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date.

6. That the limitations, conditions and requirements contained in the East Helena control strategy become effective immediately upon the issuance of this Order, except as follows: the specified emission monitoring requirements become effective on July 1, 1994; the reporting requirements apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of the control strategy, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates.

7. That this Order, including the attached Appendix A, be submitted to the Governor of the State of Montana for submittal to the U.S. Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena.

8. That modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

9. That a copy of this Order as executed by the Board be provided to a representative of each party to this proceeding.

DATED this 18 day of March, 1994.

By: Raymond W. Gustafson
RAYMOND W. GUSTAFSON,
Chairman, Board of Health and
Environmental Sciences

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions from the Lead Smelter Located at East Helena, Montana, owned and operated by Asarco Incorporated

STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Asarco Incorporated, ("Asarco"), hereby stipulate and agree to all the following Paragraph Nos. 1-30 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. BACKGROUND:

1. On September 14, 1973, the United States Environmental Protection Agency ("EPA") promulgated both primary and secondary National Ambient Air Quality Standards ("NAAQS") for sulfur oxides (measured as sulfur dioxide, "SO_2"). These standards were promulgated by EPA pursuant to the federal Clean Air Act, 42 U.S.C. §§ 7401, *et seq.*, as amended by the Clean Air Act Amendments of 1990 ("federal Act").

2. Primary NAAQS define levels of air quality which are

determined by EPA to be necessary, with an adequate margin of safety, to protect the public health. Secondary NAAQS define levels of air quality which are determined by EPA to be necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

3. The primary annual SO_2 NAAQS is 80 micrograms per cubic meter (0.03 parts per million) of SO_2, annual arithmetic mean (40 CFR § 50.4(a)). The primary 24-hour SO_2 NAAQS is 365 micrograms per cubic meter (0.14 ppm) of SO_2, maximum 24-hour concentration, not to be exceeded more than once per year (40 CFR § 50.4(b)).

4. The secondary SO_2 NAAQS is 1300 micrograms per cubic meter (0.5 ppm) of SO_2, maximum 3-hour concentration, not to be exceeded more than once per year (40 CFR § 50.5).

5. In August, 1980, the Board adopted Montana Ambient Air Quality Standards ("MAAQS") for sulfur dioxide, including: an annual standard of 0.02 ppm (annual average); a 24-hour standard of 0.10 ppm (24-hour average), not to be exceeded more than once per year; and an hourly standard of 0.5 ppm (one-hour average), not to be exceeded more than 18 times in any consecutive 12 months (ARM 16.8.820).

6. This Stipulation (and associated proposed control strategy) does not address compliance by the East Helena area with either the federal secondary SO_2 NAAQS or the SO_2 MAAQS. The parties recognize that further action by the Board in the future will be necessary to address concerns regarding compliance by the East Helena area with these requirements, and

that additional controls and limitations may be necessary at the Asarco East Helena facility.

7. In March, 1978, EPA designated the area of East Helena, Montana, as nonattainment for SO_2 based on historical ambient monitoring data showing violations of the primary 24-hour SO_2 NAAQS. The EPA nonattainment designation encompassed that portion of East Helena and vicinity located within a 0.67 kilometer radius centered on the sinter storage building at the Asarco East Helena facility.

8. Section 110 of the federal Act (42 U.S.C. § 7410), requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since standards have been promulgated for sulfur oxides, the State of Montana is required to submit an implementation plan for sulfur dioxide to EPA.

9. Pursuant to section 110 of the federal Act, any limitations, conditions and other requirements that are contained in a control strategy designed to achieve and maintain compliance with the NAAQS must be enforceable by the Department.

10. The Clean Air Act of Montana is found generally at Title 75, Chapter 2, MCA. Pursuant to § 75-2-112(c), MCA, the Department is charged with the responsibility to "prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state".

11. Pursuant to § 75-2-111, MCA, the Board is authorized

to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-203, MCA, authorizes the Board to establish such limitations on the levels, concentrations, or quantities of emissions of various pollutants from any source as may be necessary to prevent, abate, or control air pollution.

12. On February 14, 1975, the Department and Asarco stipulated to a final control plan for the control of sulfur dioxide emissions from the East Helena facility, which was approved by the Board on May 16, 1975. On September 19, 1975, EPA approved a proposed SO_2 control strategy for the East Helena facility that incorporated the final control plan adopted by the Board. This control strategy was incorporated into the Montana State Air Quality Control Implementation Plan ("SIP").

13. In April, 1979 the Department submitted a revision to the SIP for the East Helena area, which was designed to achieve compliance with the SO_2 NAAQS. EPA proposed to approve this revision in July, 1983 (48 Fed. Reg. 30696), but final action was not taken pending litigation concerning the federal stack height regulations.

14. In November 1990, the federal Act was significantly amended, and required that any SIP lacking full approval be resubmitted under new guidelines contained in the amended Act (42 U.S.C. § 7514(b)). Pursuant to section 192 of the federal Act, as amended, the new SIP must provide for attainment of the primary SO_2 NAAQS no later than November 15, 1995 (42 U.S.C. §

7514a(b)). Consequently, the Department and Asarco have reevaluated the ambient air quality impacts of the Asarco East Helena facility utilizing established protocols, dispersion modeling techniques, and detailed emission inventories approved by the Department and EPA.

15. As amended, the federal Act established May 15, 1992, as the deadline to submit to EPA a sulfur dioxide control plan for the East Helena area (42 U.S.C. § 7514). However, the federal Act and implementing regulations allow EPA to extend the deadline for submitting the control plan for the secondary SO_2 NAAQS to three years. This extension may be granted if "compelling evidence" is provided that achieving and maintaining the secondary NAAQS requires significant additional controls beyond those required for the primary NAAQS (42 U.S.C. § 7410).

16. On August 5, 1993, the Department submitted a request to EPA for the full three years to develop a plan for the East Helena area that addresses the secondary SO_2 NAAQS. On October 7, 1993, EPA published its approval of this request (58 Fed. Reg. 52237).

17. On February 25, 1994, the Department filed with the Board a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order in this proceeding approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area. Specifically, the Department has proposed the following: that Chapter 5 of the SIP be revised by completely

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deleting the existing control strategy for the SO_2 NAAQS in the East Helena area; that the proposed primary SO_2 NAAQS control strategy for East Helena be adopted and incorporated into the SIP as a new Chapter 25.

18. The Department and Asarco both understand and agree that the emission limitations and conditions and the testing and reporting requirements established by this Stipulation (Exhibit A) are intended to achieve and maintain compliance with the primary SO_2 NAAQS. Furthermore, both parties understand and agree that additional or more stringent emission limitations and conditions and testing and reporting requirements may be necessary in the future to achieve the secondary SO_2 NAAQS and SO_2 NAAQS.

19. Utilizing a dispersion modeling analysis, Asarco and the Department have developed an emission control strategy that achieves compliance with the primary SO_2 NAAQS. Using both the RTDM (Rough Terrain Dispersion Model) and ISCST (Industrial Source Complex Simple Terrain) models, and utilizing the control strategy proposed by this Stipulation (Exhibit A), this modeling analysis demonstrates compliance with both the 24-hour and the annual SO_2 NAAQS. The 24-hour standard has proven to be more difficult to achieve in the East Helena area, and has the most influence upon the modeling and proposed control strategy. As discussed further below, Asarco is concerned with the reliability of the RTDM model, but nevertheless is entering into this Stipulation in the spirit of cooperation.

20. The proposed control strategy contained in Exhibit A

establishes a fixed emission limitation for the acid plant stack, crushing mill baghouse stack #1, crushing mill baghouse stack #2, and concentrate storage and handling building, while performance requirements (work practices) have been established for other minor SO_2 sources. Emissions from the blast furnace stack and the sinter plant stack are allowed to vary in accordance with a series of equations that are based upon the dispersion modeling analysis (Exhibit B, "Modeling Analysis in Support of Compliance Demonstration for SO_2 Primary NAAQS at East Helena, Montana"), and ensures compliance with the primary SO_2 NAAQS. As a part of this Stipulation, Asarco agrees to implement production and process controls which will ensure that the limitations are not exceeded on a daily or annual basis.

21. The Department and Asarco agree that in order to demonstrate compliance with the primary SO_2 NAAQS using the RTDM and ISCST models, the East Helena facility must be subject to the emission limitations and conditions set forth in Exhibit A. Exhibit A to this Stipulation contains emission limitations and conditions applicable to the Asarco East Helena facility, methods for determining emission limits for the blast furnace and sinter plant stacks, and the requirements by which all such emission limitations and conditions are made quantifiable and enforceable by the Department. The parties acknowledge that Asarco remains concerned with the reliability of the RTDM model, and has entered into this Stipulation in the spirit of cooperation. As noted in Paragraph No. 24, below, by entering

into this Stipulation Asarco does not in any way acknowledge the reliability of the RTDM model. The parties are developing data to model air quality using the CTDMPLUS model, and it is possible that the results of this model may differ from the RTDM results. As a result of the use of the CTDMPLUS model, it is possible that the emissions limitations, conditions and requirements for the Asarco East Helena facility, as set forth in Exhibit A to this Stipulation, may be modified by a subsequent Board Order. Notwithstanding Asarco's concerns with the RTDM model and the subsequent evaluation and use of the CTDMPLUS model, the parties agree that the emission limitations, conditions and requirements set forth in Exhibit A to this Stipulation shall remain in full force and effect after adoption by the Board, unless expressly modified or replaced by a subsequent Board Order.

B. <u>BINDING EFFECT</u>

22. The parties to this Stipulation agree that any such emission limitations and conditions and associated testing and reporting requirements placed on Asarco must be enforceable by both the Department and EPA. To this end, the parties have negotiated specific limitations, conditions and requirements that are to be applicable to Asarco, which are contained in Exhibit A to this Stipulation (entitled "Emission Limitations and Conditions - Asarco Incorporated") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

23. The parties understand and agree that this Stipulation may be either renegotiated and made enforceable through an associated Board Order, or superseded by a subsequent Order of the Board upon notice of hearing. This may occur for a number of reasons, including, but not limited to, the following: an EPA determination that the submitted plan is incomplete; an EPA disapproval, either partial or complete, of the submitted plan; additional or more stringent emission limitations and conditions and testing and reporting requirements are necessary in the future to achieve and maintain the secondary SO_2 NAAQS or SO_2 NAAQS; or, the CTDMPLUS model produces valid results that indicate the emission limitations, conditions and requirements set forth in Exhibit A are either more stringent than necessary or inadequate to demonstrate compliance with the primary SO_2 NAAQS.

24. As previously noted, Asarco remains concerned with the reliability of the RTDM model, and has entered into this Stipulation in the spirit of cooperation. By entering into this Stipulation, Asarco does not in any way acknowledge the reliability of the RTDM model. Nothing in this Stipulation, including Exhibit A, shall affect or limit Asarco's ability to later petition the Board to modify this Stipulation and Exhibit A, or to obtain judicial review of the Board's action or failure to act respecting such a petition. Asarco may later petition the Board to modify the emission limitations, conditions and requirements set forth herein and demonstrate, if it can, that such limitations, conditions and requirements

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are not supported by valid scientific evidence and are more stringent than necessary to demonstrate compliance with applicable ambient air quality standards. However, nothing in this paragraph shall be construed to provide Asarco with administrative or judicial remedies that are not otherwise provided by law. In addition, nothing in this paragraph shall be construed as impairing in any manner the finality or enforceability of the Board Order approving this Stipulation.

25. The parties to this Stipulation agree that upon finding the limitations, conditions and requirements contained in Exhibit A to this Stipulation to be necessary for the East Helena non-attainment area to achieve and maintain the primary SO_2 NAAQS, the Board has jurisdiction to issue an appropriate Order that adopts such limitations, conditions and requirements as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law.

26. The limitations, conditions and requirements contained in Exhibit A to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

27. It is the intent of the parties that this Stipulation and the attached Exhibit A, after adoption and incorporation by Board Order, shall be submitted to the Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena. Consistent with this intent, and

except as described below in Paragraph No. 28 relating to catalyst screening, the requirements contained in this Stipulation and attached Exhibit A shall supersede all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena. The obligations in this Stipulation and Exhibit A supersede any less stringent corresponding requirements set forth in any existing air quality permit currently issued to Asarco for the East Helena facility, or in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

28. The provisions of this Stipulation are subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds, which criteria and procedures were approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984; provided, however, that the Board's prior approval of such criteria and procedures in 1982, as described above, shall no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date. As described above, Asarco is concerned with the reliability of the RTDM model, and continues to evaluate and use the CTDMPLUS model. Nothing in this paragraph shall be construed as in any way limiting Asarco's ability to later petition the Board to

demonstrate that adherence to such criteria and procedures, or a modified version thereof, will not result in a predicted violation of the applicable SO_2 NAAQS, utilizing dispersion models approved by the Montana Air Quality Bureau and the United States Environmental Protection Agency. Nothing in this paragraph shall be construed as in any manner allowing Asarco to rely on an intermittent control system (ICS) as a part of such petition and demonstration.

29. The parties agree that the limitations, conditions and requirements contained in this Stipulation and Exhibit A will become immediately effective upon the issuance of an Order by the Board in this proceeding, except as follows: the specified emission monitoring requirements will become effective on July 1, 1994; the reporting requirements will apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions will, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of Exhibit A to this Stipulation, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates. Nothing herein shall be construed as in any way impairing or otherwise affecting the existing obligations of Asarco to conduct ambient monitoring in the East Helena area.

30. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this

Stipulation for the Board to issue an Order imposing the terms in this Stipulation and the limitations, conditions and requirements contained in Exhibit A of this Stipulation, and adopting the same as enforceable measures applicable to the Asarco East Helena facility.

ASARCO, East Helena, MT

By [signature]

By [signature]
Attorney

Date 3/14/94

Montana Department of Health and Environmental Sciences

By [signature]
Robert J. Robinson
Director

By [signature]
Timothy R. Baker
Attorney

Date 3/15/94

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc., and American Chemet Corporation.	STIPULATION OF DEPARTMENT AND AMERICAN CHEMET

<u>STIPULATION</u>

The Department of Health and Environmental Sciences ("Department") and American Chemet Corporation ("American Chemet") hereby stipulate to the following Paragraph Nos. 1-21, including Exhibit A as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board"):

A. <u>BACKGROUND</u>:

1. On October 5, 1978, the United States Environmental Protection Agency ("EPA") promulgated a National Ambient Air Quality Standard ("NAAQS") for lead. The standard was set at a level of 1.5 micrograms of lead per cubic meter of air averaged over a calendar quarter. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401 <u>et seq</u>. ("Act").

2. The NAAQS define levels of air quality which are determined by EPA to be necessary, with an adequate margin of

safety, to protect the public health (42 U.S.C. 7409).

3. Ambient air quality monitoring data collected by the State in population centers throughout Montana during the period 1977-81 revealed that there were recorded violations of the NAAQS for lead in the East Helena area.

4. The Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated (42 U.S.C. § 7410). Since a national standard has been promulgated for lead, the State of Montana is required to submit a lead implementation plan for East Helena to EPA.

5. On September 16, 1983, the Department and Asarco Incorporated (ASARCO) stipulated to a plan for the control of lead emissions from the East Helena facility. The plan was approved by the Board on September 16, 1983. On September 29, 1983, the Governor of Montana submitted the plan to EPA as part of the Montana State Implementation Plan for lead ("1983 lead SIP").

6. EPA published a notice of proposed approval of the 1983 lead SIP on December 29, 1983 (48 FR 57327). EPA published final approval of the 1983 lead SIP on July 9, 1984 (49 FR 27944).

7. The 1983 lead SIP required ASARCO to control several fugitive dust sources, including the ore storage piles and roads in and out of the facility. ASARCO was also required to install an air control system on the #1 blast furnace and enclose the top of both blast furnaces and ventilate the

exhaust to the baghouse. The Montana Highway Department was required to regularly sweep Highway 12 through East Helena. The City of East Helena was required to sweep all paved streets south of Riggs Street between 3rd Street and Montana Avenue (including Riggs and Main Streets).

8. As of December 31, 1986, all of the control strategies in the 1983 lead SIP were implemented. The 1983 lead SIP called for the lead NAAQS to be achieved in the East Helena area within three years of EPA approval, or August 8, 1987. Ambient monitoring data for the fourth calendar quarter of 1987 and the first calendar quarter of 1988 indicated that the lead NAAQS was not met.

9. In an October 1, 1988 letter to the Governor of Montana, EPA notified the State of Montana that the 1983 lead SIP for East Helena was inadequate to attain and maintain the lead NAAQS. The basis for EPA's finding of inadequacy was that, since the development of the 1983 lead SIP, ambient air quality data demonstrated that the previously approved control measures no longer provided for attainment of the lead standard.

10. EPA required Montana to adopt and submit to EPA for approval whatever additional control measures were necessary to assure timely attainment and maintenance of the lead NAAQS. Consequently, the Department and ASARCO have reevaluated the existing lead control plan of the ASARCO East Helena facility utilizing protocols, receptor and dispersion modeling techniques, and detailed emission inventories approved by

the Department and EPA.

11. On November 6, 1991, EPA designated the East Helena area as a nonattainment area for lead (56 FR 56694). The designation was effective on January 6, 1992. As a result of this designation, Montana was required to submit a revised lead SIP that meets the requirements of the Act by July 6, 1993 for the East Helena lead nonattainment area. The SIP must provide for attainment of the lead NAAQS as expeditiously as practicable, but not later than January 6, 1997.

12. On August 2, 1993, EPA made a finding that Montana had failed to submit a lead SIP by July 6, 1993 for the East Helena lead nonattainment area. Pursuant to 42 U.S.C. Section 7509(b), sanctions were to be imposed 18 months after the finding (February 2, 1995), unless the State submitted a revised SIP and EPA determined that the revised SIP was complete within that time frame. EPA also has the option to withhold air pollution grants to the State based upon the State's failure to submit a revised SIP (42 U.S.C. Section 7405). EPA must either approve a SIP or promulgate a Federal Implementation Plan no later than two years (August 2, 1995) after a finding under 42 U.S.C. Section 7509 [42 U.S.C. Section 7410(c)].

13. On February 2, 1995, EPA imposed 2:1 emission offset sanctions in the East Helena lead nonattainment area.

14. Utilizing a dispersion modeling analysis, American Chemet and the Department have developed a emission control strategy that, together with a control strategy for ASARCO,

is intended to assure attainment and maintenance of the lead NAAQS in the East Helena nonattainment area.

15. In this proceeding, the Department has filed with the Board a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order approving and adopting the revised emission control strategy for achieving and maintaining the lead NAAQS in the East Helena nonattainment area. Specifically, the Department's Petition proposed the following: that Chapter 5 of the Montana SIP be revised by deleting the existing control strategy for the lead NAAQS in the East Helena nonattainment area; that the revised lead NAAQS control strategy for East Helena be adopted and incorporated into the SIP as a new Chapter 25.

B. BINDING EFFECT

16. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions that, together with the control strategy for ASARCO, are necessary to assure attainment and maintenance of the lead NAAQS in the East Helena nonattainment area. American Chemet shall comply with the terms of this Stipulation, the emission limitations and other conditions of Exhibit A.

17. To the extent allowed under federal requirements, minor and clerical corrections may be made to this Stipulation or Exhibit A by mutual agreement of the parties, without the necessity for a formal revision of the East Helena lead SIP.

18. The parties agree that the requirements of this Stipulation and Exhibit A will become effective upon the issuance of an Order by the Board in this proceeding, except as otherwise provided in Exhibit A. All current reporting requirements and emission limitations and conditions shall remain in effect until such effective dates. Prior to the effective date of a requirement specified herein, American Chemet must obtain all permits necessary to implement that requirement.

19. It is the intent of the parties that, after adoption and incorporation by Board Order, the lead NAAQS control strategy for American Chemet shall be submitted to EPA for review and approval as part of the revised lead SIP for the East Helena area. The requirements of the lead NAAQS control strategy for American Chemet shall supersede any less stringent corresponding conditions in any existing permit currently issued to American Chemet.

~~20. The requirements of this Stipulation and Exhibit A may be subject to modification when sufficient grounds exist. Sufficient grounds include, but are not limited to, the following,~~

~~(a) an EPA determination that the submitted plan is incomplete;~~

~~(b) an EPA disapproval, either partial or complete, of the submitted plan;~~

~~(c) an EPA conditional approval of the submitted plan,~~

~~(d) a determination by EPA that this plan has failed to~~

~~achieve or maintain the NAAQS; or~~

~~(e) a demonstration by American Chemet, utilizing Department and EPA-approved dispersion modeling techniques, that the NAAQS can be achieved and maintained by implementing an alternative control plan.~~

~~Modifications of the requirements of this Stipulation or Exhibit A that necessitate a revision of the State Implementation Plan (SIP) shall not be effective except upon issuance of a Board order adopting the modifications, after proper notice and public hearing, and approval by EPA. The requirements of this Stipulation may also be modified by equivalent alternative requirements implemented through the state operating permit program under authorization of Title V of the federal Clean Air Act. The procedures for implementing equivalent alternative requirements must meet federal requirements for modification of SIPs through state operating permits. Equivalent alternative requirements may be adopted only after a demonstration that their adoption will assure attainment and maintenance of the NAAQS. American Chemet does not waive and expressly reserves its right to contest any Department, Board, or federal action which, without American Chemet's written consent, modifies the requirements of this Stipulation and Exhibit A.~~

21. Accordingly, the parties agree that the Board shall issue an order adopting the requirements of this Stipulation and Exhibit A. Upon adoption in a Board Order, such requirements shall be enforceable by the Department, subject

to the effective dates set forth in Exhibit A.

American Chemet Corporation	Montana Department of Health and Environmental Sciences
By [signature]	By [signature] Robert J. Robinson, Director
By ____ Attorney	By [signature] Attorney
Date 6/30/95	Date 6/30/95

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER

The Department of Environmental Quality ("Department") has filed with the Board of Environmental Review ("Board") a Petition seeking a Board Order approving and adopting revisions to Asarco, Incorporated's ("ASARCO's") control strategy for achieving and maintaining the lead National Ambient Air Quality Standards ("NAAQS") in the East Helena nonattainment area.

Pursuant to public notice, and on June 21, 1996, the Board of Environmental Review ("Board") conducted a hearing in Helena, Montana on the Petition filed by the Department. At the hearing, an opportunity for comment was provided to the Department, ASARCO, and interested members of the public. The Board deferred final action and kept its record open until the close of a hearing on June 24, 1996, to take public comment on the submittal of the revised ASARCO plan to EPA. Based on the comments, both oral and written, received at the June 21 and June 24 hearings, and based on the attached Stipulation, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. On October 5, 1978, the United States Environmental Protection Agency ("EPA") promulgated NAAQS for lead. The NAAQS were set at a level of 1.5 micrograms of lead per cubic meter of air averaged over a calendar Quarter. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401 et seq. ("Act").

2. The Act requires each state to submit an implementation plan for the control of each air pollutant for which NAAQS have been promulgated (42 U.S.C. § 7410). Since NAAQS have been promulgated for lead, the State of Montana is required to submit a lead implementation plan for East Helena to EPA.

3. On September 16, 1983, the Department and ASARCO stipulated to a plan for the control of lead emissions from the East Helena facility. The plan was approved by the Board of Health and Environmental Sciences, predecessor to the Board of Environmental Review, on September 16, 1983. On September 29, 1983, the Governor of Montana submitted the plan to EPA as part of the Montana State Implementation Plan for lead ("1983 lead SIP").

4. On July 17, 1995, the Department and ASARCO stipulated to a revised plan for the control of lead emissions from the city of East Helena and the ASARCO East Helena facility ("1995 Stipulation"). The plan, which superseded the 1983 lead SIP, was approved by the Board of Environmental Review on August 4, 1995. On August 16, 1995, the Governor of Montana submitted the plan to EPA as a revision to the Montana State Implementation Plan for lead ("1995 lead SIP").

5. On March 13, 1996, the Department and ASARCO stipulated to certain modifications to the 1995 lead SIP. The purpose of the modifications to the 1995 lead SIP was to allow ASARCO additional operational flexibility, while still assuring attainment and maintenance of the NAAQS for lead. The 1996 modifications to the 1995 lead SIP were approved by the Board on April 12, 1996.

6. The Department and ASARCO have agreed to certain additional revisions to the 1995 lead SIP. The purpose of the additional revisions is to allow ASARCO additional operational flexibility and to ensure the feasibility of the control strategy, while still assuring attainment and maintenance of the NAAQS for lead.

7. The additional revisions will not increase lead emissions above that already expected in the modeling performed for the 1995 lead SIP, as amended. Therefore, no additional modeling is necessary to show compliance with the lead NAAQS.

8. The revised emission control strategy for ASARCO is described in the Stipulation, Exhibit A, and Attachments entered into between ASARCO and the Department, which are attached to this Order and incorporated herein. The requirements of this Stipulation, Exhibit A, and Attachments are intended to supersede the existing East Helena lead control plan for ASARCO contained in the September 16, 1983, July 17, 1995, and March 13, 1996 Stipulations between the Department and ASARCO, and to supersede any less stringent corresponding conditions in any existing permit currently issued to ASARCO.

9. It is the intent of the parties that the stipulated emission control strategy for ASARCO, after adoption and incorporation by Board Order, be submitted to the EPA for review and approval as part of the revised control strategy for achieving and maintaining the lead NAAQS in the East Helena nonattainment area.

10. The Department has issued public notice of the proposed additional revisions to the 1995 lead SIP. Notice of the proposal was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the Stipulation containing the proposed revisions, together with the proposed Board Order adopting the Stipulation, was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter pursuant to Title 2, chapters 3 and 4, MCA.

2. The federal requirements for notice and hearing prior to adoption of revisions of State Implementation Plans have been met. 40 CFR Section 51.102.

3. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

4. The Board has authority to issue orders necessary to provide for a coordinated statewide program of air pollution prevention, abatement and control or to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

5. A Board Order adopting the attached Stipulation is consistent with attainment and maintenance of the lead NAAQS in the East Helena area.

6. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The ASARCO Stipulation, Exhibit A, and Attachments thereto are adopted by the Board and are incorporated herein as part of this Order. The requirements of this Order shall supersede the existing East Helena lead control plan for ASARCO contained in the September 16, 1983, August 4, 1995, and April 12, 1996, Board Orders, and shall supersede any less stringent corresponding conditions in any existing permit currently issued to ASARCO.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 26th day of June, 1996

By: [signature]
Cindy E. Younkin, Chairperson
Board of Environmental Review

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BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc., and American Chemet Corporation.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND ASARCO

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting revisions to the lead ("Pb") emission control plan for ASARCO. The revised control plan is intended to attain and maintain the Pb National Ambient Air Quality Standards ("NAAQS") in the East Helena Area.

Pursuant to public notice, at its meeting on August 27-28, 1998, in Helena, Montana, the Board considered the proposed revisions to the control plan. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1995 by a petition of the Department of Environmental Quality. The petition requested an Order from the Board of Environmental Review ("Board") adopting Pb emission control plans for ASARCO and American Chemet. The Pb control plans were developed in response to an October 1, 1988, letter to the Governor of Montana from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's Pb State Implementation Plan (SIP). The Board approved the control plans in August of 1995. This Board approved revisions to the control plan for ASARCO in April and June 1996. On July 2, 1996, Montana submitted

the revised plans to EPA as a SIP revision.

2. In March 1998, ASARCO notified the Department of problems associated with required emission controls at the East Helena facility Specifically, ASARCO reported that moisture in the emissions from the facility's Speiss/Matte Granulating Pit was causing problems in the required emission control device - the Dross Plant Baghouse. ASARCO requested that the required control device be change to the Blast Furnace Baghouse in order to solve the moisture-related problems. After discussions with ASARCO, the Department in July of 1998 stipulated to a revision to the emission control plan that changed the required emission control device to the Blast Furnace Baghouse. That revision is currently before this Board.

3. The revision to the Pb control plan for ASARCO is contained in the Stipulation that is attached to this Order and is incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached revision to the emission control plan for ASARCO, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised Pb SIP for the East Helena area.

5. The Department has issued public notice of the proposed revisions to the Pb control plan. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for

notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation is necessary to comply with the October 1, 1988 EPA request that the East Helena SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The revisions to the Pb control plan for ASARCO set forth in the attached Stipulation are adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 28th day of August, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc.	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND ASARCO**

The Department of Environmental Quality ("Department") has requested an Order from the Board of Environmental Review ("Board") adopting revisions to the lead emission control plan for Asarco. As amended by the revisions contained herein, the control plan is intended to attain and maintain the lead National Ambient Air Quality Standards ("NAAQS") in the East Helena Nonattainment area.

Pursuant to public notice, on September 15, 2000, the Board conducted a hearing in Billings, Montana, on the proposed revisions to the control plan. At the hearing an opportunity for comment was provided to the Department, Asarco, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. On June 11, 1996, the Department and Asarco executed a document entitled "Stipulation of Department and Asarco," which included an Exhibit A and seven attachments (collectively "1996 Stipulation"). The 1996 Stipulation contained the lead control plan for Asarco, as part of the state's efforts to revise the State Implementation Plan for the control of lead emissions in the East Helena Nonattainment Area.

2. The express purpose of the 1996 Stipulation was to assure "attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) for lead." (1996 Stipulation, para. 1). As part of the 1996 Stipulation, Exhibit A contained emission

limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, and requirements by which such emission limitations are made quantifiable and enforceable by the Department. The attachments addressed a variety of issues, ranging from sampling and analysis of road dust samples to a baghouse maintenance plan. The 1996 Stipulation was approved and made enforceable by Board Order, dated June 26, 1996 ("1996 Board Order").

3. On August 13, 1998, the Department and Asarco executed a "Stipulation of Department and Asarco," which modified the 1996 Stipulation. ("1998 Stipulation"). The 1998 Stipulation was approved and made enforceable by Board Order, dated August 28, 1998 ("1998 Board Order").

4. The 1996 Stipulation required Asarco to install and operate a furnace lead granulation system within the Dross Building. Asarco installed and attempted to operate this system, but despite Asarco's best efforts, operation of this system presented insurmountable technical and operating problems. The use of granulated lead in the smelting process has resulted in a fouled product which cannot be sold, and numerous attempts to solve this problem have been unsuccessful. Use of the lead granulator has proven to be technically infeasible, and Asarco has returned to the conventional drossing process. However, the return to the conventional drossing process is not expected to increase ambient concentrations of lead in the East Helena area, based on the following considerations:

a. The subject drossing activities are conducted entirely within the Dross Plant building;

b. The Dross Plant building is completely enclosed and ventilated to the Dross Plant baghouse;

c. There will be no change in the fugitive emission rate for the Dross Plant building;

d. There will be no change in emissions from the Dross Plant baghouse stack.

5. In addition to deleting the requirement that Asarco install and operate a furnace lead granulation system within the Dross Building, revisions to the lead control plan for Asarco are also made to better reflect the current configuration of Asarco's East Helena facility. The revisions to the lead control plan for Asarco are contained in the Stipulation

between Department and Asarco, dated July 18, 2000, that is attached to this Order and incorporated herein by reference. The Board has examined the findings in the attached Stipulation and hereby ratifies and adopts them as the Board's findings in this matter.

6. Unless expressly stated otherwise, this Order, including the attached Stipulation, does not in any way supercede or alter the provisions of the 1996 or 1998 Board Orders (or the 1996 or 1998 Stipulations adopted therein). Except as expressly revised herein, the 1996 Stipulation (including Exhibit A and the attachments 1-7), the 1998 Stipulation, and the 1996 and 1998 Board Orders adopting those stipulations, remain in full force and effect, as part of the Department's control plan for lead emissions in the East Helena Nonattainment Area.

7. It is the intent of the parties that this Stipulation, after adoption and incorporation by Board Order, shall be submitted to EPA for review and approval as revisions to the Asarco control strategy for the attainment and maintenance of the lead NAAQS in the East Helena Nonattainment area, as part of the State Implementation Plan.

8. The Department has issued public notice of the proposed revisions to the lead control plan. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertising in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR § 51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation of the Department and Asarco, dated July 18, 2000, is appropriate to comply with the October 1, 1988, EPA request to revise the State Implementation Plan for East Helena.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The revisions to the lead control plan for Asarco set forth in the attached Stipulation of the Department and Asarco, dated July 18, 2000, are adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Unless expressly stated otherwise in the Stipulation of the Department and Asarco, dated July 18, 2000, this Order does not in any way supercede or alter the provisions of the 1996 and 1998 Board Orders (and the 1996 and 1998 Stipulations adopted therein), and the 1996 and 1998 Board Orders remain in full force and effect, as part of the Department's control plan for lead emissions in the East Helena Nonattainment area.

4. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 15th day of September, 2000.

By: Joe Gerbase
JOE GERBASE
Chair
Board of Environmental Review

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc.	STIPULATION OF DEPARTMENT AND ASARCO

STIPULATION

The Department of Environmental Quality ("Department") and Asarco Incorporated ("ASARCO") hereby stipulate to the following Paragraphs 1-18, including Exhibit A and Attachments as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board"):

1. The purpose of this Stipulation is to allow ASARCO additional operational flexibility, while still assuring attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) for lead. The requirements of this Stipulation, Exhibit A, and Attachments shall supersede the existing East Helena lead control plan for ASARCO contained in the July 17, 1995, and March 13, 1996 Stipulations between the Department and ASARCO, and shall supersede any less stringent corresponding conditions in any existing permit currently issued to ASARCO.

2. On October 5, 1978, the United States Environmental Protection Agency ("EPA") promulgated NAAQS for lead. The NAAQS were set at a level of 1.5 micrograms of lead per cubic meter of air averaged over a calendar Quarter. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401 et seq. ("Act").

3. The Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated (42 U.S.C. § 7410). Since a national standard has been promulgated for lead, the State of

Montana is required to submit a lead implementation plan for East Helena to EPA.

4. On September 16, 1983, the Department and ASARCO stipulated to a plan for the control of lead emissions from the East Helena facility. The plan was approved by the Board on September 16, 1983. On September 29, 1983, the Governor of Montana submitted the plan to EPA as part of the Montana State Implementation Plan for lead ("1983 lead SIP").

5. On July 17, 1995, the Department and ASARCO stipulated to a revised plan for the control of lead emissions from the city of East Helena and the ASARCO East Helena facility ("1995 Stipulation"). The 1995 Stipulation, which superseded the 1983 lead SIP, was approved by the Board on August 4, 1995. On August 16, 1995, the Governor of Montana submitted the 1995 Stipulation to EPA as a revision to the Montana State Implementation Plan for lead ("1995 lead SIP").

6. On March 13, 1996, the Department and ASARCO stipulated to certain modifications to the 1995 lead SIP. The purpose of the modifications to the 1995 lead SIP was to allow ASARCO additional operational flexibility, while still assuring attainment and maintenance of the NAAQS for lead. The 1996 modifications to the 1995 lead SIP were approved by the Board on April 12, 1996.

7. On February 8, 1996, ASARCO met with the Department and expressed concern regarding the handling of furnace lead and the development and implementation of the new lead granulation technology contained in the 1995 lead SIP. These concerns were based on both safety and engineering aspects regarding the development of this technology. The Department agreed to work with ASARCO in finding a solution to the problem presented. ASARCO again met with the Department on March 8, 1996, and presented a revised method for handling furnace lead. The Department agreed in concept, and agreed to work with ASARCO to revise the 1995 lead SIP.

8. It is expected that the new method for handling furnace lead will not increase lead emissions above that already expected in the modeling performed for the 1995 lead

SIP, as amended. Therefore, no additional modeling is necessary to show compliance with the lead NAAQS.

9. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions which will assure attainment and maintenance of the lead NAAQS in the East Helena nonattainment area. ASARCO shall comply with the terms of this Stipulation, the emission limitations and other conditions of Exhibit A, and the terms and conditions of all supplemental documents incorporated by reference in this Stipulation or Exhibit A.

10. The following supplemental documents are attached to Exhibit A and are incorporated therein and in this Stipulation by reference:

Attachment #1:	Sampling and Analysis of Paved Road Dust Samples in East Helena, May 1995;
Attachment #2:	Compliance Plan for Process Weight and Time of Day Restrictions, July 1995;
Attachment #3:	East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan, May 1995;
Attachment #4:	ASARCO East Helena Compliance Modeling - Legal Description and Map of the Boundaries Between Ambient Air and Areas of Restricted Public Access, July 1995; and
Attachment #5:	Compilation of Air Pollutant Emission Factors (AP-42), Appendix D.2 (July 1993), Appendix D.3 (July 1993), Appendix E.1 (July 1993), Appendix E.2 (July 1993), and Appendix E.3 (July 1993).
Attachment #6:	Quality Assurance/ Quality Control (QA/QC) and Standard Operating Procedures (SOP) for Continuous Opacity Monitoring Systems; and

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Attachment #7: Baghouse Maintenance Plan.

11. The parties to this Stipulation agree that the Board Order approving and adopting this Stipulation and Exhibit A shall also approve and adopt all Attachments to Exhibit A.

12. To the extent allowed under federal requirements, minor and clerical corrections may be made to this Stipulation, Exhibit A, or Attachments, by mutual agreement of the parties, without the necessity for a Board Order or formal revision of the East Helena lead SIP.

13. The parties agree that the requirements of this Stipulation, Exhibit A, and Attachments will become effective upon the issuance of an Order by the Board in this proceeding, except as otherwise provided in Exhibit A or the Attachments. All current lead emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until such effective dates. Prior to the effective date of a requirement specified herein, ASARCO must obtain all permits necessary to implement that requirement. Nothing herein shall be construed as in any way impairing or otherwise affecting the existing obligations of ASARCO to conduct ambient monitoring in the East Helena area.

14. It is the intent of the parties that, after adoption and incorporation by Board Order, this Stipulation together with Exhibit A and Attachments shall be submitted to EPA for review and approval as part of the revised lead SIP for the East Helena area.

~~15. The requirements of this Stipulation, Exhibit A, and Attachments may be subject to modification when sufficient grounds exist. Sufficient grounds include, but are not limited to, the following:~~

~~(a) An EPA determination that the submitted plan is incomplete;~~

~~(b) An EPA disapproval, either partial or complete, of the submitted plan;~~

~~(c) An EPA conditional approval of the submitted plan;~~

~~(d) A determination by EPA that this plan has failed to achieve or maintain the NAAQS; or~~

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~~(c) A demonstration by ASARCO, utilizing Department and EPA-approved dispersion modeling techniques, that the NAAQS can be achieved and maintained by implementing an alternative control plan.~~

~~The requirements of this Stipulation may also be modified by equivalent alternative requirements implemented through the state operating permit program under authorization of Title V of the Federal Clean Air Act. The procedures for implementing equivalent alternative requirements must meet federal requirements for modification of SIPs through state operating permits. Equivalent alternative requirements may be adopted only after a demonstration that their adoption will assure attainment and maintenance of the NAAQS.~~

~~Modifications of the requirements of this Stipulation or Exhibit A that constitute a modification of the State Implementation Plan (SIP) shall not be effective except upon issuance of a Board Order adopting the modifications, after proper notice and public hearing, and approval by EPA.~~

~~ASARCO does not waive and expressly reserves its right to contest any Department, Board, or federal action which, without ASARCO's written consent, modifies the requirements of this Stipulation, Exhibit A, or Attachments.~~

~~16. Attachments may be revised by mutual agreement of ASARCO and the Department. Agreed revision shall not require action by the Board modifying the Board Order approving and adopting this Stipulation, Exhibit A and Attachments, provided that the Department certifies in writing that such revisions have been agreed upon and meet all applicable requirements of Exhibit A. Upon such certification, any revision to an Attachment shall be deemed incorporated in Exhibit A and this Stipulation and shall supersede the prior version of the Attachment.~~

17. If a dispute arises regarding a proposed revision to an Attachment, either ASARCO or the Department may petition the Board to resolve the dispute. Board and judicial review of such disputes shall be in accordance with the contested case provisions of the Montana Administrative Procedure Act, Title 2, Chapter 4, Part 6, MCA. Upon

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resolution of a dispute pursuant to this Paragraph, the revised Attachment shall be deemed incorporated in Exhibit A and this Stipulation and shall supersede the prior version of the Attachment. This Paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of Attachments or of any other provisions of this Stipulation or Exhibit A.

18. Accordingly, the parties agree that the Board may issue an Order adopting the requirements of this Stipulation, Exhibit A, and Attachments. Upon adoption in a Board Order, such requirements shall be enforceable by the Department, subject to the effective dates set forth in Exhibit A and the Attachments.

ASARCO Incorporated	Montana Department of Environmental Quality
By	By Mark A. Simonich Mark A. Simonich Director
By Attorney	By Attorney
Date 6/5/96	Date 6/11/96

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BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Lead Emissions in the East Helena Nonattainment Area, Affecting the Following Industries: Asarco, Inc.

STIPULATION OF DEPARTMENT AND ASARCO

STIPULATION

The Department of Environmental Quality ("Department") and Asarco Incorporated ("ASARCO") hereby stipulate to the following Paragraphs 1-5 in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board"):

1. The purpose of this Stipulation is to modify the June 21, 1996 Stipulation and Exhibit A executed by the Department and ASARCO for the control of lead (Pb) emissions from ASARCO's East Helena Smelter (June 1996 Stipulation). The modifications to the June 1996 Stipulation are necessary in order to allow ASARCO to make certain physical changes to emission controls for the purpose of improving the emission control efficiency. As modified herein, the June 1996 Stipulation will assure attainment and maintenance of the National Ambient Air quality Standards ("NAAQS") for lead (Pb).

2. The parties agree that the terms of the June 1996 Stipulation shall be modified as follows:

a. Section 3(A)(10)(a) shall be replaced with the following:

(a) The Blast Furnace Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Blast Furnaces; Blast Furnace Tapping Platform (10V), including but not limited to the

Forebay, Slag Pans, lead pots; Blast furnace Feed Floor (9V), including the enclosures; and the Speiss/Matte Granulating Pit.

b. Section 3(A)(10)(e) shall be replaced with the following:

(e) The Blast Furnace Baghouse and associated ventilation equipment shall maintain a minimum volumetric flowrate of 249,000 Acfm when the Blast Furnace, Blast Furnace Tapping Platform (10V), Blast Furnace Feed Floor, and the Speiss/Matte Granulating Pit are Operating, except as provided in Section 7.

c. Section 3(A)(10)(l) shall be replaced with the following:

(l) The effective date of Section 3(A)(10), except Section 3(A)(10)(a and e) shall be January 6, 1997. The effective date of Section 3(A)(10)(a and e) shall be August 29, 1998.

d. Section 3(A)(12)(a) shall be replaced with the following:

(a) The Dross Plant Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the dross reverberatory furnace, the 60 ton lead kettle and launder, the charge hole, the Speiss/Matte tap, the Speiss/Matte launder, the lead granulator, the dross Kettles (both combustion and process emissions), and the Dross building general ventilation while the Dross Plant Is Operating.

e. Section 3(A)(12)(p) shall be replaced with the following:

(p) The plenum ventilating the dross reverberatory furnace, the 60 ton lead kettle and launder, the Speiss/Matte tap, the Speiss/Matte launder, and the lead granulator shall maintain a minimum volumetric flowrate of 28,000 Acfm, except as provided in Section 7.

f. Section 3(A)(12)(v) shall be replaced with the following:

(v) The effective date of Section 3(A)(12), except Section 3(A)(12)(a and p) shall be January 6, 1997. The effective date of Section 3(A)(12)(a and p) shall be August 29, 1998.

g. Section 3(A)(26)(b) shall be replaced with the following:

(b) Emissions from the Speiss/Matte air/mist granulating process shall be vented to and controlled by the Blast Furnace Baghouse ventilation system.

h. Section 3(A)(26)(g) shall be replaced with the following:

(g) The effective date of Section 3(A)(26), except Section 3(A)(26)(b), shall be January 6, 1997. The effective date of Section 3(A)(26)(b) shall be August 29, 1998.

3. The parties agree that the requirements of this Stipulation shall become effective upon the issuance of an Order by the Board in this proceeding.

4. It is the intent of the parties that, after adoption and incorporation by Board Order, this Stipulation shall be submitted to EPA for review and approval as part of the revised lead SIP for the East Helena area.

5. Accordingly, the parties agree that the Board may issue an Order adopting the requirements of this Stipulation. Upon adoption in a Board Order, such requirements shall be enforceable by the Department, subject to the effective dates set forth herein.

ASARCO Incorporated

By__________

By__________
Attorney

Date 8/5/98

Montana Department of Environmental Quality

By__________
Mark A. Simonich
Director

By__________
Attorney

Date 8/13/98

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BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of)
the Department of Environmental)
Quality for Revision of the Montana)
State Air Quality Control Implementation)
Plan relating to Control of Lead Emissions)
in the East Helena Nonattainment Area,)
Affecting the Following Industries:)
Asarco, Inc.)

STIPULATION OF DEPARTMENT AND ASARCO

STIPULATION

The Department of Environmental Quality ("Department"), and Asarco Incorporated ("Asarco"), hereby stipulate to the following paragraphs 1 through 11, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

1. On June 11, 1996, the Department and Asarco executed a document entitled "Stipulation of Department and Asarco," which included an Exhibit A and seven attachments (collectively "1996 Stipulation"). The 1996 Stipulation contained the lead control plan for Asarco, as part of the state's efforts to revise the State Implementation Plan for the control of lead emissions in the East Helena Nonattainment Area.

2. The express purpose of the 1996 Stipulation was to assure "attainment and maintenance of the National Ambient Air Quality Standards (NAAQS) for lead." (1996 Stipulation, para. 1). As part of the 1996 Stipulation, Exhibit A contained emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, and requirements by which such emission limitations are made quantifiable and enforceable by the Department. The attachments addressed a variety of issues, ranging from sampling and analysis of road dust samples to a baghouse maintenance plan. The 1996 Stipulation was approved and made enforceable by Board Order, dated June 26, 1996.

3. On August 13, 1998, the Department and Asarco executed a "Stipulation of Department and Asarco," which modified the 1996 Stipulation. ("1998 Stipulation") The 1998 Stipulation was approved and made enforceable by Board Order, dated August 28, 1998.

4. The 1996 Stipulation required Asarco to install and operate a furnace lead granulation system within the Dross Building. Asarco installed and attempted to operate this system, but despite Asarco's best efforts, operation of this system presented insurmountable technical and operating problems. The use of granulated lead in the smelting process has resulted in a fouled product which cannot be sold, and numerous attempts to solve this problem have been unsuccessful. Use of the lead granulator has proven to be technically infeasible, and Asarco has returned to the conventional drossing process. However, the return to the conventional drossing process is not expected to increase ambient concentrations of lead in the East Helena area, based on the following considerations:

a. The subject drossing activities are conducted entirely within the Dross Plant building;

b. The Dross Plant building is completely enclosed and ventilated to the Dross Plant baghouse;

c. There will be no change in the fugitive emission rate for the Dross Plant building;

d. There will be no change in emissions from the Dross Plant baghouse stack.

5. The purpose of this document is to revise Exhibit A of the 1996 Stipulation to remove the requirement that Asarco install and operate a furnace lead granulation system. Revisions to Exhibit A are also made to better reflect the current configuration of Asarco's East Helena facility. Specifically, the references to Crushing Mill Baghouses #1 and #2 are changed to "Sinter Plant Roof Baghouses #7 and #8" respectively, and references to the Dross Plant 60-ton kettle are changed to the "#4 Kettle."

6. Unless expressly stated otherwise, this document does not in any way supercede or alter the provisions of the 1996 Stipulation or the 1998 Stipulation. Except

as expressly revised by this document, the 1996 Stipulation, including Exhibit A and the attachments 1-7, and the 1998 Stipulation, remain in full force and effect, as part of the Department's control plan for lead emissions in the East Helena Nonattainment Area.

7. The parties agree that Exhibit A to the 1996 Stipulation is revised as follows:

a. Section 1(B)(4) shall be revised to read:

"(4) Sinter Plant Roof Baghouse #7 Venting the Sinter Building (3Pa);"

b. Section 1(B)(5) shall be revised to read:

"(5) Sinter Plant Roof Baghouse #8 Venting the Sinter Building (4Pa);"

c. Section 3(A)(3) shall be revised to read:

"(3) Sinter Plant Roof Baghouse #7 Venting Sinter Building (3Pa)

(a) The Sinter Plant Roof Baghouse #7 and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter (D&L) Building (6V).

(b) Lead emissions from the Sinter Plant Roof Baghouse #7 shall not exceed 0.0889 Lbs/Hour.

(c) Visible emissions from the Sinter Plant Roof Baghouse #7 shall not exhibit an opacity of 20% or greater.

(d) Dust captured by the Sinter Plant Roof Baghouse #7 shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(e) The Sinter Plant Roof Baghouse #7 and associated ventilation system shall maintain a minimum airflow of 20,000 Acfm when the Sinter Plant is Operating, except as provided in Section 7.

(f) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sinter Plant Roof Baghouse #7 Fan.

(g) The effective date of Section 3(A)(3) shall be 4 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997."

d. Section 3(A)(4) shall be revised to read:

"(4) Sinter Plant Roof Baghouse #8 Venting Sinter Building (4Pa)

(a) The Sinter Plant Roof Baghouse #8 and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter (D&L) Building (6V).

(b) Lead emissions from the Sinter Plant Roof Baghouse #8 shall not exceed 0.0225 Lbs/Hour.

(c) Visible emissions from the Sinter Plant Roof Baghouse #8 shall not exhibit an opacity of 20% or greater.

(d) Dust captured by Sinter Plant Roof Baghouse #8 shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(e) The Sinter Plant Roof Baghouse #8 and associated ventilation system shall maintain a minimum airflow of 14,000 Acfm when the Sinter Plant is Operating, except as provided in Section 7.

(f) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sinter Plant Roof Baghouse #8 Fan.

(g) The effective date of Section 3(A)(4) shall be 4 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997."

(Stipulation of Department and ASARCO)

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e. Section 3(A)(12)(a) shall be revised to read:

"(a) The Dross Plant Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the dross reverberatory furnace, the #4 Kettle and launder, the charge hole, the Speiss/Matte tap, the Speiss/Matte launder, the dross Kettles (both combustion and process emissions), and the Dross Building general ventilation while the Dross Plant is Operating."

f. Section 3(A)(12)(l) shall be revised to read:

"(l) Emissions generated from the burning of natural gas to heat dross Kettles #1, #2, #3 (previously designated as kettles #2, #4, and #5) (12P) and the #4 Kettle shall be vented to combustion ventilation ducts. These ducts must run to the roof area and emissions will be collected by the ductwork providing general ventilation to the Dross Building."

g. Section 3(A)(12)(m) shall be revised to read:

"(m) The #4 Kettle shall have a ventilated hood which shall be designed and operated to provide ventilation at all times that the kettle is in use."

h. Section 3(A)(12)(o) shall be revised to read:

"(o) Hoods shall be operated on the dross reverberatory furnace, the #4 Kettle and launder, the Speiss/Matte tap, the Speiss/Matte launder, and the Speiss/Matte granulating pit."

i. Section 3(A)(12)(p) shall be revised to read:

"(p) The plenum ventilating the dross reverberatory furnace, the #4 Kettle and launder, the Speiss/Matte tap and the Speiss/Matte launder shall maintain a minimum volumetric flowrate of 28,000 Acfm, except as provided in Section 7."

j. Sections 3(A)(12)(q) and (r) shall be removed.

k. Section 3(A)(16)(a) shall be revised to read:

"(a) After the Crushing Mill is permanently shutdown, the Crushing Mill Baghouses #1 and #2 shall be renamed Sinter Plant Roof Baghouses #7 and #8 respectively and their associated ventilation equipment shall supply ventilation to and control emissions from the Sinter (D&L) Building (6V) when the Sinter Machine is Operating. In addition, the Sinter Plant Ventilation System (SPVS) shall supply ventilation to and control emissions from the Sinter (D&L) Building (6V) when the Sinter Plant is Operating."

l. Section 5(D)(1) shall be revised to read:

"(1) Section 3(A)(3)(b), Sinter Plant Roof Baghouse #7 Venting Sinter Building (3Pa);"

m. Section 5(D)(2) shall be revised to read:

"(2) Section 3(A)(4)(b), Sinter Plant Roof Baghouse #8 Venting Sinter Building (4Pa);"

n. Section 5(G)(4) shall be revised to read:

"(4) Beginning in January 1996, ASARCO shall perform analyses to determine the Lead Content, Silt Content, and Moisture Content the first time during each calendar year that each type of material produced in the ASARCO East Helena facility (e.g., Blast Furnace Baghouse Dust, Blast Furnace Flue Dust, etc.) is handled outdoors. Slag, Sinter, Speiss/Matte, cast metal shapes, and Wet Scrubber Filter Cakes produced in the ASARCO East Helena facility are exempt from these analyses."

o. Section 8(A)(2) shall be revised to read:

"(2) Sinter Plant Roof Baghouse #7 Fan (Source 3Pa)."

p. Section 8(A)(3) shall be revised to read:

"(3) Sinter Plant Roof Baghouse #8 Fan (Source 4Pa)."

q. Section 9(B)(2) shall be revised to read;

"(2) Sinter Plant Roof Baghouse #7 Fan (Source 3Pa)"

r. Section 9(B)(3) shall be revised to read;

"(3) Sinter Plant Roof Baghouse #8 Fan (Source 4Pa)"

8. This Stipulation shall become effective immediately upon the issuance of an order by the Board in this proceeding.

9. It is the intent of the parties that this Stipulation, after adoption and incorporation by Board Order, shall be submitted to EPA for review and approval as revisions to the Asarco control strategy for the attainment and maintenance of the lead NAAQS in the East Helena Nonattainment area, as part of the State Implementation Plan.

10. The 1996 Stipulation, as revised by this Stipulation, and the 1998 Stipulation, are intended to assure attainment and maintenance of the NAAQS for lead, but is not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards.

11. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation. Upon adoption in a Board Order, this Stipulation shall be enforceable by the Department.

ASARCO Incorporated	Montana Department of Environmental Quality
By ______	By ______ Mark Simonich Director
Date July 10, 2000	Date 7/18/00
By ______ Attorney	By ______ Attorney
Date July 10, 2000	Date 7/18/00

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

American Chemet Corporation
East Helena, Montana

PART I

Section 1 Affected Facilities

(A) Plant Location:

The American Chemet Corporation has a facility located immediately south of the community of East Helena, Montana. The American Chemet plant is located at NW¼ Section 36, Township 10N, Range 3W, Lewis and Clark County, within the City of East Helena, approximately three miles east of Helena.

(B) Affected Equipment and Facilities:

(1) #1 Copper Furnace Stack and

(2) All other processing points within the facility.

Section 2 Definitions

(A) The following definitions apply throughout this Stipulation and Exhibit A:

(1) "Board" means the Montana Board of Health and Environmental Sciences or its successor.

(2) "Department" means the Montana Department of Health and Environmental Sciences or its successor.

(3) "Equation 1" means

$E_{Qtr} = E_{Hr} * \text{Hours/Qtr}$

Where:

E_{Qtr} = Quarterly emission rate in pounds per quarter
E_{Hr} = Hourly lead emission rate in pounds as determined from source testing.
Hours/Qtr = Number source operating hours in the quarter.

"*" denotes multiplication.

(4) "Lead Content" means the content (in percent) in any specified material.

(5) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials, and lead emissions are expected from the source, building, or stack.

(6) "Quarter" means the three month calendar period ending on the last day of the months of March, June, September and December.

Section 3 Emission Limitations

(A) #1 Copper Furnace Stack

American Chemet will have two different options, depending upon the height of the stack of the #1 Copper Furnace:

(1) **Option A:** If the height of the #1 Copper Furnace Stack is increased from the 1995 height of 8.8 meters to 20 meters, American Chemet shall comply with the following emissions limitations:

(a) Quarterly emissions of lead from the #1 Copper Furnace Stack shall not exceed 175 pounds per quarter (Lbs/Qtr) as determined by Equation 1.

(b) Lead emissions from the #1 Copper Furnace Stack shall not exceed 0.08 pounds per hour (Lbs/Hr).

(c) Visible emissions from the #1 Copper Furnace Stack shall not exhibit an opacity of 20% or greater.

(2) **Option B:** If the height of the #1 Copper Furnace Stack is not changed and is kept at the 1995 height of 8.8 meters, American Chemet shall comply with the following emissions limitations:

(a) Quarterly emissions of lead from the #1 Copper Furnace Stack shall not exceed 30.8 pounds per quarter (Lbs/Qtr) as determined by Equation 1.

(b) Lead emissions from the #1 Copper Furnace Stack shall not exceed 0.014 pounds per hour (Lbs/Hr).

(c) Visible emissions from the #1 Copper Furnace Stack shall not exhibit an opacity of 20% or greater.

(3) On January 6, 1997 and thereafter, American Chemet shall be in compliance with the requirements of Section 3(B) and, depending upon whether #1 Copper Furnace is exhausting through the 20.0 meter stack or through the 8.8 meter stack, either the emission limitations contained in Section 3(A)(1) or Section 3(A)(2), respectively.

(4) If American Chemet elects Option A, it must apply to the Department not later than January 6, 1996 for a permit to construct the 20.0 meter stack and initiate construction within three years after the issuance of the permit. Obtaining the permit for the 20.0 meter stack does not preclude the option of not building the 20.0 meter stack as long as American Chemet demonstrates compliance with the emissions limitations in Section 3(A)(2).

(B) Feed material into the plant shall have a quarterly average Lead Content of less than 0.15%, and an annual average Lead Content of less than 0.10%.

Section 4 Compliance Determinations

Compliance with the emission and Lead Content limitations contained in Section 3 shall be determined using data from the testing and reporting requirements required by Sections 5 through 9.

Section 5 Emission Testing

(A) All emission testing for lead shall be conducted in accordance with the Montana Source Testing Protocol and Procedures Manual. All lead compliance tests shall contain a determination of front and back-half emissions.

(B) All opacity values shall be determined according to 40 CFR Part 60, Appendix A, Method 9, Visual Determination of Opacity of Emissions from Stationary Sources or by a continuous opacity monitoring system (COMS), except where noted.

(C) American Chemet shall perform source testing for lead on the following schedule:

(1) American Chemet shall perform a source test for lead on the existing 8.8 meter stack by November 15, 1995.

(2) As long as American Chemet continues to exhaust the #1 Copper Furnace through the 8.8 meter stack, the following source testing schedule shall apply:

(a) If the initial source test required by Section 5(C)(1) demonstrates compliance with the emissison limitations in Section 3(A)(2), American Chemet shall conduct a source test for lead on the 8.8 meter stack at least once every five years after the initial source test.

(b) If the source test required by Section 5(C)(1) does not demonstrate compliance with the emission limitations in Section 3(A)(2), American Chemet shall conduct an additional source test for lead on the 8.8 meter stack within six (6) months after January 6, 1997 and at least once every five years thereafter.

(3) If American Chemet elects Option A and constructs the 20 meter stack, it shall conduct a source test for lead on the 20 meter stack within six (6) months after completion of construction and at least once every five years thereafter.

Section 6 Data Reporting

(A) American Chemet shall submit to the Department a quarterly written report within 45 days of the end of each quarter. Each quarterly report must provide, for the previous quarter:

(1) the hours of operation of the #1 Copper Furnace (20P);

(2) the pounds per quarter of lead emissions for the #1 Copper Furnace (20P); and

(3) the quarterly average Lead Content for the feed material.

(B) The quarterly report for the last calendar quarter of each year shall, in addition to the information required by Section 6 (A), provide the average annual Lead Content for the feed material.

Section 7 Notification Requirements

If American Chemet elects to build a 20 meter stack, then American Chemet shall inform the Department at least 15 days prior to the initiation of construction of the stack and within 15 days after the initial use of the stack.

Section 8 Additional Requirements and Conditions

(A) Notwithstanding the testing that is required and specified by this Exhibit, the Department may require emission testing on sources in the plant per ARM 16.8.704, Testing Requirements.

(B) American Chemet shall retain copies of all data collected and reported in accordance with this Exhibit for five (5) years. Data shall be made available to the Department upon request in a format compatible with the Department's data management system.

Section 9 General Conditions

(A) Inspection - American Chemet shall allow the Department representatives access to all sources at the American Chemet facility such that Department representatives may enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an air contaminant source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain data, audit any monitoring equipment, or observe any monitoring or testing, and conduct all necessary functions related to this control plan.

All inspections shall be conducted in compliance with all applicable federal or state rules or requirements for workplace safety and American Chemet plant safety rules or requirements. American Chemet shall inform Department representatives of all applicable workplace safety rules or requirements at the time of the inspection. Nothing contained in this stipulation and Exhibit A shall be construed to limit the Department's statutory right of entry and inspection as provided for in Section 75-2-403, MCA.

(B) Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve American Chemet from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the Department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

(C) Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for judicial or administrative enforcement action.

(D) Construction Commencement - If American Chemet does not initiate construction of the 20 meter stack within three years of permit issuance and does not proceed with due diligence the Department may revoke the permit.

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

ASARCO Lead Smelter
East Helena, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

The ASARCO primary lead smelter is located immediately south of the community of East Helena, Montana in Lewis and Clark County, Township 10 North, Range 3 West, Section 36. The plant's slag pile is adjacent to and on the south side of U.S. Highway 12.

(B) Affected Equipment and Facilities:

The combination of numbers and letters contained in the parentheses in the following list provides a cross reference to the emission points identified in the ASARCO East Helena Primary Lead Smelter Emission Inventory, North American Weather Consultants, May 1992, and the Demonstration of Attainment Modeling Report Revised East Helena, Montana Lead SIP, Cermak Peterka Peterson, Inc., July 1995. These documents quantify the baseline emissions and describe how the emissions were handled in the compliance modeling demonstration. The cross referencing provides a means to track the changes in the emission configuration from the baseline situation to the lead emission control plan encompassed in this Exhibit. The following equipment and facilities are subject to this Exhibit:

(1) Sample Mill and Sample Mill Baghouse Stack (1P);
(2) Laboratory and Laboratory Assay Stacks (2P);
(3) Crushing Mill, including Crushing Mill Baghouse Stack #1 Venting Crusher (3P), Crushing Mill Baghouse Stack #2 Venting Crusher (4P), Crushing Mill Baghouse Stack #3 (5P), Crushing Mill Track Hopper (1Va), Crushing Mill Product Conveyor (1Vb), and Crushing Mill Building (1V);
(4) **Sinter Plant Roof Baghouse #7 Venting the Sinter Building** (3Pa);
(5) **Sinter Plant Roof Baghouse #8 Venting the Sinter Building** (4Pa);
(6) Concentrate Storage and Handling Building (CSHB) Baghouse Stack (6P), CSHB, Sinter Plant Ventilation System (SPVS), Acid Dust Handling System and Associated Ventilation Facilities;
(7) Sinter Plant (D&L) Baghouse Stack (7P), Sinter Machine, and Associated Ventilation Facilities;
(8) Acid Plant and Acid Plant Stack (8P);
(9) Sinter Storage Building and Sinter Storage Building Baghouse Stack (9P);
(10) Tetrahedrite Drier and Tetrahedrite Drier Baghouse Stack (10P);
(11) Kettles #1 and #3 Combustion Ventilation (11P);
(12) Kettles #1, #2, and #3 (previously Kettles #2, #4, and #5) Combustion Ventilation (Existing 12P);
(13) Kettle #6 Combustion Ventilation (13P);
(14) Kettle #7 Combustion Ventilation (14P);
(15) Blast Furnace, Associated Equipment, and Blast Furnace Baghouse Stack (16P);
(16) Acid Dust Bin System, including Acid Dust Bin Baghouse Stack (17P), Acid Dust Bin Building (17V), and Acid Dust Conveyor Drop (17Va);
(17) Zinc Plant, including Zinc Furnace Baghouse Stack (18P), Zinc Plant Building (20V), and Zinc

Baghouse Building (21V);

(18) Dross Building (19P);

(19) Dross Plant, Associated Equipment, and the New Dross Plant Baghouse Stack (21P);

(20) Hopto Unloading and Blast Furnace Baghouse Dust Reclaiming (2V);

(21) Old Ore Storage Yard (3V);

(22) High Grade Building Dumping Area (4V);

(23) Sinter (D&L) Building (6V);

(24) Cottrell Penthouse (7V);

(25) Breaking Floor Building (8Va);

(26) Blast Furnace Charge Building (8Vb);

(27) Sinter Handling by Payloader (8Vf);

(28) Matte Handling by Payloader (8Vh);

(29) Direct Smelt Bins Charging (8Vi);

(30) 47 Feeder Charging (8Vk);

(31) Blast Furnace Feed Floor (9V),

(32) Blast Furnace Tapping Platform (10V);

(33) Slag Handling Facility (11V);

(34) Slag Pile Dumping (12V);

(35) Speiss Handling Area (15V);

(36) Tetrahedrite Drier Bin Charging (16V);

(37) Blast Furnace Baghouse Cleanout (18V); and

(38) Blast Furnace Flue Cleanout (19V).

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout Exhibit A:

(1) "Acfm" means air flow measurement in actual cubic feet per minute.

(2) "Afternoon Shift" means the eight hour period beginning at 3:00 p.m. and ending at 11:00 p.m.

(3) "Attachment #1" means the "Sampling and Analysis of Paved Road Dust Samples in East Helena, May 1995."

(4) "Attachment #2" means the "Compliance Plan for Process Weight and Time of Day Restrictions, July 1995."

(5) "Attachment #3" means the "East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan, May 1995."

(6) "Attachment #4" means the "ASARCO East Helena Compliance Modeling - Legal Description and Map of the Boundaries Between Ambient Air and Areas of Restricted Public Access, July 1995."

(7) "Attachment #5" means the "Compilation of Air Pollutant Emission Factors (AP-42), Appendix D.2 (July 1993), Appendix D.3 (July 1993), Appendix E.1 (July 1993), Appendix E.2 (July 1993), Appendix E.3 (July 1993)."

(8) "Attachment #6" means the "Quality Assurance/Quality Control (QA/QC) and Standard Operating Procedure (SOP) for Continuous Opacity Monitoring Systems, November 20, 1995."

(9) "Attachment #7" means the "Baghouse Maintenance Plan, January 1996."

(10) "Board" means the Montana Board of Environmental Review.

(11) "Day Shift" means the eight hour period beginning at 7:00 a.m. and ending at 3:00 p.m.

(12) "Department" means the Montana Department of Environmental Quality.

(13) "Dust" means any lead bearing material, excluding East Helena Slag, East Helena Sinter, and East Helena Speiss/Matte, that has a Lead Content greater than 1.0% and that:
(a) was collected by an air pollution control device other than a wet scrubber, or
(b) has an Emission Potential greater than 57.6.

(14) "Emission Potential" means a numerical value which describes how readily a material can become airborne and is calculated in accordance with the following equation:

$$EP = (S/5) / (M/2)^2$$

Where:

/ = Denotes division throughout this Exhibit,

EP = Emission Potential,

S = Silt Content as determined from the most recent analysis of the material, and

M = Moisture Content as determined from the most recent analysis of the material.

(15) "Equation 1" means

$$E = M * PB_w * EP_w * C$$

Where:

* = Denotes multiplication throughout this Exhibit,

E = Quarterly lead emissions in pounds (Lbs/Qtr),

M = Tons of Dust handled per Quarter as determined by the payloader Load Cell measurement system (Tons/Qtr),

PB_w = Average Lead Content, in percent, divided by 100, weighted by the amount of each type of Dust handled,

EP_w = Average Emission Potential weighted by the amount of each type of Dust handled, and

C = A constant which is specific to a particular process or source as defined below:

Reclaiming Blast Furnace Baghouse Dust	0.00428
Dropping Dust in the Old Ore Storage Yard	0.00428
Charging Dust to the Direct Smelt Bins	0.00500
Cleaning out the Blast Furnace Flue	0.00355

The above constants were calculated using the following equation and assumptions:

$C = [0.0018] * [(U/5) * (H/5)] / [Y/6]^{0.33}$

Where:

U = a wind speed of 10.4 mph.
H = a drop height in feet, and
Y = a drop capacity in cubic yards.

Equation 1 can be used for total Quarterly lead emissions, or Quarterly lead emissions for a particular shift by using the appropriate amount of Dust handled for the entire Quarter, or a particular shift during the Quarter.

(16) "Equation 2" means

$E_{Qtr} = E_{Ton} * \text{tons}$

Where:

E_{Qtr} = Quarterly lead emission rate in pounds per Quarter,

E_{Ton} = Pounds of lead emissions per ton of material processed (Lbs/Ton) as determined by the most recent source testing, and

Tons = Tons of material processed during the Quarter.

(17) "Equation 3" means

$E_{Qtr} = E_{FAC} * \text{tons}$

Where:

E_{Qtr} = Quarterly lead emission rate in pounds per Quarter,

E_{FAC} = Source specific emission factor stated in this Exhibit , and

Tons = Tons of material processed during the Quarter.

(18) "Furnace Lead" means the total tons of bullion and Speiss/Matte produced.

(19) "Lead Content" means the content of lead (in percent) in any specified material.

(20) "Load Cell" means Loadrites or an equivalent weighing system which can be attached to a loader or forklift, and meets the criteria set forth in Attachment #2.

(21) "Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment, or a process when it affects emissions, to operate in a normal manner. A failure caused entirely or in part by poor maintenance, careless operation, poor design, or any other preventable upset condition or preventable equipment breakdown is not a Malfunction.

(22) "Moisture Content" means the content of moisture in percent in any material as determined according to Attachment #5, Appendix E.2. Sampling from storage piles or other bulk sampling shall be performed using Attachment #5, Appendix D.3 ~~or an equivalent procedure~~. Splitting of samples for analysis shall be performed according to Attachment #5, Appendix E.1 ~~or an equivalent procedure.~~

(23) "Natural Draft Opening" or "NDO" means any permanent opening that remains open while the facility is Operating and is not connected to a ventilated duct. Garage doors, employee doors, and temporary openings necessary for maintenance and repairs shall not be considered as NDO, provided that ASARCO keeps such openings in their closed position except when actually in use.

(24) "Night Shift" means the eight hour period beginning at 11:00 p.m. and ending at 7:00 a.m.

(25) "Non-dust" means material that is not Dust, and has a Lead Content of greater than 1%. The term excludes cast metal shapes, granulated furnace bullion, East Helena slag, East Helena sinter, and East Helena Speiss/Matte. Wet Scrubber Filter Cakes greater than 1% lead are considered Non-dust.

(26) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials, and lead emissions are expected from the source, building, or stack.

(27) "Quarter" means the three month calendar period ending on the last day of the months of March, June, September or December.

(28) "Silt Content" means the percent mass which passes through a #200 mesh screen (75 micrometers), as determined according to Attachment #5, Appendix E.3. Sampling of paved roads shall follow the procedure outlined in Attachment #5, Appendix D.2, and sampling from storage piles or other bulk sampling shall be performed using Attachment #5, Appendix D.3 ~~or an equivalent procedure.~~ Splitting of samples for analysis shall be performed according to Attachment #5, Appendix E.1 ~~or an equivalent procedure~~.

SECTION 3. EMISSION LIMITATIONS

(A) Affected Facilities:

(1) Sample Mill and Sample Mill Baghouse Stack (1P)

(a) The Sample Mill Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sample Mill.

(b) Lead emissions from the Sample Mill Baghouse Stack (1P) shall not exceed 0.0204 Lbs/Hour.

(c) Visible emissions from the Sample Mill Baghouse Stack (1P) shall not exhibit an opacity of 20% or greater.

(d) The Sample Mill Baghouse ventilation system shall maintain a minimum airflow of 4,800 Acfm when the Sample Mill is Operating, except as provided in Section 7.

(e) Dust captured by the Sample Mill Baghouse shall be recovered from the baghouse hopper by a vacuum truck or other means which will minimize emissions.

(f) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sample Mill Baghouse Fan.

(g) The effective date of Section 3(A)(1) shall be upon issuance of the Board Order adopting this Exhibit.

(2) Laboratory and Laboratory Assay Stacks (2P)

(a) The Laboratory shall not analyze more than 16,000 lead crucibles per Quarter. (For informational purposes only, this corresponds to a Quarterly lead emission rate of 96 pounds.)

(b) Visible emissions from the Laboratory Assay Stacks (2P) shall not exhibit an opacity of 20% or greater.

(c) The effective date of Section 3(A)(2) shall be upon issuance of the Board Order adopting this Exhibit.

(3) Sinter Plant Roof Baghouse #7 Venting Sinter Building (3Pa)

(a) The Sinter Plant Roof Baghouse #7 and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter (D&L) Building (6V).

(b) Lead emissions from the Sinter Plant Roof Baghouse #7 shall not exceed 0.0889 Lbs/Hour.

(c) Visible emissions from the Sinter Plant Roof Baghouse #7 shall not exhibit an opacity of 20% or greater.

(d) Dust captured by the Sinter Plant Roof Baghouse #7 shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(e) The Sinter Plant Roof Baghouse #7 and associated ventilation system shall maintain a minimum airflow of 20,000 Acfm when the Sinter Plant is Operating, except as provided in Section 7.

(f) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sinter Plant Roof Baghouse #7 Fan.

(g) The effective date of Section 3(A)(3) shall be 4 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997."

(4) Sinter Plant Roof Baghouse #8 Venting Sinter Building (4Pa)

(a) The Sinter Plant Roof Baghouse #8 and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter (D&L) Building (6V).

(b) Lead emissions from the Sinter Plant Roof Baghouse #8 shall not exceed 0.0225 Lbs/Hour.

(c) Visible emissions from the Sinter Plant Roof Baghouse #8 shall not exhibit an opacity of 20% or greater.

(d) Dust captured by Sinter Plant Roof Baghouse #8 shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(e) The Sinter Plant Roof Baghouse #8 and associated ventilation system shall maintain a minimum airflow of 14,000 Acfm when the Sinter Plant is Operating, except as provided in Section 7.

(f) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sinter Plant Roof Baghouse #8 Fan.

(g) The effective date of Section 3(A)(4) shall be 4 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997."

(5) Concentrate Storage and Handling Building (CSHB) Baghouse Stack (6P), Sinter Plant Ventilation System (SPVS), Acid Dust Handling System, and Associated Baghouses

(a) The CSHB baghouses and associated ventilation equipment shall be used to supply ventilation to and control emissions from the CSHB and the Acid Dust Handling System. The SPVS Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter Plant and shall exhaust through the

CSHB Baghouse Stack (6P).

(b) Lead emissions from the 187 foot CSHB Baghouse Stack (6P) shall not exceed 4.0876 Lbs/Hour.

(c) Visible emissions from the CSHB Baghouse Stack (6P) shall not exhibit an opacity of 20% or greater.

(d) The CSHB Baghouses, SPVS Baghouse, and associated ventilation equipment shall maintain a minimum airflow of 243,000 Acfm when the CSHB, the Sinter Machine and the Acid Dust Handling System are Operating, except as provided in Section 7.

(e) The SPVS Baghouse and associated ventilation system shall maintain a minimum airflow of 36.000 Acfm when the Sinter Plant is Operating, except as provided in Section 7.

(f) ASARCO shall utilize devices that monitor and record the hours of fan operation on each of the following: CSHB North Baghouse Fan. CSHB South Baghouse Fan. CSHB Feeder Room Baghouse Fan, SPVS Baghouse Fan, and the Acid Dust Handling System Fan.

(g) The effective date of Section 3(A)(5) shall be January 6, 1997.

(6) Sinter Plant (D&L) Baghouse Stack (7P), Sinter Machine, and Associated Ventilation Facilities

(a) The Sinter Plant (D&L) Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Sinter Machine and associated equipment.

(b) Lead emissions from the Sinter Plant (D&L) Baghouse Stack (7P) shall not exceed 1.8176 Lbs/Hour.

(c) The Sinter Plant (D&L) Baghouse and associated ventilation equipment shall maintain a minimum airflow of 112,000 Acfm when the Sinter Machine is Operating, except as provided in Section 7.

(d) ASARCO shall utilize devices that monitor and record the hours of fan operation on each of the following: Sinter Plant Baghouse Fan, Sinter Plant No. 5 Ventilation Fan, and the Sinter Plant Stack Fan.

(e) The effective date of Section 3(A)(6) shall be upon issuance of the Board Order adopting this Exhibit.

(7) Acid Plant and Acid Plant Stack (8P)

(a) The Acid Plant, Cottrell, and associated ventilation equipment shall be used to supply ventilation to and control emissions associated with the strong gas (high SO_2 concentration) from the Sinter Machine.

(b) Lead emissions from the Acid Plant Stack (8P) shall not exceed 0.0698 Lbs/Hour.

(c) Visible emissions from the Acid Plant Stack (8P) shall not exhibit an opacity of 20% or greater.

(d) The Acid Plant, Cottrell, and associated ventilation equipment shall maintain a minimum airflow of 30,000 Acfm when the Sinter Machine, Acid Plant, Cottrell, and associated equipment are Operating, except as provided in Section 7. Airflow testing of the Acid Plant Baghouse shall only be conducted when the Sinter Plant feed material has a sulfide content of 6% or greater.

(e) ASARCO shall utilize devices that monitor and record the hours of fan operation on each of the following: Acid Plant Hot Gas Fan, and the Acid Plant Main Blower.

(f) The effective date of Section 3(A)(7) shall be upon issuance of the Board Order adopting this Exhibit.

(8) Sinter Storage Building and Sinter Storage Building Baghouse Stack (9P)

(a) The Sinter Storage Building Baghouse and associated ventilation system shall be used to supply ventilation to and control emissions from the Sinter Storage Building, Breaking Floor Building (8Va), Blast Furnace Charge Building (8Vb), and sinter drop into storage bin.

(b) By January 6, 1997, emissions from the Sinter Storage Building Baghouse shall be vented through the Dross Plant Baghouse Stack (21P).

(c) Dust captured by the Sinter Storage Building Baghouse shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(d) The Sinter Storage Building Baghouse and associated ventilation equipment shall maintain a minimum airflow of 35,000 Acfm when the Blast Furnace and Sinter Plant are Operating, except as provided in Section 7.

(e) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Sinter Storage Baghouse Fan.

(f) The effective date of Section 3(A)(8) shall be January 6, 1997.

(9) Tetrahedrite Drier and Tetrahedrite Drier Baghouse Stack (10P)

(a) The Tetrahedrite Drier Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Tetrahedrite Drier.

(b) Quarterly lead emissions from the Tetrahedrite Drier Baghouse Stack (10P) shall not exceed 4.9 Lbs/Qtr. If the Tetrahedrite Drier is operated less than or equal to 30 days per calendar year, then the Quarterly emissions shall be determined by using an emission factor of 0.0018 pounds of lead emissions per ton of tetrahedrite dried (Lbs/Ton) and Equation 3. If the Tetrahedrite Drier is operated greater than 30 days per calendar year, then the Quarterly emissions shall be determined by using the most recent Lbs/Ton emission factor determined by the most recent source testing and Equation 2.

(c) Visible emissions from the Tetrahedrite Drier Baghouse Stack (10P) stack shall not exhibit an opacity of 20% or greater.

(d) Dust captured by the Tetrahedrite Drier Baghouse shall be recovered from the baghouse hopper by vacuum truck or other means which will minimize emissions.

(e) The Tetrahedrite Drier Baghouse and associated ventilation equipment shall maintain a minimum airflow of 19,000 Acfm when the Tetrahedrite Drier is Operating, except as provided in Section 7.

(e) ASARCO shall utilize a device to monitor and record the hours of fan operation on the Tetrahedrite Drier Baghouse Fan.

(g) The effective date of Section 3(A)(9) shall be upon issuance of the Board Order adopting this Exhibit.

(10) Blast Furnace. Associated Equipment. and Blast Furnace Baghouse Stack (16P)

(a) The Blast Furnace Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Blast Furnaces; Blast Furnace Tapping Platform (10V). including but not limited to the Forebay, Slag Pans, lead pots; and the Blast Furnace Feed Floor (9V), including the enclosures; and the Speiss/Matte Granulating Pit.

(b) Only one Blast Furnace shall be operated at a time.

(c) Lead emissions from the Blast Furnace Baghouse Stack (16P) shall not exceed 3.7145 Lbs/Hour.

(d) Visible emissions from the Blast Furnace Baghouse Stack (16P) shall not exhibit an opacity of 20% or greater.

(e) The Blast Furnace Baghouse and associated ventilation equipment shall maintain a minimum volumetric flowrate of 249,000 Acfm when the Blast Furnace. Blast Furnace Tapping Platform (10V). Blast Furnace Feed Floor (9V), and the Speiss/Matte Granulating Pit are Operating, except as provided in Section 7.

(f) Hoods shall be operated on the No. 1 and No. 3 Blast Furnace slag tapping pans and shall meet the following requirements:

(i) The hoods shall be large enough and shaped appropriately to effectively cover the slag pans, and

(ii) The hoods shall be in place at all times the blast furnace is Operating and the Jitney is in place.

(g) Hoods designed to effectively control emissions shall be operated on each Jitney.

(h) Hoods designed to effectively control emissions shall be operated on the Blast Furnace lead pots during tapping.

(i) ASARCO shall install a Continuous Opacity Monitoring System (COMS) which meets the requirements of Section 6 on the Blast Furnace Baghouse Stack (16P).

(j) ASARCO shall utilize devices that monitor and record the hours of fan operation on each of the following: Blast Furnace Baghouse Fan, and Blast Furnace Stack Fan.

(k) Devices that monitor and record the hours of fan operation shall be installed on the Blast Furnace Tapping and Feed Floor Enclosure Ventilation Fan and the Blast Furnace Baghouse Enclosure Baghouse Fan.

(l) The effective date of Section 3(A)(10), except Section 3(A)(10)(a and e), shall be January 6, 1997. The effective date of Section 3(A)(10)(a and e) shall be August 29, 1998.

(11) Dross Building (19P)

(a) Fugitive lead emissions from the Dross Building shall not exceed 103 Lbs/Qtr as determined by Equation 3 using an emission factor of 0.0031 pounds of lead per ton of Furnace Lead produced (Lbs/Ton).

(b) The NDO of the Dross Building shall not exceed 560 square feet. This shall be accomplished by removing all existing wall and roof sheets and installing new siding and new roofing sheets on the Dross Building.

(c) All wall and roof penetrations (e.g., ducts, piping, etc.) in the Dross Building shall be sealed to the maximum extent practicable.

(d) ASARCO shall maintain the siding and roofing of the Dross Building in good repair. ASARCO shall repair any damage to the siding or roofing of the Dross Building (19P) within ten (10) days of ASARCO or the Department discovering damage.

(e) The Dross Plant Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the Dross Building.

(f) The effective date of Section 3(A)(11) shall be January 6, 1997.

(12) Dross Plant, Associated Equipment, and the Dross Plant Baghouse Stack (21P)

(a) **The Dross Plant Baghouse and associated ventilation equipment shall be used to supply ventilation to and control emissions from the dross reverberatory furnace, the #4 Kettle and launder, the charge hole, the Speiss/Matte tap, the Speiss/Matte launder, the dross Kettles (both combustion and process emissions), and the Dross Building general ventilation while the Dross Plant is Operating.**

(b) The Dross Plant Baghouse shall have a maximum air-to-cloth ratio of 3.6 to 1.

(c) By December 31, 1995, ASARCO shall construct a new Dross Reverberatory Furnace to replace the existing furnace.

(d) Lead emissions from the Dross Plant Baghouse Stack (21P) shall not exceed 3.4923 Lbs/Hour.

(e) ASARCO shall construct a Dross Plant Baghouse Stack with a minimum height of 200 feet above ground level.

(f) The emissions from the Dross Plant Baghouse shall be vented through the stack required by Section 3(A)(12)(e).

(g) Visible emissions from the Dross Plant Baghouse Stack (21P) shall not exhibit an opacity of 20% or greater.

(h) ASARCO shall install a Continuous Opacity Monitoring System (COMS) which meets the requirements of Section 6 on the Dross Plant Baghouse Stack (21P).

(i) **Emissions generated from the burning of natural gas to heat dross Kettles #1, #2, #3 (previously designated as kettles #2, #4, and #5) (12P) and the #4 Kettle shall be vented to combustion ventilation ducts. These ducts must run to the roof area and emissions will be collected by the ductwork providing general ventilation to the Dross Building.**

(j) General Dross Building and roof area ventilation shall maintain a minimum airflow of 52,000 Acfm when the Dross Plant is Operating, except as provided in Section 7.

(k) The Dross Plant Baghouse Stack (21P) and associated ventilation system shall maintain a minimum airflow of 117,000 Acfm when the Dross Plant is Operating, except as provided in Section 7.

(l) Each dross kettle shall have a ventilated hood which shall be designed and operated to provide ventilation at all times that the kettle is in use, including during the following activities: drossing (black skimming), pumping of molten lead, adding of fluxes, and stirring of fluxes.

(m) **The #4 Kettle shall have a ventilated hood which shall be designed and operated to provide ventilation at all times that the kettle is in use.**

(n) No more than two dross kettles shall be operated at a time when the dross reverberatory furnace is Operating.

(o) Hoods shall be operated on the dross reverberatory furnace, the #4 Kettle and launder, the Speiss/Matte tap, the Speiss/Matte launder, and the Speiss/Matte granulating pit.

(p) The plenum ventilating the dross reverberatory furnace, the #4 Kettle and launder, the Speiss/Matte tap and the Speiss/Matte launder shall maintain a minimum volumetric flowrate of 28,000 Acfm, except as provided in Section 7.

(q)

removed

(r)

(s) A hood designed to effectively control emissions shall be constructed and operated on the reverberatory furnace charge hole.

(t) A device to monitor and record hours of fan operation shall be installed on the Dross Plant Baghouse Fan.

(u) Dust from the Dross Plant Baghouse shall be transferred in a totally enclosed conveying system.

(v) The effective date of Section 3(A)(12), except Section 3(A)(12)(a and p), shall be January 6, 1997. The effective date of Section 3(A)(12)(a and p) shall be August 29, 1998.

(13) Hopto Unloading and Blast Furnace Baghouse Dust Reclaiming (2V)

(a) Quarterly emissions of lead from Blast Furnace Baghouse Dust Reclaiming shall not exceed 67.7 pounds as determined by Equation 1.

(b) Quarterly emissions of lead from reclaiming Blast Furnace Baghouse Dust during the Afternoon Shift shall not exceed 3 pounds as determined by Equation 1, except that any unutilized Night Shift emissions allocations may be transferred to the Afternoon Shift.

(c) Quarterly emissions of lead from reclaiming Blast Furnace Baghouse Dust during the Night Shift shall not exceed 2.6 pounds as determined by Equation 1.

(d) No more than 3000 tons of Non-dust material shall be unloaded by the Hopto type loader per Quarter as determined by plant accounting records. In accordance with the 1992

Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 1.0 pounds.

(e) Dust shall no longer be unloaded by the Hopto type loader.

(f) During the reclaiming of Blast Furnace Baghouse Dust, the average payloader drop height shall not exceed 5 feet, as determined by visual observation of the Department.

(g) The payloaders used in reclaiming Blast Furnace Baghouse Dust shall have bucket sizes sufficient to ensure that the average bucket size is 3.5 cubic yards or greater. If an inspection by the Department reveals that this requirement is not being met, then the Department may request and ASARCO shall submit data from the payloader Load Cell records to demonstrate compliance.

(h) Material specified in Section 3(A)(13)(a-c) shall not be reclaimed when the hourly average wind speed at the ASARCO meteorological monitoring site is greater than 12.0 mph for the hour prior to the reclaiming of the material.

(i) The effective date of Section 3(A)(13) shall be 2 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(14) Old Ore Storage Yard (3V)

(a) Quarterly emissions of lead from dropping Dust in the Old Ore Storage Yard shall not exceed 252 pounds as determined by Equation 1.

(b) Quarterly emissions of lead from dropping Dust in the Old Ore Storage Yard during the Afternoon Shift shall not exceed 22.4 pounds as determined by Equation 1, except that any unutilized Night Shift emissions allocations may be transferred to the Afternoon Shift.

(c) Quarterly emissions of lead from dropping Dust in the Old Ore Storage Yard during the Night Shift shall not exceed 9.9 pounds as determined by Equation 1.

(d) No more than 9600 tons of Non-dust material shall be dropped in the Old Ore Storage Yard per Quarter as determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 3.1 pounds.

(e) Dust shall no longer be dropped outdoors by rail crane or any other crane.

(f) During the dropping of Dust in the Old Ore Storage Yard, the average payloader drop height shall not exceed 5 feet, as determined by visual observation of the Department.

(g) The payloaders used in the dropping of Dust in the Old Ore Storage Yard shall have bucket sizes sufficient to ensure that the average bucket size is 3.5 cubic yards or greater. If an inspection by the Department reveals that this requirement is not being met, then the Department may request and ASARCO shall submit data from the payloader Load Cell records to demonstrate compliance.

(h) Material specified in Section 3(A)(14)(a-c) shall not be dropped when the hourly average wind speed at the ASARCO meteorological monitoring site is greater than 12.0 mph for the hour prior to the dropping of the material.

(i) The effective date of Section 3(A)(14) shall be 2 months following issuance of the Board Order adopting this Exhibit, but no later than January 6, 1997.

(15) High Grade Building Dumping Area (4V)

(a) No more than 3900 tons of Dust and Non-dust material shall be dumped per Quarter at the High Grade Ore Dumping Area as determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 0.74 pounds.

(b) The effective date of Section 3(A)(15) shall be upon issuance of the Board Order adopting this Exhibit.

(16) Sinter (D&L) Building (6V)

(a) After the Crushing Mill is permanently shutdown, the Crushing Mill Baghouses #1 and #2 shall be renamed Sinter Plant Roof Baghouses #7 and #8 respectively and **their associated ventilation equipment shall supply ventilation to and control emissions from the Sinter (D&L) Building (6V) when the Sinter Machine is Operating. In addition, the Sinter Plant Ventilation System (SPVS) shall supply ventilation to and control emissions from the Sinter (D&L) Building (6V) when the Sinter Plant is Operating.**

(b) The NDO of the Sinter (D&L) Building (6V) shall not exceed 1100 square feet. (For informational purposes only, this corresponds to a Quarterly lead emission rate of 76.9 pounds.)

(c) The Sinter Plant Ventilation System (SPVS) shall supply ventilation to the Larry Pit, the Tail No. 2 and No. 4 Pans, the Tail No. 3 Pan, the Smooth Roll, the Down Day Mid 3 Pan, the vibrating conveyor, the moisture screw, the Head E2/D Belt, the nodulizer drum inlet chute, the J Belt/ignition shuttle, the grate rapper, the 1-4 Fan Shafts, the pallet repair and the Sinter Machine tail.

(d) The effective date of Section 3(A)(16) shall be 4 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(17) Cottrell Penthouse (7V)

(a) Visible emissions from the Cottrell penthouse shall not exceed 20% opacity.

(b) For informational purposes only, the Quarterly lead emission rate of the Cottrell

Penthouse is expected to be 108 pounds.

(c) The effective date of Section 3(A)(17) shall be upon issuance of the Board Order adopting this Exhibit.

(18) Breaking Floor Building (8Va)

(a) Fugitive lead emissions from the Breaking Floor Building shall not exceed 45.3 Lbs/Qtr using an emission factor of 0.0205 Lbs/Hour.

(b) The NDO of the Breaking Floor Building shall not exceed 417 square feet.

(c) The effective date of Section 3(A)(18) shall be upon issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(19) Blast Furnace Charge Building (8Vb)

(a) Fugitive lead emissions from the Blast Furnace Charge Building (8Vb) shall not exceed 17.7 Lbs/Qtr using an emission factor of 0.0080 Lbs/Hour.

(b) The NDO of the Blast Furnace Charge Building shall not exceed 1136 square feet.

(c) The effective date of Section 3(A)(19) shall be upon issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(20) Sinter Handling by Payloader (8Vf)

(a) No more than 5500 tons of sinter shall be dropped outdoors by payloader per Quarter as determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to Quarterly lead emission rate of 440 pounds.

(b) ASARCO shall not exceed 3069 tons of sinter in the outdoor sinter storage area.

(c) The effective date of Section 3(A)(20) shall be 2 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(21) Direct Smelt Bins Charging (8Vi)

(a) Quarterly emissions of lead from charging Dust at the Direct Smelt Bins shall not exceed 96.8 pounds as determined by Equation 1.

(b) Quarterly emissions of lead from charging Dust at the Direct Smelt Bins during the Afternoon Shift shall not exceed 4.3 pounds as determined by Equation 1, except that any unutilized Night Shift emissions allocations may be transferred to the Afternoon Shift.

(c) Quarterly emissions of lead from charging Dust in the Old Ore Storage Yard during the Night Shift shall not exceed 3.8 pounds as determined by Equation 1.

(d) No more than 7315 tons of Non-dust material shall be charged to the Direct Smelt Bins per Quarter as determined by plant accounting records. In accordance to the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 2.9 pounds.

(e) During charging Dust at the Direct Smelt Bins, the average payloader drop height shall not exceed 5 feet, as determined by visual observation of the Department.

(f) The payloaders used in the charging of Dust at the Direct Smelt Bins shall have bucket sizes sufficient to ensure that the average bucket size is 2.0 cubic yards or greater. If an inspection by the Department reveals that this requirement is not being met, then the Department may request and ASARCO shall submit data from the payloader Load Cell records to demonstrate compliance.

(g) Material specified in Section 3(A)(21)(a-c) shall not be charged when the hourly average wind speed at the ASARCO meteorological monitoring site is greater than 12.0 mph for the hour prior to the charging of the material.

(h) The effective date of Section 3(A)(21) shall be 2 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(22) Blast Furnace Feed Floor (9V)

(a) Fugitive lead emissions from the Blast Furnace Feed Floor (9V) shall not exceed 56.0 Lbs/Qtr using an emission factor of 0.0254 Lbs/Hour.

(b) Only one blast furnace shall be operated at a time.

(c) A ventilated enclosure large enough to accept the charge car shall be constructed around the top of each blast furnace.

(d) The NDO of each enclosure shall not exceed 338 square feet.

(e) Each enclosure shall be ventilated with a minimum air flow of 32,000 Acfm, except as provided in Section 7.

(f) The Blast Furnace Baghouse and associated ventilation equipment shall supply ventilation to and control emissions from the Blast Furnace Feed Floor (9V).

(g) The effective date of Section 3(A)(22) shall be January 6, 1997.

(23) Blast Furnace Tapping Platform (10V)

(a) Fugitive lead emissions from the Blast Furnace Tapping Platform (10V) shall not exceed

175 Lbs/Qtr as determined by Equation 3 using an emission factor of 0.0053 pounds of lead emissions per ton of Furnace Lead tapped (Lbs/Ton).

(b) Permanent covers designed to effectively control emissions shall be constructed and used on all Blast Furnace lead pots.

(c) The effective date of Section 3(A)(23) shall be January 6, 1997.

(24) Slag Handling Facility (11V)

(a) No more than 44,000 tons of slag shall be handled in the Slag Handling Facility per Quarter as determined by plant accounting records. In accordance to the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 113 pounds.

(b) The effective date of Section 3(A)(24) shall be upon issuance of the Board Order adopting this Exhibit.

(25) Slag Pile Dumping (12V)

(a) No more than 44.000 tons of slag shall be dumped at the slag piles per Quarter as determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 74.6 pounds.

(b) The effective date of Section 3(A)(25) shall be upon issuance of the Board Order adopting this Exhibit.

(26) Speiss/Matte Handling (15V) (This includes former source 8Vh)

(a) Speiss/Matte shall be air/mist granulated into a ventilated enclosure.

(b) Emissions from the Speiss/Matte air/mist granulating process shall be vented to and controlled by the Blast Furnace Baghouse ventilation system.

(c) Granulated Speiss/Matte shall be removed from the ventilated enclosure by front-end loader.

(d) Granulated Speiss/Matte shall be dewatered on the pad prior to shipment.

(e) Oversized Speiss/Matte shall be screened and returned to the Dross Reverberatory Furnace for re-processing.

(f) No more than 16,600 tons of Speiss/Matte shall be dropped outdoors per Quarter (8,300 tons of Speiss/Matte dropped twice) as determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 4.8

pounds.

(g) The effective date of Section 3(A)(26), except Section 3(A)(26)(b), shall be January 6, 1997. The effective date of Section 3(A)(26)(b) shall be August 29, 1998.

(27) Tetrahedrite Drier Bin Charging (16V)

(a) No more than 2700 tons of Tetrahedrite shall be dried per Quarter as determined by multiplying the number of tote bins loaded by 7.0 tons each. Each tote bin shall have a maximum capacity which shall not exceed 7.5 tons. The number of tote bins loaded shall be determined by plant accounting records. In accordance with the 1992 Lead Emission Inventory and the 1995 Demonstration of Attainment Modeling, this tonnage corresponds to a Quarterly lead emission rate of 0.29 pounds.

(b) The effective date of Section 3(A)(27) shall be upon issuance of the Board Order adopting this Exhibit.

(28) Blast Furnace Baghouse Cleanout (18V)

(a) ASARCO shall construct an enclosure around the Blast Furnace Baghouse cleanout area and reclaim trench (Blast Furnace Baghouse Enclosure) which will be ventilated to a baghouse.

(b) The ventilation system associated with the Blast Furnace Baghouse Enclosure shall maintain a minimum airflow of 35,400 Acfm, except as provided in Section 7. The exhaust from the Blast Furnace Baghouse Enclosure and associated baghouse shall be exhausted through the Blast Furnace Baghouse Stack (16P).

(c) The NDO of the Blast Furnace Baghouse Enclosure shall not exceed 177 square feet. (For informational purpose only, this corresponds to a Quarterly lead emission rate of 17.7 pounds.)

(d) The effective date of Section 3(A)(28) shall be January 6, 1997.

(29) Blast Furnace Flue Cleanout (19V)

(a) Quarterly emissions of lead from cleaning out the Blast Furnace Flue shall not exceed 80.3 pounds as determined by Equation 1.

(b) Quarterly emissions of lead from cleaning out the Blast Furnace Flue during the Afternoon Shift shall not exceed 3.5 pounds as determined by Equation 1, except that any unutilized Night Shift emissions allocations may be transferred to the Afternoon Shift.

(c) Quarterly emissions of lead from cleaning out the Blast Furnace Flue during the Night Shift shall not exceed 3.1 pounds as determined by Equation 1.

(d) During flue cleanout, the average payloader drop height shall not exceed 3 feet, as determined by visual observation of the Department.

(f) The payloaders used in the cleaning out of the Blast Furnace Flue shall have bucket sizes sufficient to ensure that the average bucket size is 1.0 cubic yards or greater. If an inspection by the Department reveals that this requirement is not being met, then the Department may request and ASARCO shall submit data from the payloader Load Cell records to demonstrate compliance.

(g) Blast Furnace Flue cleanout shall not be conducted when the hourly average windspeed at the ASARCO meteorological monitoring site is greater than 12.0 mph for the hour prior to the cleaning of the Flue.

(h) The effective date of Section 3(A)(29) shall be 2 months following issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(B) Equipment Permanently Shut Down:

(1) ASARCO permanently shut down the Zinc Fuming Plant including the following identified points of emissions effective July 6, 1993:

(a) Zinc Plant Building (20V);
(b) Zinc Baghouse Building (21V); and
(c) Zinc Furnace Baghouse Stack (18P).

(2) ASARCO shall construct and operate an Acid Dust Handling System no later than January 6, 1997, and abandon the following points of emissions and equipment effective when the Acid Dust Handling System is in operation:

(a) 130 ton Acid Dust Bin Baghouse Stack (17P);
(b) Acid Dust Bin Building (17V) including the zig-zag blender; and
(c) Acid Dust Conveyor Drop (17Va) point into an open-top gondola railcar.

(3) ASARCO shall shut down the crushing mill and the following points of emissions and equipment effective within 4 months of the issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997:

(a) Crushing mill baghouse #1 while ventilating the crushing mill building (eliminating source 3P);
(b) Crushing mill baghouse #2 while ventilating the crushing mill building (eliminating source 4P);
(c) Crushing Mill Baghouse Stack #3 (5P);
(d) Crushing Mill Building (1V);
(e) Crushing Mill Track Hopper (1Va); and
(f) Crushing Mill Product Conveyor (1Vb).

(4) ASARCO shall remove the following equipment and points of emissions by January 6, 1997:

(a) Kettle #1 and Kettle #3 (upon removal of source 11P, ASARCO shall renumber existing Kettles #2, #4, and #5 to Kettles #1, #2, and #3, respectively) along with the associated kettle combustion stack (11P);

(b) Kettle #6 and associated kettle combustion stack (13P); and

(c) Kettle #7.

(5) ASARCO shall no longer charge material to the 47 Feeders (8Vk) after January 6, 1997.

(C) ASARCO Area Source Limitations

(1) Unpaved Roads and Unpaved Areas Within Facility

(a) Visible emissions from unpaved roadways within the ASARCO facility shall not exceed 5% opacity.

(b) ASARCO shall treat all unpaved portions of the in-plant haul roads and the general plant area and areas where unpaved traffic surfaces adjoin paved roads with water, chemical dust suppressant, and/or acceptable oil or asphalt products, as necessary to meet the limitation stated in (C)(1)(a).

(c) All water used on the roads for dust suppression must come from Upper Lake, or have a Lead Content less than or equal to that of Upper Lake.

(d) The use by ASARCO of any dust suppressants, including any oil or asphalt products, shall be in compliance with all applicable local, state, and federal requirements.

(e) ASARCO shall limit traffic on unpaved roadways and parking areas to essential traffic.

(2) Maintenance of Paved Roads and Paved Areas Within Facility

(a) Visible emissions from paved roads within the ASARCO facility shall not exceed 5% opacity.

(b) ASARCO shall sweep or spray with water all paved roads within the facility on a regular basis as necessary to meet the limitation stated in (C)(2)(a).

(c) All paved roads within ASARCO's East Helena facility shall be maintained in good condition.

(d) At a minimum, ASARCO shall maintain two sweepers (roadway or vacuum sweepers) for use in the plant.

(e) The sweeping material collected by dry sweepers shall be emptied within an enclosed building which is ventilated and controlled by a particulate control device(s) which meets the criteria of Best Available Control Technology (BACT). Sweeping material collected by wet sweepers shall be emptied at the equipment washdown area. The emptying of sweeping material shall be in compliance with all applicable local, state and federal requirements.

(f) Any spills of dust on paved roads or paved areas within the plant shall be cleaned up by ASARCO.

(g) Within the facility, ASARCO shall use only commercially-available sanding material for deicing purposes which has a Lead Content of 0.0148 % or less.

(3) Construction

Any construction, demolition or renovation must maintain compliance with ARM 16.8.1401 (3).

(4) Haul Trucks

All haul trucks carrying lead-containing materials to and from the facility must pass over a grating system for the purpose of dislodging any materials which may be bonded to the truck bed, side walls and undercarriage.

(5) Decrease Disturbance of Outside Storage Piles

(a) All materials stored outside at the ASARCO East Helena Facility with a Lead Content greater than 1% (with the exception of East Helena sinter, East Helena smelter slag, East Helena Speiss/Matte, cast metal shapes, granulated furnace bullion, materials stored in permanent bunkers or bins, and materials which are stored in containers) shall be required to follow the conditions outlined in Section 3(C)(5)(b-e).

(b) Storage piles must be oriented so as to minimize disturbance by wind or plant equipment.

(c) Storage piles are to be chemically sealed with a suitable binder. Sealed piles which are broken into during plant operation are to be resealed as soon as practicable but no later than 24 hours after initial crust breaking, when weather permits.

(d) Concrete dividers must be installed and maintained to separate all storage materials to minimize disturbance of the piles.

(e) Wind screens must be installed and maintained to minimize wind impacts on the storage piles.

(f) The Excavation/Demolition piles between the Upper and Lower Lakes shall be sealed as necessary to ensure that the fugitive emissions from these piles are minimized. The requirements of Section 3(C)(5)(b, d, e) do not apply to these piles.

(6) Property Access Restrictions

(a) ASARCO shall maintain a fence or other barrier sufficient to restrict public access to the area described in Attachment #4. This area was not considered ambient air in the July

1995 compliance demonstration.

(b) Where fencing or other barriers are not feasible due to continual removal by natural causes (e.g., a flooding creek bed), then ASARCO shall be responsible for maintaining signs to discourage public access.

(7) The effective date of Section 3 (C) shall be upon issuance of the Board Order adopting this Exhibit.

(D) East Helena Paved Road Dust Control Requirements

(1) ASARCO shall comply with all requirements contained in Attachment #1.

(2) The following definitions apply to Attachment #1 and Section 3(D):

(a) "Area A," "Area B," and "Area C" mean the areas as defined in Attachment #1.

(b) "Equation 4" means

Lead Loading (grains/ft^2) = $SL * PB_{silt}$ 100

Where:

SL = silt content in grains/ft^2 of area sampled from one street

PB_{silt} = percent lead from one street in silt portion of sample.

(c) "Equation 5" means

Monthly Average Lead Loading (grains/ft^2) =
Σ(Lead Loadings for all individual samples collected in one of the three areas: A, B, or C) ÷ (number of samples collected in the same area for one calendar month).

(d) "Equation 6" means

Quarterly Average Lead Loading (grains/ft^2) =
Σ(Monthly average Lead Loadings for a single area (A, B or C) ÷ (number of months for which valid Monthly Average Lead Loadings are available for that area).

(e) "Lead Loading" means the grains of silt size lead per square foot of street surface for one sample collected in Area A, Area B, or Area C and as calculated by Equation 4.

(f) "Monthly Average Lead Loading" means the average of all Lead Loadings for samples collected during one calendar month in Area A, Area B or Area C as calculated by Equation 5.

(g) "Quarterly Average Lead Loading" means the average of three Monthly Average Lead

Loadings during a calendar Quarter for Area A, Area B or Area C, as calculated by Equation 6 provided, however, that if a Monthly Average Lead Loading sample cannot be obtained for one or more months, the Quarterly Average Lead Loading shall be determined based on data for those months with data divided by the number of months with data.

(3) Effective July 6, 1996, Asarco shall clean the paved public streets and roads (city, county and state jurisdiction) in Area A and Area B as necessary to limit the Quarterly Average Lead Loading of the silt portion of road dust samples taken in those areas to less than 0.05 grains of lead per square foot of paved street surface. Sampling and testing shall be conducted in accordance with Section 3(D)(5) and Attachment #1.

(4) Effective July 6, 1996, Asarco shall clean the paved public streets and roads (city, county and state jurisdiction) in Area C as necessary to limit the Quarterly Average Lead Loading of the silt portion of road dust samples taken in Area C to less than 0.074 grains of lead per square foot of paved street surface. Sampling and testing shall be conducted in accordance with Section 3(D)(5) and Attachment #1. This limit shall be monitored and enforced as follows:

(a) If the sampling results for any 12 consecutive months show that all Monthly Average Lead Loadings for Area C are less than 0.074 grains of lead per square foot of paved street surface, Asarco may cease sampling road dust in Area C: provided, however, that Asarco may only cease sampling after the Department has reviewed the sampling data and agrees with the findings. If an event occurs described by Section 3(D) (6 or 7) during the 12 consecutive months which will prevent Asarco from obtaining a Monthly Average Lead Loading, then all valid Monthly Average Lead Loadings during the 12 consecutive month period shall be considered.

(b) Cessation of sampling in Area C pursuant to Section 3(D)(4)(a) does not relieve ASARCO from its obligation to comply with the Quarterly Average Lead Loading standard for Area C set forth in this Section 3(D)(4). Notwithstanding any cessation of sampling by Asarco in accordance herewith, the Department may sample and test for Lead Loading in accordance with Section 3(D)(5) and Attachment #1.

(c) If, at any time after cessation of sampling by Asarco in Area C, the Department determines, based on at least two samples in Area C, that a Monthly Average Lead Loading exceeds 0.074 grains per square foot, Asarco shall, upon notification by the Department, resume the cleaning and sampling of paved public streets in Area C as necessary to meet the Quarterly Average Lead Loading standard of 0.074 grains per square foot.

(5) In order to determine compliance with the Quarterly Average Lead Loading standard defined in Section 3(D)(3 and 4), ASARCO shall perform street sampling in accordance with the following requirements:

(a) ASARCO shall request, at least once a month, that the Department identify a randomly selected grid in Area A and Area B. Such requests shall also be made at least once a month for Area C during all times when Area C is required to be sampled. ASARCO may make additional requests for a randomly selected grid in any Area.

(b) Upon ASARCO's request, the Department shall randomly select a grid in the Area or Areas for which ASARCO has submitted a request, and shall provide the coordinates to ASARCO. ASARCO shall, in accordance with the procedures described in Appendix D.2 (7/93), of the Compilation of Air Pollutant Emission Factors (AP-42) (Attachment #5), collect a road dust sample from one street within each randomly selected grid in each such Area. Once ASARCO receives the grid coordinates from the Department, ASARCO shall not sweep in that grid until the road dust sample is collected. ASARCO shall collect the road dust sample within 72 hours of receiving the grid coordinates from the Department. Failure to collect a sample within 72 hours shall only be excused for those reasons described in Section 3(D)(6 or 7). Failure to collect a sample shall not affect ASARCO's right to obtain additional randomly selected grids from the Department, obtain samples from such grids and test such samples in accordance herewith.

(c) ASARCO shall analyze each road dust sample collected for Lead Loading in accordance with Attachment #3, "East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan."

(d) ASARCO shall calculate and report the Lead Loadings, as defined by Equation 4, the dates and times of sampling of all individual samples obtained in all valid areas, the specific places where the individual samples were obtained, the monthly and Quarterly average lead values for each area as defined by Equations 5 and 6, respectively, and any other requested information as defined in Attachment #3 to the Department within 45 days after the completion of a calendar Quarter. These reports shall be submitted to the Department in both hard copy and magnetic media (disk) formats.

(e) Asarco shall ensure that all samples collected for analysis and reporting are archived for at least 6 months.

(f) The Department may obtain a split of any of ASARCO's archived or current Lead Loading samples for determination of a Lead Loading analysis.

(g) The Department may perform its own sampling of Lead Loading in Area A, Area B and Area C at any time in the future.

(6) After July 1, 1996, any failure to meet the applicable Quarterly Average Lead Loading standard contained in Section 3(D)(3 and 4) or the sampling requirements contained in Section 3(D)(5) shall be excused only if ASARCO shows that the failure was the result of an act of God or of another event that was unforeseeable, beyond ASARCO's control, and which could not reasonably have been prevented or mitigated by ASARCO. Such events shall not include acts or omissions of a road dust sweeping contractor or lack of legal access to roads. ASARCO shall use best efforts to foresee, control, prevent, and mitigate any event that might cause a failure to meet the Quarterly Average Lead Loading, or the monthly sampling requirements.

(7) If there is a calendar month in which there is snow cover present on all roadways in the randomly

selected grid in any one of the three areas defined in Attachment #1 for the entire balance of any month remaining after the Department has notified Asarco of the randomly selected grid ASARCO shall be excused from sampling that area during that month. Asarco shall use best efforts to prevent and mitigate any loss of sampling due to snow covered roads. Submittal by ASARCO of a request for grid coordinates on or before the fifth calendar day of a month shall be deemed to constitute best efforts to timely attain a sampling grid coordinate.

(8) ASARCO shall obtain written access agreements with owners of the paved public roads included in Area A, Area B, and Area C. Such agreements shall grant legal access to ASARCO and its contractors for purposes of implementing this section. Failure to obtain legal access to roads shall not constitute an event, as described in Section 3(D)(6), excusing ASARCO from meeting the Quarterly Average Lead Loading standards.

(9) ASARCO may elect to have the required sweeping and sampling implemented through a qualified contractor. In that event, ASARCO shall remain liable for meeting the Quarterly Average Lead Loading standards notwithstanding the acts or omissions of its contractor.

(10) ASARCO grants to the Department the right to audit both the sweeping and sampling practices of ASARCO and its contractors.

(11) ASARCO shall handle all materials gathered from street sweeping so as to minimize re-entrainment of such materials into the air. ASARCO shall comply with all local, state and federal requirements applicable to the handling of street sweeping materials.

SECTION 4 COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations and requirements contained in Section 3, Subsections A through C shall be determined through Department inspections and using data from the testing, notification, and reporting requirements of Sections 5 through 13.

(B) Compliance with the emission limitations contained in Section 3(D) shall be determined by collecting and analyzing the road dust samples and calculating Quarterly Average Lead Loading for each area in accordance with Attachment #1 and Section 3(D).

SECTION 5. EMISSION TESTING

(A) All emission testing for lead shall be conducted in accordance with the Montana Source Testing Protocol and Procedures Manual. All lead compliance tests shall contain a determination of front and back-half emissions.

(B) All opacity values shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources or by a continuous opacity monitoring system (COMS). In cases of determining opacity values on roads, the viewer evaluating the opacity shall determine the opacity through a single point perpendicular to the road, and shall not follow any vehicle during the opacity reading.

(C) ASARCO shall conduct tests in accordance with Section 5(A) within six months of January 6, 1997 and demonstrate compliance with the lead emission limitations contained in the following sections for the specified sources. Testing shall then be conducted every 5 years thereafter.

(1) Section 3(A)(1)(b), Sample Mill Baghouse Stack (1P); and

(2) Section 3(A)(7)(b), Acid Plant Stack (8P).

(D) Except for sources under construction, ASARCO shall conduct tests in accordance with Section 5(A) within six months of January 6, 1997, and demonstrate compliance with the lead emission limitations contained in the following sections for the specified sources. Facilities under construction shall have emission testing performed within six months of completing construction. Testing shall then be conducted annually thereafter.

(1) **Section 3(A)(3)(b), Sinter Plant Roof Baghouse #7 Venting Sinter Building (3Pa);**

(2) **Section 3(A)(4)(b), Sinter Plant Roof Baghouse #8 Venting Sinter Building (4Pa);**

(3) Section 3(A)(5)(b), Concentrate Storage and Handling Building Baghouse Stack (6P);

(4) Section 3(A)(6)(b), Sinter (D&L) Baghouse Stack (7P);

(5) Section 3(A)(10)(c), Blast Furnace Baghouse Stack (16P); and

(6) Section 3(A)(12)(d), Dross Plant Baghouse Stack (21P).

(E) ASARCO shall conduct tests in accordance with Section 5(A) and demonstrate compliance with the lead emission limitations contained in Section 3(A)(9) on the Tetrahedrite Drier Baghouse Stack (10P) if the Tetrahedrite Drier is operated greater than 30 days during any calendar year and if a source test has not been performed in the past 5 years.

(F) Source Testing shall be conducted at specific conditions that are representative of the designed Operating capacity or permitted capacity and at the normal Operating conditions of the ventilated source and the ventilation system. Testing shall not be conducted during the startup or shutdown of the ventilation system, during baghouse cleaning or bag repair (this does not include bag shaking), during scheduled maintenance, or when the ventilated source is not operational.

(G) For materials greater than 1% lead, and which are or will be stored or handled outdoors, ASARCO shall perform analyses to determine Lead Content, Silt Content, and Moisture Content on the following schedule. The Silt Content and Moisture Content shall be calculated as specified in Attachment #5, Appendices E.3 and E.2, respectively, while the collecting of samples shall follow the guidelines set forth in Attachment #5, Appendices E.1 and D.3, ~~or an equivalent procedure.~~

(1) In January 1996, ASARCO determined Lead Content, Silt Content, and Moisture Content of all types of materials which were stored or handled outdoors during the month of January 1996. This will be called the January 1996 inventory.

(2) After the January 1996 inventory, and until the end of the 1996 calendar year, ASARCO shall perform analyses to determine Lead Content, Silt Content, and Moisture Content upon receipt of the first batch of any new type of material entering the ASARCO East Helena facility which will be stored or handled outdoors.

(3) Beginning in the 1997 calendar year, and for every calendar year thereafter, ASARCO shall perform analyses to determine Lead Content, Silt Content, and Moisture Content upon receipt of the first batch of each type of material entering the ASARCO East Helena facility which will be stored or handled outdoors.

(4) Beginning in January 1996, ASARCO shall perform analyses to determine the Lead Content, Silt Content, and Moisture Content the first time during each calendar year that each type of material produced in the ASARCO East Helena facility (e.g., Blast Furnace Baghouse Dust, Blast Furnace Flue Dust, etc.) is handled outdoors. Slag, Sinter, Speiss/Matte, cast metal shapes, and Wet Scrubber Filter Cakes produced in the ASARCO East Helena facility are exempt from these analyses.

(H) The results of the Silt Content and Moisture Content analyses required by Section 5 (G) shall be used to determine if the material is a Dust or Non-dust as defined in Section 2 and, if the material is a Dust, to determine the Quarterly Lead Emissions in accordance with Equation 1.

SECTION 6. CONTINUOUS OPACITY MONITORING SYSTEMS (COMS)

(A) ASARCO shall maintain and operate a continuous opacity monitoring system (COMS) on the Blast Furnace Baghouse Stack (16P). ASARCO shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS) on the Dross Plant Baghouse Stack (21P). These two COMS shall monitor and record the opacity from the stacks discharged into the atmosphere.

(B) The COMS required in Section 6(A) above shall conform to all requirements of 40 CFR Part 60, Subpart R (Standards of Performance for Primary Lead Smelters) and Appendix B, Performance Specification 1, (Specifications and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources) (PS1).

(C) The COMS required in Section 6(A) above shall follow the specific operational controls, procedures, activities, and requirements set forth in Attachment #6: Quality Assurance/Quality Control (QA/QC) and Standard Operating Procedures (SOP) for Continuous Opacity Monitoring Systems.

(D) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under 40 CFR 60.13 (d), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation required in 40 CFR 60.13(e)(1).

(E) If any instrument or equipment is changed or other hardware is placed into service, ASARCO shall develop a new Attachment #6: Quality Assurance/Quality Control (QA/QC) and Standard Operating Procedures (SOP) for Continuous Opacity Monitoring Systems as appropriate for the new equipment. ~~Any revised documents are subject to review and approval by the Department as described in Section 12.~~

SECTION 7. AIRFLOW COMPLIANCE VERIFICATION

(A) ASARCO shall use the following methods to determine compliance with the minimum airflow requirements in Section 3(A).

(1) Test ports shall be installed in all ducts with minimum airflow requirements in Section 3.

(2) 40 CFR Part 60, Appendix A, Method 2, Method 2A, Method 2B, Method 2C, or Method 2D; ~~or a method approved by the Department in accordance with the Montana Source Testing Protocol and Procedures Manual shall be used to measure the volumetric flow rate at each location identified.~~

(B) Except for sources under construction, tests to determine airflow compliance shall be conducted within six months of January 6, 1997. Facilities under construction shall have airflow compliance testing performed within six months of completing construction. Determination of airflow shall be conducted annually thereafter.

(C) Testing shall be conducted at specific conditions that are representative of the designed Operating capacity or permitted capacity and at the normal Operating conditions of the ventilated source and the ventilation system. Testing shall not be conducted during the startup or shutdown of the ventilation system, during baghouse cleaning or bag repair (this does not include bag shaking), during scheduled maintenance, or when the ventilated source is not operational.

(D) If requested by the Department, ASARCO shall provide the Department data on the sulfide content of the Sinter Plant feed material for a period of seven (7) days prior to airflow compliance testing on the Acid Plant and the associated ventilation equipment.

SECTION 8. DATA COLLECTING

(A) ASARCO shall monitor and record the number of hours of fan operation per Quarter for the following fans (Sources listed in parentheses are used as a cross reference for facilities the fans affect.):

(1) Sample Mill Baghouse Fan (Source 1P).
(2) **Sinter Plant Roof Baghouse #7 Fan (Source 3Pa).**
(3) **Sinter Plant Roof Baghouse #8 Fan (Source 4Pa).**
(4) CSHB North Baghouse Fan (Source 6P),
(5) CSHB South Baghouse Fan (Source 6P),
(6) CSHB Feeder Room Baghouse Fan (Source 6P),
(7) Sinter Plant Ventilation System Baghouse Fan (Source 6P).
(8) Acid Dust Handling System Fan (Source 6P),
(9) Sinter Plant Baghouse Fan (Source 7P).
(10) Sinter Plant Number 5 Ventilation Fan (Source 7P),
(11) Sinter Plant Stack Fan (Source 7P),
(12) Acid Plant Hot Gas Fan (Source 8P),
(13) Acid Plant Main Blower (Source 8P),

(14) Sinter Storage Baghouse Fan (Source 9P),
(15) Tetrahedrite Baghouse Fan (Source 10P),
(16) Blast Furnace Baghouse Fan (Source 16P),
(17) Blast Furnace Stack Fan (Source 16P),
(18) Blast Furnace Tapping and Feed Floor Enclosure Ventilation Fan (Source 16P),
(19) Blast Furnace Baghouse Enclosure Baghouse Fan (Sources 18V and 16P), and
(20) Dross Plant Baghouse Fan (Source 21P).

(B) ASARCO shall determine and record the total number of Operating hours during the Quarter for the following facilities:

(1) Sample Mill,
(2) Concentrate Storage and Handling Building,
(3) Sinter Plant,
(4) Acid Plant,
(5) Tetrahedrite Drier,
(6) Blast Furnaces,
(7) Dross Plant.

(C) ASARCO shall determine and record the number of days that the Tetrahedrite Drier was Operating during the Quarter.

(D) In accordance with Section 5(G), ASARCO shall collect and record the latest data on the Lead Content, Silt Content, and Moisture Content of the all Dust material handled outdoors during the Quarter.

(E) For Hopto Unloading and Blast Furnace Baghouse Dust Reclaiming (2V), ASARCO shall collect and record the following tonnages to demonstrate compliance:

(1) The total tons of Blast Furnace Baghouse Dust reclaimed during the Quarter,

(2) The tons of Blast Furnace Baghouse Dust reclaimed on the Afternoon Shift during the Quarter,

(3) The tons of Blast Furnace Baghouse Dust reclaimed on the Night Shift during the Quarter, and

(4) The tons of Non-dust unloaded by the Hopto type loader during the Quarter.

(F) For the Old Ore Storage Yard (3V), ASARCO shall collect and record the following tonnages to demonstrate compliance:

(1) The total tons of Dust dropped in the Old Ore Storage Yard during the Quarter,

(2) The tons of Dust dropped in the Old Ore Storage Yard on the Afternoon Shift during the Quarter,

(3) The tons of Dust dropped in the Old Ore Storage Yard on the Night Shift during the Quarter, and

(4) The total tons of Non-dust material dropped in the Old Ore Storage Yard during the Quarter.

(G) For the High Grade Dumping Area (4V), ASARCO shall collect and record the total tons of Dust and Non-dust material dumped in the High Grade Building Dumping Area during the Quarter.

(H) For Sinter Handling (8Vf), ASARCO shall collect and record the total tons of Sinter dropped outdoors by Payloader during the Quarter.

(I) For Direct Smelt Bins Charging (8Vi), ASARCO shall collect and record the following tonnages to demonstrate compliance:

(1) The total tons of Dust charged at the Direct Smelt Bins during the Quarter,

(2) The tons of Dust charged at the Direct Smelt Bins on the Afternoon Shift during the Quarter.

(3) The tons of Dust charged at the Direct Smelt Bins on the Night Shift during the Quarter. and

(4) The total tons of Non-dust charged at the Direct Smelt Bins during the Quarter.

(J) For the Blast Furnace Tapping Platform (10V), ASARCO shall collect and record the total tons of Furnace Lead tapped from the furnace during the Quarter.

(K) For the Handling of Slag by Payloader (11V), ASARCO shall collect and record the total tons of Slag Handled at the Slag Handling Facility during the Quarter.

(L) For Slag Pile Dumping (12V), ASARCO shall collect and record the total tons of Slag dumped at the Slag piles during the Quarter.

(M) For the Speiss/Matte Handling Area (15V). ASARCO shall determine and record the total tons of Speiss/Matte dropped during the Quarter.

(N) For the Charging of Tetrahedrite to the Drier Bin (16V), ASARCO shall determine and record the total tons of Tetrahedrite dried during the Quarter.

(O) For the Blast Furnace Flue Cleanout (19V), ASARCO shall collect and record the following tonnages to demonstrate compliance:

(1) The total tons of Dust material cleaned out from the Blast Furnace Flue during the Quarter,

(2) The tons of Dust material cleaned out from the Blast Furnace Flue on the Afternoon Shift during the Quarter, and

(3) The tons of Dust material cleaned out from the Blast Furnace Flue on the Night Shift during the Quarter.

(P) ASARCO shall collect and record the hourly average windspeed and wind direction at the ASARCO meteorological monitoring site.

(Q) On a regular basis and using the Load Cell records for each loader performing the following functions, ASARCO shall collect and record the date, time, tonnage, and material location/identifier.

(1) Reclaimed Blast Furnace Baghouse Dust,
(2) Dropped Dust in the Old Ore Storage Yard,
(3) Charged Dust at the Direct Smelt Bins, and
(4) Cleaned out Blast Furnace Flue Dust.

SECTION 9. DATA REPORTING

ASARCO shall submit to the Department, within 45 days after the end of the Quarter, a Quarterly Report, both in a written format and where possible, a magnetic media (disk) format compatible with the Departments data management system.

(A) ASARCO shall report the Lead Content, Silt Content, Moisture Content, and tonnages of all Dust material handled per Quarter outdoors.

(B) ASARCO shall report the number of hours of fan operation per Quarter for the following fans (Sources listed in parentheses are used as a cross reference for facilities the fans affect):

(1) Sample Mill Baghouse Fan (Source 1P)
(2) Sinter Plant Roof Baghouse #7 Fan (Source 3Pa)
(3) Sinter Plant Roof Baghouse #8 Fan (Source 4Pa)
(4) CSHB North Baghouse Fan (Source 6P)
(5) CSHB South Baghouse Fan (Source 6P)
(6) CSHB Feeder Room Baghouse Fan (Source 6P)
(7) Sinter Plant Ventilation System Baghouse Fan (Source 6P)
(8) Acid Dust Handling System Fan (Source 6P)
(9) Sinter Plant Baghouse Fan (Source 7P)
(10) Sinter Plant Number 5 Ventilation Fan (Source 7P)
(11) Sinter Plant Stack Fan (Source 7P)
(12) Acid Plant Hot Gas Fan (Source 8P)
(13) Acid Plant Main Blower (Source 8P)
(14) Sinter Storage Baghouse Fan (Source 9P)
(15) Tetrahedrite Baghouse Fan (Source 10P)
(16) Blast Furnace Baghouse Fan (Source 16P)
(17) Blast Furnace Stack Fan (Source 16P)
(18) Blast Furnace Tapping and Feed Floor Enclosure Ventilation Fan (Source 16P)
(19) Blast Furnace Baghouse Enclosure Baghouse Fan (Source 18V)
(20) Dross Plant Baghouse Fan (Source 21P)

(C) ASARCO shall report the total number of hours of operation for the following facilities

(1) Sample Mill
(2) Concentrate Storage and Handling Building
(3) Sinter Plant
(4) Acid Plant
(5) Tetrahedrite Drier

(6) Blast Furnaces
(7) Dross Plant

(D) ASARCO shall report the tons of material handled per Quarter for the following sources:

(1) Non-dust material unloaded by the Hopto type loader (Source 2V),
(2) Non-dust material dropped in the Old Ore Storage Yard (Source 3V),
(3) Dust and Non-dust material dumped at the High Grade Dumping Area (Source 4V),
(4) Sinter dropped outdoors by payloader (Source 8Vf),
(5) Non-dust material charged at the Direct Smelt Bins (Source 8Vi),
(6) Slag handled at the Slag Handling Facility (Source 11V),
(7) Slag dumped at the Slag Piles (Source 12V),
(8) Speiss/Matte dropped per Quarter (Source 15V), and
(9) Tetrahedrite charged to the bin per Quarter (Source 16V).

(E) ASARCO shall report the total pounds per Quarter (Lbs/Qtr) lead emissions, the pounds per Quarter (Lbs/Qtr) of lead emissions for the Afternoon Shift, and the pounds per Quarter (Lbs/Qtr) of lead emissions for the Night Shift for the following sources:

(1) Reclaiming Blast Furnace Baghouse Dust (Source 2V),
(2) Dust dropped in the Old Ore Storage Yard (Source 3V),
(3) Dust charged at the Direct Smelt Bins (Source 8Vi), and
(4) Dust cleaned out of the Blast Furnace Flue (Source 19V).

(F) ASARCO shall report the total number of lead crucibles analyzed at the Laboratory per Quarter (Source 2P).

(G) ASARCO shall report the number of days that the Tetrahedrite drier was Operating during the Quarter.

(H) ASARCO shall report the total tons of Furnace Lead tapped from the furnace per Quarter.

(I) Continuous Opacity Monitoring System (COMS)

(1) ASARCO shall submit to the Department, in the Quarterly Report, a section addressing all excess emissions during the Quarter. Periods of excess emissions shall be defined as those emissions in excess of the opacity limitations identified in Sections 3(A)(10) and (12) for each stack on a rolling six-minute basis. The excess emissions section shall include, at a minimum, the following information:

(a) The magnitude of excess emissions and the date and time of commencement and completion of each time period of excess emissions.

(b) Specific identification of each period of excess emissions that occurs during start-ups, shutdowns, and Malfunctions of the affected facility. The nature and cause of any Malfunction (if known), the corrective action taken or preventative measures adopted.

(c) The date and time identifying each period during which the COMS was inoperative. The nature of the system repairs or adjustments must also be reported.

(d) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

(e) The percentage of time the COMS was operating, calculated as:

$$\left[\frac{1 - \text{hours of COMS downtime during source Operating hours for the reporting period}}{\text{hours the sources were Operating during reporting period}}\right] x100$$

This shall be reported as % Time Available

(f) The percentage of time the COMS indicated compliance. This shall be calculated as:

$$\left[\frac{1 - \text{hours of excess opacity during source Operating hours for the reporting period}}{\text{total hours of COMS availability during reporting period}}\right] x100$$

This shall be reported as percent compliance.

(g) The excess emission reports shall be submitted to the Department as a separate section of the Quarterly Report.

(2) ASARCO shall maintain a file of all measurements from the COMS; all performance testing measurements; all COMS performance evaluations; all COMS or monitoring device calibration checks and audits; and adjustments and maintenance performed on these systems or devices. The file must be recorded in a permanent form suitable for inspection.

(J) ASARCO shall report the hourly windspeed and wind direction from the meteorological monitoring site for the Quarter as required in Section 11. This data shall only be reported in a magnetic media (disk) format compatible with the Department's data management system.

(K) ASARCO shall report all information required under Section 3 (D).

SECTION 10. NOTIFICATION REQUIREMENTS

(A) Within 15 days after completion, Asarco shall notify the Department in writing that the following activities have been accomplished:

(1) Installation of all the devices which monitor and record the fan operating hours of those fans identified in Section 3(A) which due to construction activities were not installed at the time the Board adopted this Exhibit.

(2) Removal of Kettle #1 and Kettle #3 along with the associated Kettle Combustion Stack (11P).

(3) Removal of Kettle #6 and associated Kettle Combustion Stack (13P),

(4) Removal of Kettle #7,

(5) Permanent shutdown of the Crushing Mill and associated equipment (3P, 4P, 5P, 1V, 1Va, and 1Vb),

(6) Permanent shutdown of the Acid Dust Handling System (17P, 17V, and 17Va),

(B) Within 30 days after completion, Asarco shall notify the Department in writing that the following activities have been accomplished:

(1) Installation of all broken bag detectors as required in Section 11(B)(1), on all baghouses installed and operating at the time the Board adopted this Exhibit.

(2) Installation of all broken bag detectors as required in Section 11(B)(1), on all baghouses not installed or operating at the time the Board adopted this Exhibit.

SECTION 11. ADDITIONAL REQUIREMENTS AND CONDITIONS

(A) Notwithstanding the testing that is required and specified by this Exhibit, the Department may require additional emission testing per ARM 16.8.704, Testing Requirements.

(B) ASARCO shall install, operate, and maintain bag break detectors on all baghouses except those which have COMS on their stacks.

(1) Detectors shall be installed within 2 months of issuance of the Board Order adopting this Exhibit or at start-up for new baghouses, but not later than January 6, 1997.

(2) The detectors shall be equipped with a data logger or similar recording device to record emission variations.

(3) The detectors shall be equipped with alarms designed to identity broken bags and/or identify significant increases in emissions.

(C) ASARCO shall utilize Attachment #7: Baghouse Maintenance Plan, in maintaining the pollution control capabilities of all baghouses listed in Attachment #7, and ensuring that those baghouses listed are operating in an efficient manner. Should ASARCO install an additional baghouse, remove a baghouse, or substantially modify an existing baghouse(s), ASARCO shall modify Attachment #7 to reflect the changes. ~~Such a revised document shall be subject to review and approval by the Department as described in Section 12~~.

(D) ASARCO shall maintain a current or install a new meteorological monitoring site representative of the conditions at the ASARCO East Helena Facility.

If ASARCO elects to initiate operation of a new meteorological monitoring site, then the exact location of the monitoring site must be approved by the Department and meet all the siting requirements contained in the

Montana Air Quality Assurance Manual including revisions, the EPA Quality Assurance Manual including revisions, and Parts 50, 53, and 58 of the Code of Federal Regulations, or any other requirements specified by the Department.

A new site must be in operation within 2 months of the issuance of the Board Order adopting this Exhibit, but not later than January 6, 1997.

(E) Visible emissions from any material handling shall not exhibit an opacity of 20% or greater.

(F) ASARCO shall retain copies of all data collected and reported in accordance with this Exhibit and its Attachments for five (5) years. Data shall be made available to the Department upon request in a format compatible with the Department's data management system, where possible.

SECTION 12. SUPPLEMENTAL DOCUMENTS

(A) ASARCO shall maintain and utilize the following supplemental documents, which have been approved by the Department and are attached to this Exhibit and incorporated herein by reference:

(1) Attachment #1: Sampling and Analysis of Paved Road Dust Samples in East Helena, May 1995, as required by Section 3(D).

(2) Attachment #2: Compliance Plan for Process Weight and Time of Day Restrictions, July 1995, as required by Section (8).

(3) Attachment #3: East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan (May 1995), as required by Section 3(D).

(4) Attachment #4: ASARCO East Helena Compliance Modeling - Legal Description and Map of the Boundaries Between Ambient Air and Areas of Restricted Access (July 1995), as required by Section 3(C)(6).

(5) Attachment #5: Compilation of Air Pollutant Emission Factors (AP-42), Appendix D.2, (July 1993), Appendix D.3 (July 1993), Appendix E.1 (July 1993), Appendix E.2 (July 1993), Appendix E.3 (July 1993).

(6) Attachment #6: Quality Assurance/Quality Control (QA/QC) and Standard Operating Procedures (SOP) for Continuous Opacity Monitoring Systems (November 20, 1995)..

(7) Attachment #7: Baghouse Maintenance Plan (January 1996). The Department has given partial approval for this maintenance plan. The only lacking requirements to this maintenance plan is that there are currently no inspection, maintenance or corrective action procedures for the bag break detectors. These devices have yet to be purchased by ASARCO, but will be purchased and installed within two (2) months of issuance of the Board Order adopting this Exhibit (see Section 11(B)). Within four (4) months of issuance of the Board Order adopting this Exhibit, ASARCO shall submit to the Department a revised Attachment #7: Baghouse Maintenance Plan, which will include provisions for the inspection, maintenance and corrective action procedures for the bag

break detectors. ~~This revised Attachment shall be subject to the review and approval procedures outlined in Section 12(B). The Baghouse Maintenance Plan shall be effective only upon full approval of the plan, as revised. This approval shall be obtained from the Department by January 6, 1997. This deadline shall be extended to the extent that the Department has exceeded the time allowed in Section 12(B) for its review and approval of the revised document.~~

~~(B) The following procedure shall apply to the review of revisions to Attachments which are submitted by ASARCO.~~

~~(1) Within 90 days of submittal by ASARCO, the Department shall approve, require revision, or disapprove the document.~~

~~(2) Within 45 days after receiving notice from the Department that a document requires further revision or is disapproved, ASARCO shall either revise and resubmit the document to the Department or petition the Board to resolve any disputes between ASARCO and the Department concerning the document.~~

~~(3) Within 45 days after receiving the resubmitted document from ASARCO, the Department shall approve or disapprove the resubmitted document.~~

~~(4) Department approval of a revised Attachment shall be in writing and shall certify that the revised Attachment has been agreed upon by the parties and meets all applicable requirements of Exhibit A. Upon such certification the revised Attachment shall be deemed incorporated in this Exhibit A and shall supersede the prior version of the Attachment.~~

~~(5) Except as provided in Section 12(B)(6), ASARCO shall implement the requirements of an Attachment or a revised Attachment immediately upon approval by the Department or the Board, unless otherwise provided herein.~~

~~(6) If both parties agree in writing that it is appropriate and beneficial to do so, Asarco shall implement a draft revision to an attachment.~~

SECTION 13. GENERAL CONDITIONS

(A) Inspection - ASARCO shall allow the Department representatives access to all airborne sources of lead at the ASARCO facility for the purpose of compliance monitoring and enforcing this lead control strategy such that the Department representatives may enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which a airborne source of lead is located or is being constructed or installed. The Department representatives shall be allowed to collect samples, obtain data, audit any monitoring equipment, or observe any monitoring or testing, and conduct all necessary compliance monitoring and enforcement functions related to this control plan.

All inspections shall be conducted in compliance with all applicable federal or state rules or requirements for workplace safety and ASARCO East Helena plant safety rules or requirements. ASARCO shall inform Department representatives of all applicable workplace safety rules or requirements at the time of the inspection. Nothing contained in this Stipulation, Exhibit A, and attachments shall be construed to limit the

Department's statutory right of entry and inspection as provided for in Section 75-2-403, MCA.

(B) Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve ASARCO from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the Department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

(C) Enforcement - Violations of limitations, conditions and requirements contained herein ("Stipulation Requirement") may constitute grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 16, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

(D) Baghouses and Associated Ventilation - In addition to meeting the minimum airflow requirements and lead emission limitations contained in this Exhibit. ASARCO shall use its best efforts to operate and maintain all baghouses. ventilation systems, fans, and hoods in order to optimize the capture efficiency and control lead emissions. except during a Malfunction to the fan, or a Malfunction to any equipment or process directly affecting the fan. or during scheduled maintenance to the fan or ventilation system.

SECTION 14 CONTINGENCY MEASURES

(A) Tier I Contingency Measures:

Within 60 days of EPA's notification that the East Helena Lead nonattainment area has failed to attain the lead NAAQS for any Quarter after the first calendar Quarter of 1997, or make reasonable further progress in reducing lead emissions, ASARCO shall implement the following contingency measures set forth in paragraphs 1-5 of Section 14(A). If Section 14(A) is implemented due to a deficiency in making reasonable further progress, then the contingency measures shall stay in effect until such time that the deficiency has been corrected. If Section 14(A) is implemented due to a violation of the lead NAAQS after the first Quarter of 1997. the measures shall remain in effect until a revised Lead SIP is approved by the Board.

(1) Reduce Outdoor Storage of Sinter Material

The outdoor storage of sinter shall be reduced from the allowable limit of 3,069 tons to 2,000 tons. Within 180 days of the notification from EPA that the East Helena Lead nonattainment area has failed to attain the lead NAAQS, the allowable limit of outdoor sinter shall be reduced to 500 tons. Any sinter produced in excess of the capacity of the Sinter Storage Building and the 500 tons allowed outdoors shall be stored in an enclosed facility which only has an opening large enough to allow a payloader or truck to enter.

(2) Cease Operations During Night Shift

The following facilities shall not handle materials during the Night Shift:

(a) Hopto Unloading and Blast Furnace Baghouse Dust Reclaiming (2V)
(b) Old Ore Storage Yard (3V)

(c) High Grade Building Dumping Area (4V)
(d) Breaking Floor Building (8Va)
(e) Direct Smelt Bins Charging (8Vi)
(f) Slag Pile Dumping (12V)
(g) Speiss/Matte Handling Area (15V)
(h) Tetrahedrite Drier Bin Charging (16V)
(i) Blast Furnace Flue Cleanout (19V)

(3) More Stringent Lead Grain Loading on East Helena Paved Roads

ASARCO shall reduce the Quarterly Average Lead Loading of the silt portion of road dust samples for Area A, as defined in Attachment #1, to 0.040 grains of lead per square foot of paved street surface.

(4) Reduce Road Emission from East Helena Roads

(a) ASARCO shall pave the unpaved areas between the Volunteer Firehall and Smith's Bar.

(b) ASARCO shall treat all unpaved streets and alleys within Area A with a suitable road stabilizer.

(5) Reduce Spills On East Helena Roads

(a) ASARCO shall re-route all haul trucks carrying lead-containing material away from the 4-lane highway.

(b) ASARCO shall require all haul trucks carrying lead-containing material to cover their loads.

(B) Tier II Contingency Measures

If, beginning the first full calendar Quarter after the Tier I contingency measures are fully implemented pursuant to Section 14(A), the Department finds that the East Helena lead nonattainment area has failed to attain the lead NAAQS, the Department shall give written notice to ASARCO that the Tier II contingency measures are to be implemented. Within 60 days of the date of the notice, ASARCO shall implement the following additional contingency measures contained in Section 14(B). If Section 14(B) is implemented due to a deficiency in making reasonable further progress, then the contingency measures shall stay in effect until such time that the deficiency has been corrected. If Section 14(B) is implemented because of a violation of the lead NAAQS after the first Quarter of 1997, the measures shall remain in effect until a revised lead SIP is agreed upon and approved by the Board.

(1) More Stringent Lead Grain Loading on East Helena Paved Roads

ASARCO shall reduce the Quarterly Average Lead Loading of the silt portion of road dust samples for Area A, as defined in Attachment #1, to 0.035 grains of lead per square foot of paved street surface.

(2) Storage and Handling of Sinter Outdoors

ASARCO shall eliminate all storage and handling of sinter outdoors.

(3) Reduce Road Dust Emissions from the ASARCO Plant Property

ASARCO shall pave or cover with gravel a minimum of 50,000 square feet of surface area within the ASARCO East Helena Facility. The areas that will be paved or covered shall be subject to the same requirements set forth in Section 3(C).

ATTACHMENT #1

Sampling and Analysis of Paved Road Dust Samples in East Helena

Prepared by
Montana Department of Environmental Quality
In Cooperation with ASARCO, Inc.

May 1995

This document specifies the sampling and analysis protocol for paved road dust samples in East Helena that ASARCO must follow in order to show compliance with the emission limitations specified in the East Helena lead control strategy specified in Exhibit A, to which this document is an Attachment.

Section 1. Definitions of Sampling Areas

All coordinates are in Universal Transverse Mercator (UTM) coordinates.

(A) "Area A" means that portion of East Helena and vicinity which is visually described on the map contained in attached Figure 1 and contained within the following boundaries:

Beginning at the point described by 429,500 mE and 5,159,750 mN, east to 430,000 mE and 5,159,750 mN, south to 430,000 mE and 5,159,500 mN. west to 429,500 mE and 5.159,500 mN, and north to 429,500 mE, 5,159,750 mN, the point of beginning.

(B) "Area B" means that portion of East Helena and vicinity, excluding area A, which is within the following boundaries for the East Helena road dust control requirements (see map attached as Figure 2):

Beginning at the point described by 428,000 mE and 5,160,000 mN east to 430,500 mE and 5,160,000 mN, south to 430,500 mE and 5.158,500 mN, west to 429,000 mE and 5,158.500 mN, north to 429,000 mE and 5.159,500 mN, west to 428,000 mE and 5.159,500 mN, and north to 428,000 mE and 5,160.000 mN, the point of beginning.

(C) "Area C" means that portion of East Helena and vicinity, excluding area A and area B, which is within the following boundaries for the East Helena road dust control requirements (see map attached as Figure 3):

Beginning at the point described by 427,000 mE and 5,162,000 mN, east to 432.500 mE and 5,162,000 mN, south to 432.500 mE and 5,158,000 mN, west to 427.000 mE and 5,158,000 mN, and north to 427,000 mE and 5.162,000 mN, the point of beginning.

(D) "Area A Grids" means any of the 50 grids contained in Area A having dimensions of 50 meters by 50 meters and containing at least one paved public street or road.

(E) "Area B Grids" means any of the 11 grids contained in Area B having dimensions of 500 meters by 500 meters and containing at least one paved public street or road, except that the grids containing area A shall only include that portion of the grids outside of area A.

(F) "Area C Grids" means any of the 77 grids contained in Area C having dimensions of 500 meters by 500 meters and containing at least one paved public street or road, except that the grids containing Areas A and B shall only include that portion of the grids outside of Areas A and B.

Section 2.

ASARCO shall analyze the silt portion of each road dust sample as specified in the "East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan." This document is attached as Attachment #3 to this stipulation.

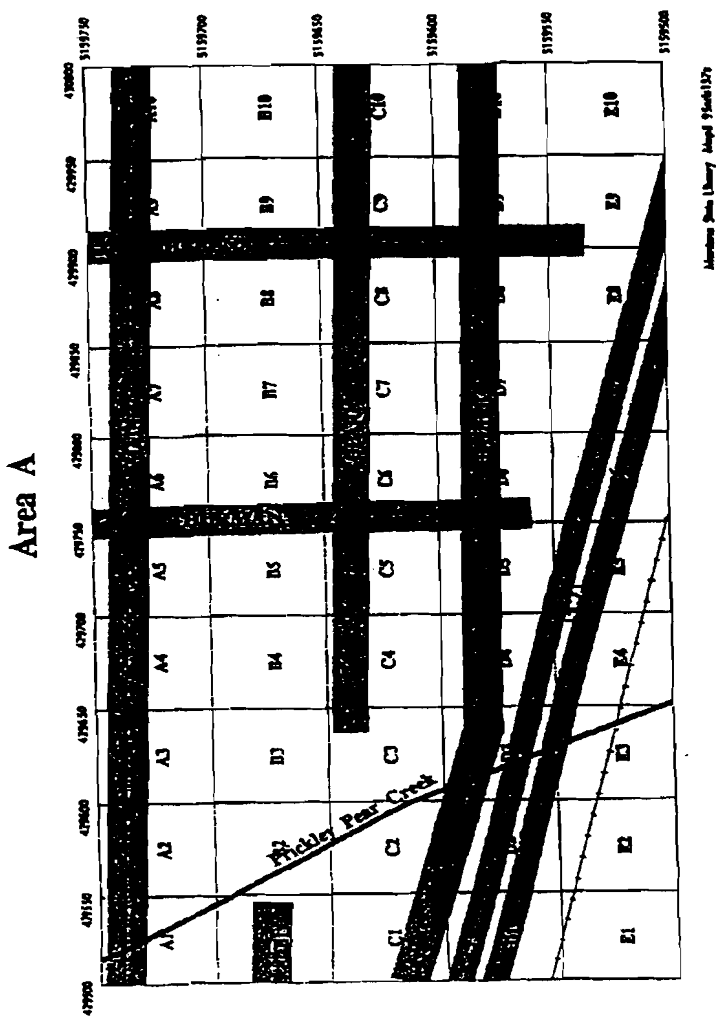

Area A
A1
A2
A3
A4
A5
A6
A7
A8
B3
B4
B5
B6
B7
B8
B9
B10
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
E1
E2
E3
E4
E5
E8
E9
E10
Prickly Pear Creek

Figure 1

Area B

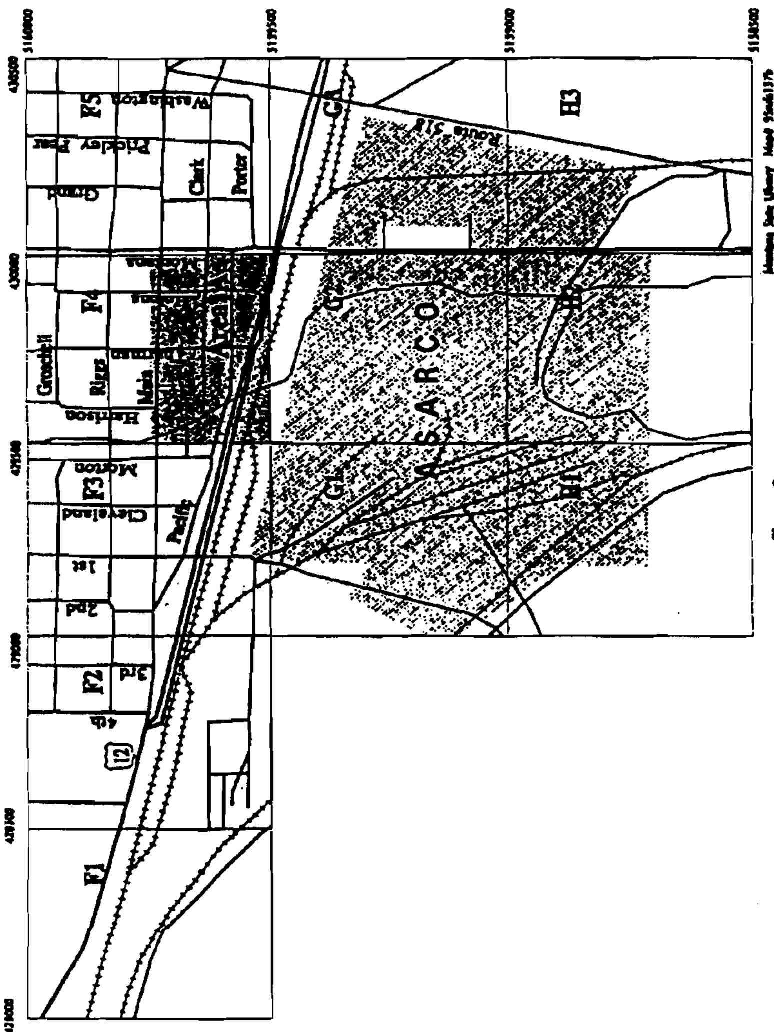


Figure 2

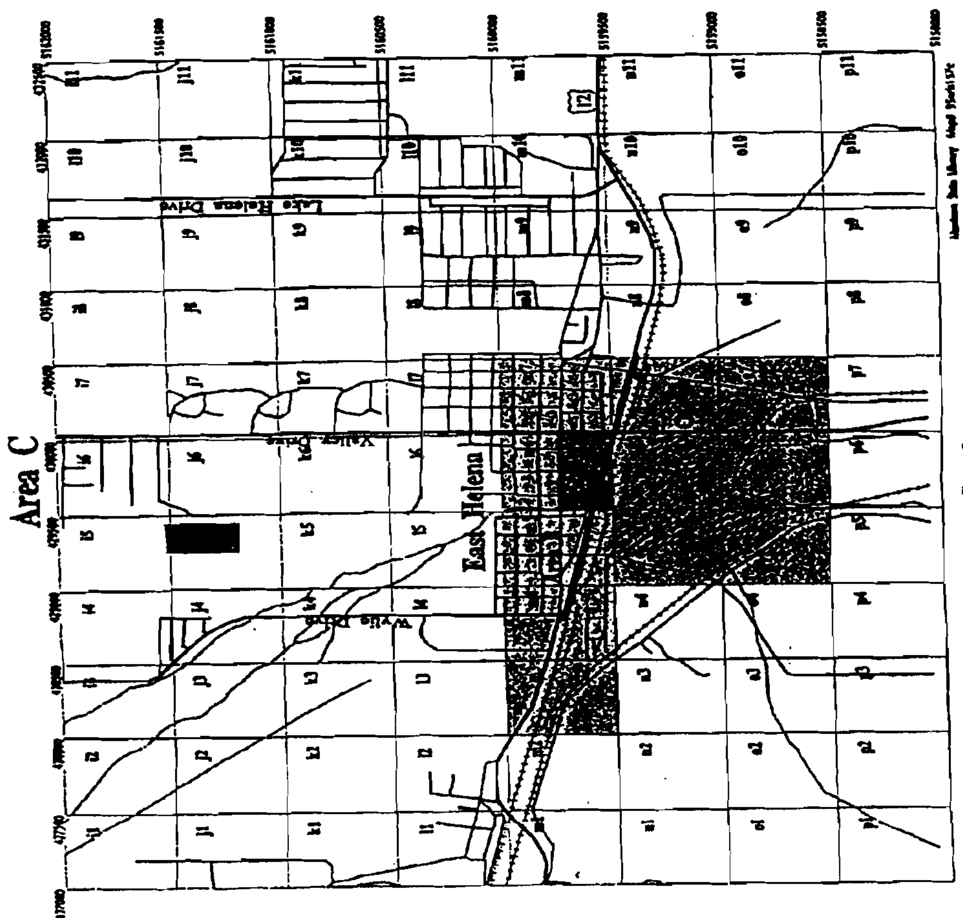

Area C
East Helena
Lake Helena Drive
Valley Drive
Wylie Drive

Figure 3

ATTACHMENT #2

Compliance Plan for Process Weight and Time of Day Restrictions

Prepared by
Montana Department of Environmental Quality
In Cooperation with ASARCO, Inc.

July 1995

Compliance Plan

SECTION 1. PURPOSE

ASARCO shall institute the following tracking and handling of Dust materials with process weight or time-of-day restrictions in the East Helena lead control strategy specified in Exhibit A, to which this document is an Attachment. This plan applies to the following affected equipment and facilities:

(A) Blast Furnace Baghouse Dust Reclaiming (Source 2V)
(B) Dropping Dust in the Old Ore Storage Yard (Source 3V)
(C) Charging Dust at the Direct Smelt Bins (Source 8Vi)
(D) Cleaning out the Blast Furnace Flue (Source 19V)

SECTION 2. DEFINITIONS

"Load Cell" means Loadrites or an equivalent weighing system which can be attached to a loader or forklift.

SECTION 3. REQUIREMENTS

(A) Blast Furnace Baghouse Dust Reclaiming (Source 2V)

A Load Cell shall be used to determine and record the amount of Dust reclaimed and the time of day the material was reclaimed. The Load Cell shall also be used to identify the different types of Dust material reclaimed.

(B) Dropping Dust in the Old Ore Storage Yard (Source 3V)

A Load Cell shall be used to determine and record the amount of Dust dropped in the Old Ore Storage Yard and the time of day the Dust was dropped. The Load Cell shall also be used to identify the different types of Dust material dropped.

(C) Charging Dust at the Direct Smelt Bins (Source 8Vi)

A Load Cell shall be used to determine and record the amount of Dust charged at the Direct Smelt Bins and the time of day the Dust was charged. The Load Cell shall also be used to identify the different types of Dust material charged.

(D) Blast Furnace Flue Cleanout (19V)

A Load Cell shall be used to determine and record the amount of blast furnace flue Dust cleaned out from the flue and the time of day the flue Dust was cleaned out.

Section 4. Specifications

(A) Specified loaders shall be equipped with Loadrites or an equivalent weighing system, referred to in this document as "Load Cell." Each Load Cell shall have the following:

(1) A printer for verification by the Department of data at time of inspection.

(2) A data logger to record weights and other data for downloading to a computer.

(3) A weight indicator.

(4) A display capable of displaying lighted weights, time, and product number.

(5) For loaders handling multiple materials, the system must be capable of handling multiple product numbers.

(6) Each Load Cell should be coded to identify which piece of equipment is being used.

(B) No materials required in Attachment #2, Section 3 to be measured with a Load Cell shall be reclaimed, dropped, charged, or cleaned out within the facility by any handling equipment without a Load Cell with a proper product number.

Section 5. Quality Assurance Procedures

ASARCO shall conduct audits on the Load Cells. The audits shall be conducted and documented weekly, provided that the loaders are being used to move Dust during the week. This will ensure that the equipment is functioning properly. The following items shall be checked for accuracy:

(A) Verification of correct time, including designation of am or pm.

(B) Verification of correct date, including day, month, and year.

(C) Zeroing the equipment.

(D) A known weight shall be lifted to verify the accuracy of the weighing mechanism. If the accuracy, as defined below, is greater than two (2) percent, then the equipment shall be recalibrated.

$$\text{Accuracy } (\%) = 100 \times \left[\frac{\text{Weight of Standard} - \text{Load Cell Weight}}{\text{Weight of Standard}} \right]$$

Information from weekly audit reports, including any changes or corrections made as part of the audits, shall be submitted to the Department as part of the Quarterly Report required in the Order of the Board of Environmental Review. If, during a week, no weekly audit is required of a loader since no Dust was moved with the aforementioned loader, then this shall be stated in the Quarterly Report.

Section 6. Training

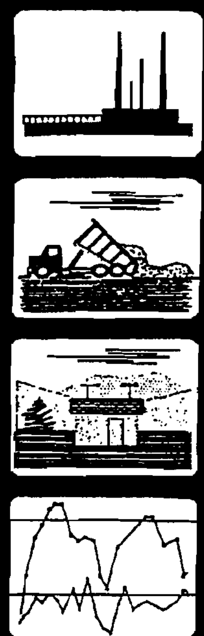
ASARCO shall provide training to all employees allowed to operate the loaders or any other handling equipment which have Load Cells installed.

ASARCO shall prepare a training document which shall be submitted to the Department within 90 days of the effective date of the emission limitations, but no later than October 31, 1996.

ATTACHMENT #3

East Helena Lead SIP Road Dust Control
Analytical Quality Assurance Plan

May 1995



East Helena Lead SIP Road Dust Control Analytical Quality Assurance Plan

Prepared For:

ASARCO Incorporated
East Helena, Montana

Prepared By:

Hydrometrics, Inc.
Consulting Scientists, Engineers and Contractors

May 1995

EAST HELENA LEAD SIP

ROAD DUST CONTROL

ANALYTICAL QUALITY ASSURANCE PLAN

Prepared for:

Mr. Jon Nickel
ASARCO INCORPORATED
100 Smelter Road
East Helena, Montana 59635

Prepared by:

HYDROMETRICS, INC.
2727 Airport Road
Helena, MT 59601

May 1995

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EAST HELENA LEAD SIP

ROAD DUST CONTROL

ANALYTICAL QUALITY ASSURANCE PLAN

1.0 PROJECT ORGANIZATION AND RESPONSIBILITY

The East Helena Lead State Implementation Plan (SIP) Road Dust Control project calls for paved street dust to be analyzed for lead. Asarco has proposed that these samples be analyzed by XRF. This is a non-destructive analytical procedure which uses x-ray spectrum to characterize a sample.

The Hydrometrics, Inc. soils laboratory in East Helena, Montana is the analytical "data generator." Asarco East Helena Plant in East Helena, Montana is primary "data user/requester." The Laboratory Supervisor/QA Officer is the "data reviewer/approver." The responsibilities of QA personnel are as follows:

Project Manager Jon Nickel	Oversees all activities.
Office Manager Tom Wing	Oversees general operations of Laboratory.
Laboratory Supervisor/ QA Officer Linda Tangen	Oversees Laboratory QA/QC procedures, corrective actions and performance. Supervises laboratory personnel, equipment, procedures, and documentation.
Laboratory Technician Deanna Hersey	Prepares samples and performs XRF analyses.

2.0 DATA QUALITY OBJECTIVES

2.1 REQUIREMENTS FOR PRECISION, ACCURACY, REPRESENTATIVENESS, COMPLETENESS, AND COMPARABILITY

The overall goal of the Quality Assurance Project Plant (QAPP) is to ensure that data are acceptable for their intended uses, and are of sufficient quality to withstand the potential scrutiny of litigation. The PARCC parameters (precision, accuracy, representativeness, completeness and comparability) address these data quality requirements.

2.1.1 Precision

Precision can be defined as the degree of variability between replicate measurements. Precision is inversely related to the variability among the results obtained. It is expressed in terms of relative percent difference (RPD) of paired data (field and laboratory duplicates). The precision is a measure of the field sampling variability and laboratory analytical variability. The control limits are a relative percent difference (RPD) of 35% or less for field and laboratory duplicates for soil samples greater than 5 times the PRDL (Project Required Detection Limit). Control limits for low concentration data (< 5 X PRDL) are +/- 2 X PRDL. Precision calculations are described in Section 8.1.

2.1.2 Accuracy

Accuracy is the agreement between a measurement and the true value. Accuracy of XRF data will be assessed using laboratory control standards (LCS) and continuing calibration verification (CCV) standards. The control limits are a recovery rate of 75% to 125% for laboratory control standards and continuing verification standards. Accuracy calculations are described in Section 8.2.

2.1.3 Representativeness

Representativeness is the extent to which discrete measurements and testing accurately describe the sample source. Good representativeness is achieved through proper analytical procedures. Analytical methods and procedures for analyses will follow the procedures outlined in this quality assurance project plan (QAPP).

2.1.4 Completeness

Completeness is achieved when the number of valid measurements is sufficient to satisfactorily address all important issues concerning this project.

2.1.5 Comparability

Comparability is the degree to which two or more data sets from the sample source are equivalent. These data sets will be reported so that comparisons may be made and conclusions drawn from the past, similar and anticipated future studies. Inherent compositional differences aside, discrete data sets may differ as a result of non-random (biased) sampling, variability in sampling technique, different sampling sites, and varied methods of analysis. In order to have confidence that data divergence is based on sample heterogeneity and not on the aforementioned variables, the following quality assurance mechanisms that will be used in this investigation can be categorized as prevention and correction:

2.1.6 Prevention

Prevention of defects in quality or quantity of measurements through planning and design of the investigation, documenting instructions and procedures, and employing experienced and qualified personnel.

2.1.7 Correction

Correction of conditions which could compromise the quality of samples or sample results, based on the review and inspection of measurements and measurement results. Corrective actions will be undertaken by laboratory personnel as described in Section 6.0 of this QAPP.

3.0 CHAIN-OF-CUSTODY

All samples must be traceable from the time the samples are collected until they are received by the laboratory. The laboratory is then responsible for custody during processing and analysis. A sample is under custody if:

1. It is in possession, or
2. It is in view, after being in possession, or
3. It was in possession and then was locked in a storage area to prevent tampering, or
4. It is in a designated secure area.

All samples will be accompanied by a chain-of-custody record. When shipping or transferring custody of samples, the following procedures will be observed.

1. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date and note the time on the record. This record documents sample custody transfer from the sampler to the laboratory.

2. Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate custody record accompanying each shipment. Shipping containers will be sealed for shipment to the laboratory.

3. All shipments will be accompanied by the Chain-of-Custody Record identifying its contents. The original record will accompany the shipment and a copy will be retained in the project file.

4. All shipping receipts (freight bills, post office receipts, bills of lading, etc.) will be retained in the project file.

4.0 LABORATORY PROCEDURES

The Hydrometrics, Inc. Soil Laboratory (XRF field laboratory) will be the primary data generator for soil samples. The samples will be analyzed using the XRF instrumentation. Analytical methods, procedures, and detection limits for XRF techniques are summarized in Table 4-1.

TABLE 4-1. ANALYTICAL METHODS, PROCEDURES AND DETECTION LIMITS

PARAMETER	SAMPLE MATRIX	ANALYTICAL TECHNIQUE	SAMPLE PREPARATION	ANALYTICAL PROCEDURE	PROJECT REQUIRED DETECTION LIMITS (PPM)
Pb	STREET DUST	XRF	SIEVING AND GRINDING	QAPP PROCEDURES	10

5.0 XRF PROCEDURES

The basic principle behind the use of the X-ray spectrometer (XRF) is that elements in samples of soil produce a specific signature or spectral intensity peak when bombarded with X-rays. These spectral intensities relate to the concentrations of metals in the sample measured by traditional wet chemistry methods and/or concentrations of certified standards (values are determined by numerous analytical methods). In the Fundamental Parameters method, the measured spectral intensities for soil samples will be compared to spectral intensities measured for pure element standards and/or well characterized reference materials. The Fundamental Parameters method adjusts for matrix differences by theoretical formulas that are quite extensive and can only be efficiently calculated using special designed software and a powerful computer.

At least one reference standard closely approximating the sample matrix, should follow standard sampling, sample preparation, and analytical techniques to validate "theoretical formulas" used by the XRF software before the XRF is used for sample analyses. The concentration of lead in the reference standard shall be within the lead concentration range of the street dust samples. A reference standard meeting the previously criteria, will be analyzed at the beginning of the first run of the day. Calibration limits will be within 75 to 125% of the reported concentration. One continuing calibration verification standard (CCV) will also be analyzed after every 31st sample analyzed. The control limits will be within 75 to 125% of the reported concentration.

6.0 LABORATORY QUALITY CONTROL

6.1 INTERNAL AND EXTERNAL QC CHECKS

Quality control in XRF analyses will be established by analyzing internal QC samples. Frequencies and control limits for QC sample analyses are summarized in Table 6-1.

6.2 CONTROL CHARTS

XRF analyses will utilize control charts to monitor long-term instrument performance and to identify "out-of-control" situations. Control charts are used to trigger corrective actions when control limits are exceeded. Control chart results will only be used by analytical personnel to supplement the specific control limits listed in Table 6-1.

6.3 CORRECTIVE ACTION

Corrective actions are the responsibility of analytical personnel and are described in Table 6-1.

6.4 DETECTION AND QUANTITATION LIMITS

Table 4-1 lists the project required detection limits (PRDL) for lead in soil (10 ppm). Instrument detection limits (IDL) must be less than the PRDL. Instrument detection limits are determined after calibration by calculating the lower limit of detection (LLD) from numerous samples with concentrations near the expected IIDL. The 99% confidence limit of these were used for the reported IDL. The following formula is used to calculate the IDL:

$$IDL = 3\sqrt{N_b} \times \frac{VK}{N_p}$$

Where: N_b = Background Intensity Counts
N_p = Peak Intensity Counts
VK = Known Value of Sample

TABLE 6-1. SUMMARY OF LABORATORY CONTROL PROCEDURES - XRF

PROCEDURE	TASK ELEMENTS	FREQUENCY REQUIREMENT	CONTROL LIMIT	CORRECTIVE ACTIONS
1. Verification of laboratory QC samples	Duplicates	1 in 10 samples or a minimum of 1 duplicate per sample set	RPD +/- 35% Duplicate values within +/- 2 X PRDL for values <5 times PRDL	If duplicate sample results are out of control, flag all data associated with that duplicate sample with "*".
	Laboratory Control Standard (Standard Reference Material or standard with concentrations determined by wet chemistry)	1 at beginning of first run	LCS Recovery 75%-125%	If results for the LCS are out of control, terminate analysis, correct problem, and reanalyze samples associated with that LCS.
2. Instrument calibration	Instrument calibration frequency and control limits	Instrument calibrated the Fundamental Parameters Methods (instrument does not need to be recalibrated after initial calibration other than a case of x-ray tube or detection failure)	Standard correlation of determination (r^2) greater than .95 (determined at the time of calibration by regression analysis)	Recalibrate
3. Instrument calibration verification	Continuing calibration verification standard (standard used for calibration)	1 in 32 samples	CCV recovery 75%-125% (or within 95% confidence limits for the standard)	If results for the CCV are out of control, terminate analysis, correct problem, verify calibration, and reanalyze samples associated with that CCV.
4. External QC Checks	Outside laboratory confirmation of sample split	1 per calendar quarter	No limits. Report results in quarterly report.	No corrective action
	Blind field sample	1 per calendar quarter	No limits. Report results in quarterly report.	No corrective action

7.0 REPORTING

Analytical reports will be reviewed by the Laboratory Supervisor/QA Officer for data input accuracy and to assure quality control standards have been met.

Analytical reports will include:

1) Copy of the Chain of Custody

2) Results of the sample analysis
   a. Name of procedure used
   b. Name of samples with laboratory codes
   c. Units
   d. Laboratory duplicate values and RPD calculations

3) Quality control report
   a. Laboratory control standard values with recovery rate calculations
   b. Continuing calibration verification standard values with recovery rate calculations

8.0 ASSESSING DATA PRECISION AND ACCURACY

8.1 PROCEDURES FOR CALCULATING PRECISION

From the summarized information on the precision form, the relative percent difference (RPD) of each laboratory duplicate pair calculated separately as:

$$RPD = \frac{|S - D|}{(S + D)/2} \times 100,$$

where: S = First Sample Value (original);
D = Second Sample Value (duplicate).

Perfect precision would result in 0% RPD.
Any RPD value exceeding the control limits of = 35% for soils.

8.2 PROCEDURES FOR CALCULATING ACCURACY

From the summarized information on the accuracy form, the percent recovery of the LCS and CCV are calculated separately as:

$$\%\ Recovery\ of\ LCS\ or\ CCV = \frac{VA}{VK} \times 100$$

Where: VA = Analytical Value of LCS and CCV;
VK = Known (or certified) Value of LCS and CCV;

Perfect accuracy would be 100 percent recovery.

APPENDIX A

STANDARD OPERATING PROCEDURES

PRE-ANALYTICAL SOIL HANDLING AND PREPARATION ©
(HS-SOP-83-5/95)

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STANDARD OPERATING PROCEDURE

PRE-ANALYTICAL SOIL HANDLING AND
PREPARATION FOR SILT ©
(HS-SOP-83-5/95)

1.0 PURPOSE

The purpose of this procedure is to prepare samples for XRF analysis. All soil samples collected for analysis will be prepared using this procedure.

2.0 EQUIPMENT

Microwave or	Ziplock Bags (one gallon size)
Drying Oven	Kraft paper bags (100 g. size)
Shatter Box Grinder or	XRF Instrument
Mill Grinder	XRF Soil Cups
Mylar (4.5 mm)	200 Mesh Sieve
	Sieve Shaker (Horizontal Action)

3.0 PROCEDURE

1) Collect Sample (200-2000 grams).

2) Record sample into laboratory log book and give sample laboratory and archive code. Mark sample bag with laboratory code.

3) Dry sample by microwave or in drying oven if needed to achieve uniform split. Drying temperature not to exceed 110^{0} C.

4) Homogenize and split sample into 100-150 gram size using "cone and quartering method." Save one 100-150 gram section of sample, archive section(s) equaling at least 200 grams and discard remaining sample into contaminated waste container.

"Cone and Quartering Method"

A) Place entire sample onto clean freezer paper.

B) Roll sample back and forth using all sides of paper. This is to be done until aggregate size is uniformly distributed in a cone fashion.

C) Sample is then divided into "pie" sections until sections equal 100-150g. A larger section may be needed if more than 80% of sample is greater than 200 mesh

5) Dry 100-150g sample section in microwave or drying oven until sample is friable. Drying temperature should not exceed 110° C.

6) Disaggregate and screen sample using a decontaminated #200 stainless steel mesh screen and tared pan. Disaggregation is accomplished by sieving sample using a sieve shaker for 10 minutes. Weigh pan containing minus 200 mesh. Repeat the sieving in 10 minute intervals until the difference between two successive pan sample weights is less than 3 percent when the tar weight of the pan has been subtracted. Do not sieve longer than 40 minutes. Discard over size sample into contaminated waste container. Screen is to be decontaminated by using compressed air in between each sample. The mortar and pestles will be decontaminated using compressed air, rinsed with distilled water and wiped dry.

7) Grind undersize sample using a shatterbox grinder for a period of 2 minutes (more may be required depending on matrix of sample) to achieve <400 mesh size. Three samples may be ground at the same time using a Spex 8510 model with adapter. Sample may also be ground using a mill type grinder for a period of 2 minutes or longer if required. Grinder is cleaned thoroughly by spraying with compressed air in between each sample. Mill grinder is additionally cleaned by grinding clean silica and spraying with compressed air. All grinding and decontaminating is to be done under a well ventilated hood. Canister type respirators are to be worn supplied with particulate HEPA filters when working with samples containing high concentrations of these materials.

8) Cool ground sample.

9) Place »10g sample into XRF sample cup. Tamp sample to a consistent depth and density within the cup. Place Mylar on cup and anchor with a plastic ring. Mark cup with sample code. Remaining sample is to be placed into a kraft paper sample bag, marked with sample code and archived. After analyses, XRF sample cup is to be archived.

APPENDIX B

STANDARD OPERATING PROCEDURE

SPECTRACE 5000 EDXRF ROUTINE SOIL ANALYSIS ©
(HL-SOP-53-2/95)

329\047\0093\EHEL\5/18/95\H:468\AQAPLN.DOC

Hydrometrics, Inc. Consulting Scientists, Engineers & Contractors

STANDARD OPERATING PROCEDURE

SPECTRACE 5000 EDXRF ROUTINE SOIL ANALYSIS ©
(HL-SOP-53-2/95)

1.0 PURPOSE

The purpose of this procedure is to provide the analyst with a guideline for XRF analysis. All soil samples collected for the determination of analytes by XRF will be analyzed using this procedure.

2.0 EQUIPMENT

Spectrace 5000 Energy Dispersive X-Ray Fluorescence Spectrometer

3.0 PROCEDURE

1) Unlock XRF at rear of instrument and turn on the computer.

2) Calibrate instrument to copper energy line by the following:

   TYPE: C:\EDXRF
   PRESS:<ENT> <F5>
   TYPE: \??? - Name of the program containing the energy calibration setup.
   PRESS: <ENT>
   Place copper disk into position #16 of carousel.
   Enter into program containing calibration setup.
   PRESS: <F7> <SPACEBAR>

3) Check system status display by the following:

   TYPE: <F2> <F4>
   Check "Fast Disc Rate" - this should be between 100 and 150/sec. If not, adjust the Fast Discriminator with a tool supplied by Spectrace to bring the rate into the correct range (must be visually instructed before attempting with procedure).

4) Print system status display by the following:

   PRESS: <PRINT SCRN>
   PRESS: <F10> <F10>

5) Run intensity correction program by the following:

Put Intensity Correction sample into position #1.
Highlight Procedure #8.
PRESS: <F1> <ENT>
The report of the check standard factor will automatically print out. Record into daily calibration log book along with the: gain dac, zero dac, fast discriminator (from system status hardcopy); date, time, initials of the analyst and whether the liquid nitrogen dewar tank was filled.

6) Run quality control and unknown samples by the following:

Review quality control standards set for each project. These standards must be consistently followed in order for results to be considered "valid."

View prepared sample in XRF cup. Check for even distribution of particles. If necessary, tap the cup until particles are distributed evenly. Place cup carefully into the carousel.

After XRF cups are appropriately placed in carousel:

PRESS: <F1>
TYPE: # - Number of samples to be run
PRESS: <ENT>
TYPE: ##-##### - Laboratory sample code
PRESS: <ENT>
After all lab codes are entered, recheck codes by:
PRESS: <F10>
Repeat above procedure by pressing <ENT> after each lab code is displayed correctly or edit lab codes when needed before pressing <ENT>

After all lab codes have been entered correctly, place carousel into the XRF by aligning pins with correct slots. Tighten thumb screw only slightly. Check all cups for proper placement. Close lid carefully. The energy level will increase and x-rays will engage at this point. When spectrum appears on screen, the analysis has begun.

If x-rays fail to engage:

Check front and back panel doors to ensure they have been properly latched. The latch for the front panel is located in the back of the XRF behind the back panel. This handle should point down. Turn the key to lock the back panel. Also, check the lid for proper latching. When lid is closed and program has started, a clicking sound can be heard (this is the latching of the lid). If no click is heard, push down slightly on lid and listen for a click. If lid again fails to latch, or if there are other problems, refer to the operator's manual or call Spectrace Instruments (415) 967-0350 and ask for a technician.

To stop the program at any time:
PRESS: <F10> This will also back out of each screen or menu.

If paper misfeeds:
Adjust printer and set "on line".

If printer error message displays on screen:
Type: <R> - Report will print from the point of interruption.

If data is unreadable:
Highlight the procedure the samples were run from.
PRESS: <F2> <F6> <F7> Entire report will print.
PRESS: <F10> <F10> This will put you back into main menu.

If program is disrupted during analyses:
=>If samples were run using a single procedure:
Check hard copy for last sample result and run samples with missing results.

=>If samples were run using a combined procedure (ex. 6+7 Unknown):
Highlight each single procedure comprising the combined procedure and follow proceeding instructions (ex. Highlight procedure 6 first to print out report, repeat for procedure 7 to print out report).
PRESS: <F2>
HIGHLIGHT: "SPECTRUM PROCESSING"
PRESS: <F1>
TYPE: ## - Number of samples that were run before disruption (if this is an unknown number, type in 16).
PRESS: <ENT> Wait until samples are processed.
HIGHLIGHT: "ANALYSES TECHNIQUE"
PRESS: <F1> Report will print out.

If screen displays error message "ZERO DAC AT LIMIT":
PRESS: <F7> <F4> <F10> <F10>
If spectrum displays on screen, reanalysis has begun. If not, use the procedure described in "*If program is disrupted during analyses:*."

7) Copy project Results file to disk by the following:

Go to program directory prompt:
PRESS: <F10>
TYPE: Y

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Copy ASCII Results file:
Insert disk in drive (B:)
TYPE: COPY RESULTS A (or B drive): ??###### (Project, Year, Month, Day)
PRESS: <ENT>
ex) EH940724 (East Helena Project, 1994, July 24th)

To convert Results file to Lotus 123 (if needed):
PRESS: <F10>
TYPE: Y CONV123
PRESS: <ENT>
TYPE: N Y ??###### (Project, Year, Month, Day)
PRESS: <ENT>

To copy Lotus 123 file to disk:
TYPE: COPY ??######.WKS A (or B drive):

8) Erase project Results (and Lotus 123) file by the following:

Go to program directory prompt:
PRESS: <F10>
TYPE: Y

Erase Results file:
TYPE: ERASE RESULTS

Erase Lotus 123 file:
TYPE: ERASE ??######.WKS

4.0 MAINTENANCE

1) Fill dewar tank with liquid nitrogen at the beginning of the day on Tuesdays and Fridays or twice a week. Safety glasses and autoclave gloves must be worn when filling. XRF should sit idle for approximately 20 minutes after filling. Check fast discriminator rate (directions preceding) to make sure it is within range before calibrating. Order liquid nitrogen from supplier every three weeks.

2) Keep carousel area free of dust and dirt. Replace mylar on detector when dirty or severely scratched (must be visually instructed before attempting this procedure).

3) Unplug computer and XRF during power surges such as electrical storms.

4) Leave computer on in between sample runs. The XRF must be energy calibrated each time the computer is turned on.

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ATTACHMENT #4

ASARCO East Helena Compliance Modeling -
Legal Description and Map of the Boundaries
Between Ambient Air and Areas of Restricted Public Access

July 1995

Legal Description of the Boundaries between
Ambient Air and Restricted Public Access

The site of land considered restricted public access in the compliance modeling demonstration is located in Section 36, Township 10 North, Range 3 West and Section 31, T.10N, R.3W, Lewis and Clark County, Montana. This site is described as Tract 1. One parcel, Parcel 1, is located inside Tract 1 and is considered ambient air. Tract 1 and Parcel 1 are shown in Figure 1.

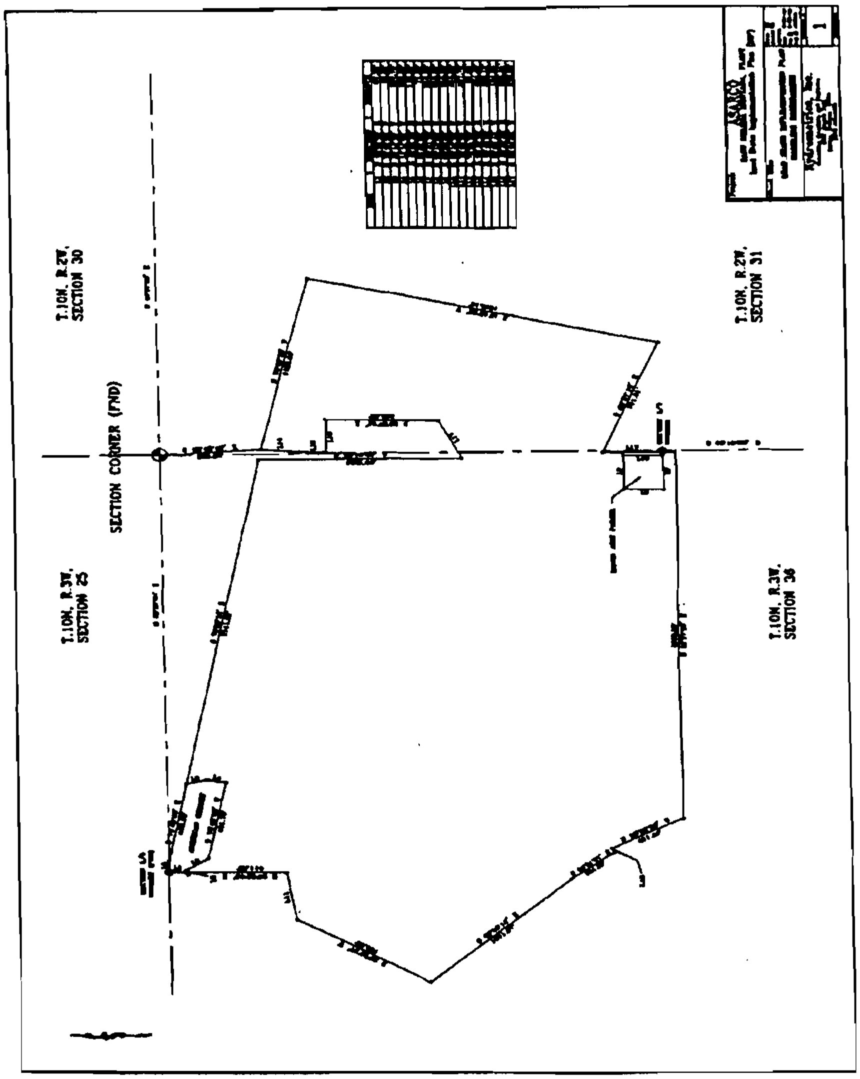
Tract 1

The Northwest corner of Section 36, T.10N, R.3W South on N 00E06'00" E for 87.30 feet. Begin the boundary between ambient air and restricted public access. South on N 00E06'00" E for 611.63 feet; Westerly on S 79E44'45" W for 297.76 feet; Southerly on S 29E06'37" W for 798.69 feet; Southeasterly on S 39E50'12" E for 1,001.67 feet; Southeasterly on S 34E51'31" E for 284.83 feet; Northeasterly on N 70E01'50" E for 27.85 feet; Southeasterly on S 26E26'29" E for 421.46 feet; Easterly on N 89E37'00" E for 2,360.58 feet; Northerly on S 00E19'00" E for 384.46 feet; Southeasterly on S 66E37'15" E for 761.81 feet; Northerly on S 12E48'03" W for 1,923.15 feet; Westerly on N 76E58'38" W for 1,122.80 feet; Southerly on N 05E42'28" E for 205.12 feet; Southerly on S 00E45'13" W for 134.05 feet; Easterly on S 89E38'23" E for 206.41 feet; Southerly on N 00E37'56" E for 602.63 feet; Southwesterly on S 62E04'24" W for 272.50 feet; Northerly on N 00E19'00" W for 1,085.68 feet; Westerly on S 79E20'12" E for 2,141.26 feet; Southerly on S 13E28'30" E for 110.00 feet; Southerly on S 11E12'00" W for 100.00 feet; Westerly on N 78E48'00" W for 481.70 feet; Northwesterly on N 32E15'30" W for 137.70 feet; and Westerly on N 78E48'00" W for 13.00 feet to the point of beginning of Tract 1.

Excluding the following parcel within the boundaries of Tract 1:

Parcel 1

The Southeast corner Section 36, T.10N, R.2W West on S 89E36'29" E for 30.00 feet. Begin the boundary between ambient air and restricted public access. Northerly on N 00E19'00" W for 210.00 feet; Westerly on N 89E37'00" E for 210.00 feet; Southerly on N 00E19'00" W for 210.00 feet; Easterly on S 89E36'29" W for 210.00 feet to the point of beginning of Parcel 1.


T.10N, R.2W, SECTION 30
T.10N, R.2W, SECTION 31
SECTION CORNER (FND)
T.10N, R.3W, SECTION 25
T.10N, R.3W, SECTION 36

ATTACHMENT #5

Compilation of Air Pollutant Emission Factors
(AP-42)

Appendix D.2 (July 1993)
Appendix D.3 (July 1993)
Appendix E.1 (July 1993)
Appendix E.2 (July 1993)
Appendix E.3 (July 1993)

Appendix E). For unpaved roads having been treated with chemical dust suppressants (such as petroleum resins, asphalt emulsions, etc.), the above goal may not be practical in well-defined study areas because a very large area would need to be swept. In general, a minimum of 400 grams (g) (1 lb) is required for silt and moisture analysis. Additional increments should be taken from heavily controlled unpaved surfaces, until the minimum sample mass has been achieved.

D.2 Samples From Paved Roads

Objective

The overall objective in a paved road sampling program is to inventory the mass of particulate emissions from the roads. This is typically done by

1. Collecting "representative" samples of the loose surface material from the road,
2. Analyzing the sample to determine the silt fraction, and,
3. Combining the results with traffic data in a predictive emission factor model.

The remarks above about definition of the study area and the appropriate level of resolution for sampling unpaved roads are equally applicable to paved roads. Before a field sampling program, it is necessary first to define the study area of interest and then to determine the number of paved road samples that can be collected and analyzed. For example, in a well-defined study area (e. g., an industrial plant), it is advantageous to collect a separate sample for each major paved road, because the resolution can be useful in developing cost-effective emission reduction plans. Similarly, in geographically large study areas, it may be more important to obtain samples representative of road types within the area by aggregating several sample increments.

Compared to unpaved road sampling, planning for a paved road sample collection exercise necessarily involves greater consideration as to types of equipment to be used. Specifically, provisions must be made to accommodate the characteristics of the vacuum cleaner chosen. For example, paved road samples are collected by cleaning the surface with a vacuum cleaner with "tared" (i. e., weighed before use) filter bags. Upright "stick broom" vacuums use relatively small, lightweight filter bags, while bags for industrial-type vacuums are bulky and heavy. Because the mass collected is usually several times greater than the bag tare weight, uprights are thus well suited for collecting samples from lightly loaded road surfaces. On the other hand, on heavily loaded roads, the larger industrial-type vacuum bags are easier to use and can be more readily used to aggregate incremental samples from all road surfaces. These features are discussed further below.

Procedure

For a network of many relatively short roads *contained in a well-defined study area* (as would be the case at an industrial plant), it is recommended that one collect a sample for each 0.8 km (0.5 mi) length, or portion thereof, for each major road segment. For a 1 km long (0.6 mi) segment, then, two samples are recommended. As mentioned, the term "road segment" refers to the length of road between intersections with other paved or unpaved roads (the nodes of the network).

For longer roads *in spatially heterogeneous study areas*, it is recommended that one collect a sample for each 4.8 km (3 mi) of sampled road length. Create a composite sample from a minimum of three incremental samples. Collect the first increment at a random location within the first 0.8 km (0.5 mi), with additional increments taken from each remaining 0.8 km (0.5 mi) of the road, up to a maximum length of 4.8 km (3 mi.) For a road less than 2.4 km (1.5 mi) long, an acceptable method for selecting sites for the increments is based on drawing three random numbers (x1, x2, x3) between zero and the length (See Figure D-3). Random numbers may be obtained from tabulations in statistical reference books, or scientific calculators may be used to generate pseudorandom numbers.

The following steps describe the collection method for samples (increments).

1. Ensure that the site offers an unobstructed view of traffic and that sampling personnel are visible to drivers. If the road is heavily traveled, use one crew member to "spot" and route traffic safely around another person collecting the surface sample (increment).

2. Using string or other suitable markers, mark the sampling portion across the road. (WARNING: *Do not mark the collection area with a chalk line or in any other method likely to introduce fine material into the sample.*) The widths may be varied between 0.3 m (1 ft) for visibly dirty roads and 3 m (10 ft) for clean roads. When an industrial-type vacuum is used to sample lightly loaded roads, a width greater than 3 m (10 ft) may be necessary to meet sample specifications, unless increments are being combined.

3. If large, loose material is present on the surface, it should be collected with a whisk broom and dustpan. NOTE: *Collect material only from the portion of the road over which the wheels and carriages routinely travel* (i. e., not from berms or any "mounds" along the road centerline). On roads with painted side markings, collect material "from white line to white line" (but avoid centerline mounds). Store the swept material in a clean, labeled container of suitable size, such as a metal or plastic 19 L (5 gal) bucket, with a sealable polyethylene liner. Increments for the same sample may be mixed within the container.

4. Vacuum the collection area using a portable vacuum cleaner fitted with an empty tared (preweighed) filter bag. NOTE: *Collect material only from the portion of the road over which the wheels and carriages routinely travel* (i. e., not from berms or any "mounds" along the road centerline). On roads with painted side markings, collect material "from white line to white line" (but avoid centerline mounds). The same filter bag may be used for different increments for one sample. For heavily loaded roads, more than one filter bag may be needed for a sample (increment).

5. Carefully remove the bag from the vacuum sweeper and check for tears or leaks. If necessary, reduce samples (using the procedure in Appendix E) from broom sweeping to a size amenable to analysis. Seal broom-swept material in a clean, labeled plastic jar for transport (alternatively, the swept material may be placed in the vacuum filter bag). Fold the unused portion of the filter bag, wrap a rubber band around the folded bag, and store the bag for transport.

6. Record the required information on the sample collection sheet (Figure D-4).

Sample Specifications

When broom swept samples are collected, they should be at least 400 g (1 lb) for silt and moisture analysis. Vacuum swept samples should be at least 200 g (0.5 lb). Also, the weight of an "exposed" filter bag should be at least 3 to 5 times greater than when empty. Additional increments should be taken until these sample mass goals have been attained.

D.3 Samples From Storage Piles

Objective

The overall objective of a storage pile sampling and analysis program is to inventory particulate matter emissions from the storage and handling of materials. This is done typically by

1. Collecting "representative" samples of the material,
2. Analyzing the samples to determine moisture and silt contents, and,
3. Combining analytical results with material throughput and meteorological information in an emission factor model.

As initial steps in storage pile sampling, it is necessary to decide (a) what emission mechanisms – material load-in to and load-out from the pile, wind erosion of the piles – are of interest and (b) how many samples can be collected and analyzed, given time and monetary constraints. (In general, annual average PM emissions from material handling can be expected to be much greater than those from wind erosion.) For an industrial plant, it is recommended that at least one sample be collected for each major type of material handled within the facility.

In a program to characterize load-in emissions, representative samples should be collected from material recently loaded into the pile. Similarly, representative samples for load-out emissions should be collected from areas that are worked by load-out equipment such as front end loaders or clamshells. For most "active" piles (i. e., those with frequent load-in and load-out operations), one sample may be considered representative of both loaded-in and loaded-out materials. Wind erosion material samples should be representative of the surfaces exposed to the wind.

In general, samples should consist of increments taken from all exposed areas of the pile (i. e., top, middle, and bottom). If the same material is stored in several piles, it is recommended that piles with at least 25% of the amount in storage be sampled. For large piles that are common in industrial settings (e. g., quarries, iron and steel plants), access to some portions may be impossible for the person collecting the sample. In that case, increments should be taken no higher than it is practical for a person to climb carrying a shovel and a pail.

Procedure

The following steps describe the method for collecting samples from storage piles.

1. Sketch plan and elevation views of the pile. Indicate if any portion is not accessible. Use the sketch to plan where the N increments will be taken by dividing the perimeter into N-1 roughly equivalent segments.

   a. For a large pile, collect a minimum of 10 increments, as near to mid-height of the pile as practical.

   b. For a small pile, a sample should be a minimum of 6increments, evenly distributed among the top, middle, and bottom.

   "Small" or "large" piles, for practical purposes, may be defined as those piles which can or cannot, respectively, be scaled by a person carrying a shovel and pail.

2. Collect material with a straight-point shovel or a small garden spade, and store the increments in a clean, labeled container of suitable size (such as a metal or plastic 19 L (5 gal) bucket) with a sealable polyethylene liner. Depending upon the ultimate goals of the sampling program, choose one of the following procedures:

   a. To characterize emissions from *material handling operations at an active pile*, take increments from the portions of the pile which most recently had material added and removed. Collect the material with a shovel to a depth of 10 to 15 centimeters (cm) (4 to 6 inches (in)). Do not deliberately avoid larger pieces of aggregate present on the surface.

   b. To characterize *handling emissions from an inactive pile*, obtain increments of the core material from a 1 m (3 ft) depth in the pile. A sampling tube 2 m (6 ft) long, with a diameter at least 10 times the diameter of the largest particle being sampled, is recommended for these samples. Note that, for piles containing large particles, the diameter recommendation may be impractical.

   c. If characterization of *wind erosion* , rather than material handling is the goal of the sampling program, collect the increments by skimming the surface in an upwards direction. The depth of the sample should be 2.5 cm (1 in), or the diameter of the largest particle, whichever is less. Do not deliberately avoid collecting larger pieces of aggregate present on the surface.

In most instances, collection method "a" should be selected.

3. Record the required information on the sample collection sheet (Figure D-5). Note the space for deviations from the summarized method.

Sample Specifications

For any of the procedures, the sample mass collected should be at least 5 kg (10 lb). When most materials are sampled with procedures 2.a or 2.b, ten increments will normally result in a sample of at least 23 kg (50 lb). Note that storage pile samples usually require splitting to a size more amenable to laboratory analysis.

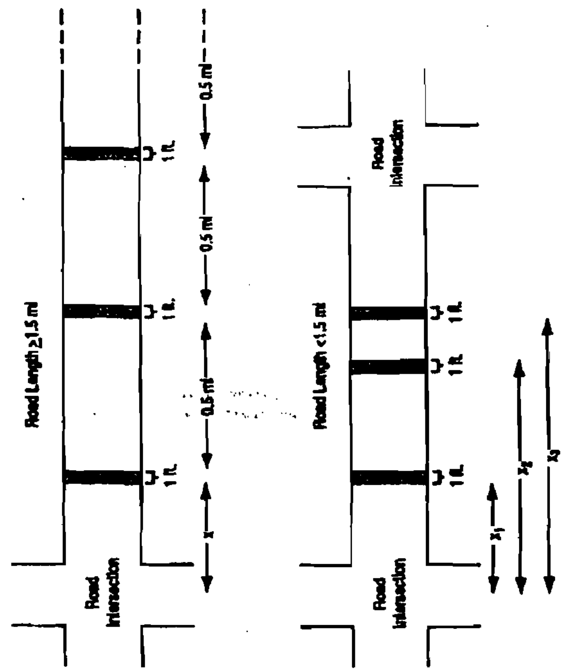


Figure D-1. Sampling locations for unpaved roads.

SAMPLING DATA FOR UNPAVED ROADS

Date Collected ___________ Recorded by ___________

Road Material (e.g., gravel, slag, dirt, etc.): ____________________

Site of sampling: ____________________

METHOD:
1. Sampling device: whisk broom and dustpan
2. Sampling depth: loose surface material (do not abrade road base)
3. Sample container: bucket with sealable liner
4. Gross sample specifications:
   a. Uncontrolled surfaces -- 5 kg (10 lb) to 23 kg (50 lb)
   b. Controlled surfaces -- minimum of 400 g (1 lb) is required for analysis

Refer to AP-42 Appendix D for more detailed instructions.

Indicate any deviations from the above: ____________________

SAMPLING DATA COLLECTED:

Sample No.	Time	Location +	Surf. Area	Depth	Mass of Sample

* Indicate and give details if roads are controlled.
\+ Use code given on plant or road map for segment identification. Indicate sampling location on map.

Figure D-2. Example data form for unpaved road samples.

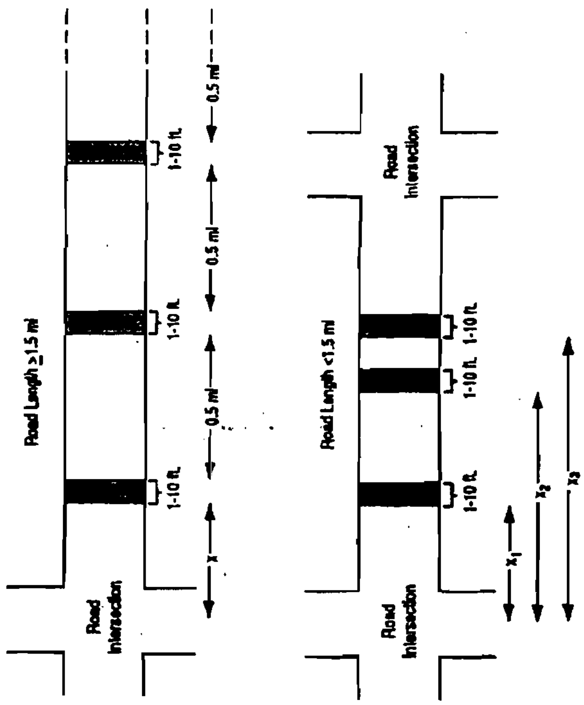


Figure D-3. Sampling locations for paved roads.

SAMPLING DATA FOR PAVED ROADS

Date Collected ___________ Recorded by ___________

Sampling location* ___________________________ No. of Lanes ___________

Surface type (e.g., asphalt, concrete, etc.)___________________________

Surface condition (e.g., good, rutted, etc.) ___________________________

* Use code given on plant or road map for segment identification. Indication sampling location on map.

METHOD:

1. Sampling device: portable vacuum cleaner (whisk broom and dustpan if heavy loading present)
2. Sampling depth: loose surface material (do not sample curb areas or other untravelled portions of the road)
3. Sample container: tared and numbered vacuum cleaner bags (bucket with sealable liner if heavy loading present)
4. Gross sample specifications: Vacuum swept samples should be at least 200 g (0.5 lb), with the exposed filter bag weight should be at least 3 to 5 times greater than the empty bag tare weight.

Refer to AP-42 Appendix D for more detailed instructions.

Indicate any deviations from the above:___________________________

SAMPLING DATA COLLECTED:

Sample No.	Vacuum Bag ID	Vacuum Bag Tare Wgt (g)	Sampling Surface Dimensions (l x w)	Time	Mass of Broom-Swept Sample +

+ Enter "0" if no broom sweeping is performed.

Figure D-4. Example data form for paved roads.

SAMPLING DATA FOR STORAGE PILES

Date Collected ____________ Recorded by ____________

Type of material sampled ________________________________

Sampling location* ________________________________

METHOD:

1. Sampling device: pointed shovel (hollow sampling tube if inactive pile is to be sampled)
2. Sampling depth:
   For material handling of active piles: 10-15 cm (4-6 in)
   For material handling of inactive piles: 1 m (3 ft)
   For wind erosion samples: 2.5 cm (1 in) or depth of the largest particle (whichever is less)
3. Sample container: bucket with sealable liner
4. Gross sample specifications:
   For material handling of active or inactive piles: minimum of 6 increments with total sample weight of 5 kg (10 lb) [10 increments totalling 23 kg (50 lb) are recommended]
   For wind erosion samples: minimum of 6 increments with total sample weight of 5 kg (10 lb).

Refer to AP-42 Appendix D for more detailed instructions.

Indicate any deviations from the above: ________________________________

SAMPLING DATA COLLECTED:

Sample No.	Time	Location* of Sample Collection	Device Used S/T **	Depth	Mass of Sample

* Use code given of plant or area map for pile/sample identification. Indicate each sampling location on map.
**Indicate whether shovel or tube.

Figure D-5. Example data form for storage piles.

Appendix E

Procedures For Analyzing Surface And Bulk Material Samples

This appendix discusses procedures recommended for the analysis of samples collected from paved and unpaved surfaces and from bulk storage piles. (AP-42 Appendix D, "Procedures For Sampling Surface And Bulk Materials", presents procedures for the collection of these samples.) These recommended procedures are based on a review of American Society For Testing And Materials (ASTM) methods, such as C-136 (sieve analysis) or D-2216 (moisture content). The recommendations follow ASTM standards where practical, and where not, an effort has been made to develop procedures consistent with the intent of the pertinent ASTM standards.

E.1 Sample Splitting

Objective

The collection procedures presented in Appendix D can result in samples that need to be reduced in size before laboratory analysis. Samples are often unwieldy, and field splitting is advisable before transporting the samples.

The size of the laboratory sample is important. Too small a sample will not be representative, and too much sample will be unnecessary as well as unwieldy. Ideally, one would like to analyze the entire gross sample in batches, but that is not practical. While all ASTM standards acknowledge this impracticality, they disagree on the exact optimum size, as indicated by the range of recommended samples, extending from 0.05 to 27 kilograms (kg) (0.1 to 60 pounds [lb]).

Splitting a sample may be necessary before a proper analysis. The principle in sizing a laboratory sample for silt analysis is to have sufficient coarse and fine portions both to be representative of the material and to allow sufficient mass on each sieve to assure accurate weighing. A laboratory sample of 400 to 1,600 grams (g) is recommended because of the capacity of normally available scales (1.6 to 2.6 kg). A larger sample than this may produce "screen blinding" for the 20 centimeter (cm) (8 inch [in]) diameter screens normally available for silt analysis. Screen blinding can also occur with small samples of finer texture. Finally, the sample mass should be such that it can be spread out in a reasonably sized drying pan to a depth of < 2.5cm (1 in).

Two methods are recommended for sample splitting: riffles, and coning and quartering. Both procedures are described below.

Procedures

Figure E-1 shows two riffles for sample division. Riffle slot widths should be at least three times the size of the largest aggregate in the material being divided. The following quote from ASTM Standard Method D2013-72 describes the use of the riffle.

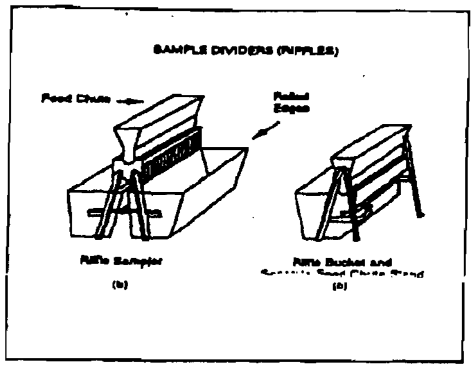


Figure E-1. Sample riffle dividers.

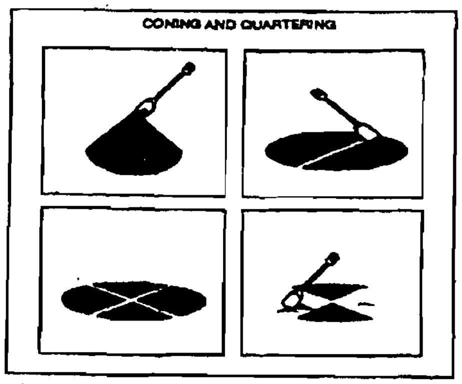


Figure E-2. Procedure for coning and quartering.

Divide the gross sample by using a riffle. Riffles properly used will reduce sample variability but cannot eliminate it. Riffles are shown in (Figure E-1). Pass the material through the riffle from a feed scoop, feed bucket, or riffle pan having a lip or opening the full length of the riffle. When using any of the above containers to feed the riffle, spread the material evenly in the container, raise the container, and hold it with its front edge resting on top of the feed chute, then slowly tilt it so that the material flows in a uniform stream through the hopper straight down over the center of the riffle into all the slots, thence into the riffle pans, one-half of the sample being collected in a pan. Under no circumstances shovel the sample into the riffle, or dribble into the riffle from a small-mouthed container. Do not allow the material to build up in or above the riffle slots. If it does not flow freely through the slots, shake or vibrate the riffle to facilitate even flow.[1]

Coning and quartering is a simple procedure useful with all powdered materials and with sample sizes ranging from a few grams to several hundred pounds.[2] Oversized material, defined as > 0.6 millimeters (mm) (3/8 in) in diameter, should be removed before quartering and be weighed in a "tared" container (one for which its empty weight is known).

Preferably, perform the coning and quartering operation on a floor covered with clean 10 mil (mm) plastic. Take care that the material is not contaminated by anything on the floor or that any portion is not lost through cracks or holes. Samples likely affected by moisture or drying must be handled rapidly, preferably in a controlled atmosphere, and sealed in a container to prevent further changes during transportation and storage.

The procedure for coning and quartering is illustrated in Figure E-2. The following procedure should be used:

1. Mix the material and shovel it into a neat cone.

2. Flatten the cone by pressing the top without further mixing.

3. Divide the flat circular pile into equal quarters by cutting or scraping out two diameters at right angles.

4. Discard two opposite quarters.

5. Thoroughly mix the two remaining quarters, shovel them into a cone, and repeat the quartering and discarding procedures until the sample is reduced to 0.4 to 1.8 kg (1 to 4 lb).

E.2 Moisture Analysis

Paved road samples generally are not to be oven dried because vacuum filter bags are used to collect the samples. After a sample has been recovered by dissection of the bag, it is combined with any broom swept material for silt analysis. All other sample types are oven dried to determine moisture content before sieving.

Procedure

1. Heat the oven to approximately 110°C (230°F). Record oven temperature. (See Figure E-3.)

2. Record the make, capacity, and smallest division of the scale.

3. Weigh the empty laboratory sample containers which will be placed in the oven to determine their tare weight. Weigh any lidded containers with the lids. Record the tare weight(s). Check zero before each weighing.

4. Weigh the laboratory sample(s) in the container(s). For materials with high moisture content, assure that any standing moisture is included in the laboratory sample container. Record the combined weight(s). Check zero before each weighing.

5. Place sample in oven and dry overnight. Materials composed of hydrated minerals or organic material such as coal and certain soils should be dried for only 1.5 hours.

6. Remove sample container from oven and (a) weigh immediately if uncovered, being careful of the hot container; or (b) place a tight-fitting lid on the container and let it cool before weighing. Record the combined sample and container weight(s). Check zero before weighing.

7. Calculate the moisture, as the initial weight of the sample and container, minus the oven-dried weight of the sample and container, divided by the initial weight of the sample alone. Record the value.

8. Calculate the sample weight to be used in the silt analysis, as the oven-dried weight of the sample and container, minus the weight of the container. Record the value.

MOISTURE ANALYSIS

Date: ________

Sample No: ________
Material: ________

Split Sample Balance: ________
Make ________
Capacity ________
Smallest division ________

Total Sample Weight: ________
(Excl. Container)
Number of Splits: ________

Split Sample Weight (before drying)
Pan + Sample: ________
Pan: ________
Wet Sample: ________

By: ________

Oven Temperature: ________
Date In ________ Date Out ________
Time In ________ Time Out ________
Drying Time ________

Sample Weight (after drying)
Pan + Sample: ________
Pan: ________
Dry Sample: ________

MOISTURE CONTENT:
(A) Wet Sample Wt. ________
(B) Dry Sample Wt. ________
(C) Difference Wt. ________

$\frac{C \times 100}{A}$ = ________ % Moisture

Figure E-3. Example moisture analysis form.

E.3 Silt Analysis

Objective

Several open dust emission factors have been found to be correlated with the silt content (< 200 mesh) of the material being disturbed. The basic procedure for silt content determination is mechanical, dry sieving. For sources other than paved roads, the same sample which was oven-dried to determine moisture content is then mechanically sieved.

For paved road samples, the broom-swept particles and the vacuum-swept dust are individually weighed on a beam balance. The broom-swept particles are weighed in a container, and the vacuum-swept dust is weighed in the bag of the vacuum, which was tared before sample collection. After weighing the sample to calculate total surface dust loading on the traveled lanes, combine the broom-swept particles and the vacuumed dust. Such a composite sample is usually small and may not require splitting in preparation for sieving.

splitting in preparation for sieving.

Procedure

1. Select the appropriate 20-cm (8-in) diameter, 5-cm (2-in) deep sieve sizes. Recommended U. S. Standard Series sizes are 3/8 in, No. 4, No. 40, No. 100, No. 140, No. 200, and a pan. Comparable Tyler Series sizes can also be used. The No. 20 and the No. 200 are mandatory. The others can be varied if the recommended sieves are not available, or if buildup on one particulate sieve during sieving indicates that an intermediate sieve should be inserted.

2. Obtain a mechanical sieving device, such as a vibratory shaker or a Roto-Tap® without the tapping function.

3. Clean the sieves with compressed air and/or a soft brush. Any material lodged in the sieve openings or adhering to the sides of the sieve should be removed, without handling the screen roughly, if possible.

4. Obtain a scale (capacity of at least 1600 grams [g] or 3.5 lb) and record make, capacity, smallest division, date of last calibration, and accuracy. (See Figure E-4.)

5. Weigh the sieves and pan to determine tare weights. Check the zero before every weighing. Record the weights.

6. After nesting the sieves in decreasing order of size, and with pan at the bottom, dump dried laboratory sample (preferably immediately after moisture analysis) into the top sieve. The sample should weigh between ~ 400 and 1600 g (~ 0.9 and 3.5 lb). This amount will vary for finely textured materials, and 100 to 300 g may be sufficient when 90% of the sample passes a No. 8 (2.36 mm) sieve. Brush any fine material adhering to the sides of the container into the top sieve and cover the top sieve with a special lid normally purchased with the pan.

7. Place nested sieves into the mechanical sieving device and sieve for 10 minutes (min.). Remove pan containing minus No. 200 and weigh. Repeat the sieving at 10-min. intervals until the

difference between two successive pan sample weighings (with the pan tare weight subtracted) is less than 3.0%. Do not sieve longer than 40 min.

8. Weigh each sieve and its contents and record the weight. Check the zero before every weighing.

9. Collect the laboratory sample. Place the sample in a separate container if further analysis is expected.

10. Calculate the percent of mass less than the 200 mesh screen (75 micrometers [µm]). This is the silt content.

E.4 References

1. "Standard Method Of Preparing Coal Samples For Analysis", *Annual Book Of ASTM Standards, 1977*, D2013-72, American Society For Testing And Materials, Philadelphia, PA, 1977.

2. L. Silverman, *et al.*, *Particle Size Analysis In Industrial Hygiene*, Academic Press, New York, 1971.

ATTACHMENT #6
PART A

Quality Assurance/Quality Control Guidelines for Monitor Labs RM4200 Visible Emissions Monitoring System and LS710 Control Unit

Prepared by
ASARCO, Inc.

November 20, 1995
Revised: June 6, 1996

QUALITY ASSURANCE/QUALITY CONTROL GUIDELINES
for
MONITOR LABS
RM4200 VISIBLE EMISSION MONITORING SYSTEM
and
LS710 CONTROL UNIT

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November 30, 1995
Revision 1.0 - June 6, 1996

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1.0 OVERVIEW

This quality control (QC) and quality assurance operating procedure guideline document (QAOP) is written for the technician that will be responsible for the operation of the continuous opacity monitoring system (COMS). It provides an overview of the system description, routine maintenance requirements, and quality control checks necessary to ensure accurate and continuous operation and representative data collection. These procedures are not intended to replace the detailed procedures defined in the complete systems manual. Reference to the *RM4200 Operators Manual*, supplied by the manufacturer, is recommended for complete understanding of specific operational, maintenance, and troubleshooting requirements.

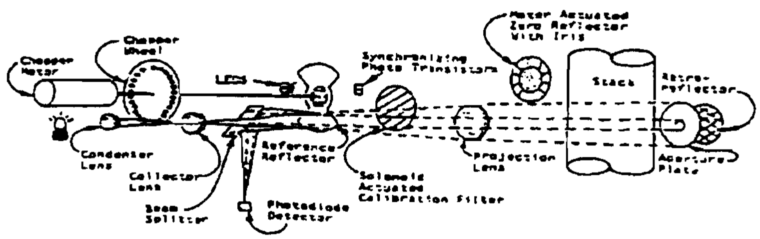
Specific responsibilities and procedures have been defined in this written document that will support the day-to-day operation of the RM4200 system. Further defined written procedures for daily, weekly, monthly, and quarterly activities are referenced as part of this document with specific step-by-step procedures and documentation requirements defined in the following procedures:

- Procedure 4200-01 Daily Operational Verification
- Procedure 4200-02 Monthly Transmissometer Cleaning Procedure
- Procedure 4200-03 Projection Lamp Replacement
- Procedure 4200-04 Quarterly Neutral Density Audit Procedure and Form

1.1 Basic System Configuration

The RM4200 is a combined optical and electronic system that detects and measures the optical density and opacity of stack gas emissions. The RM4200 consists of three primary assemblies. The transmitter/receiver (transceiver) is located on one side of the stack, while the retro reflector is located on the opposite side of the stack. The transceiver transmits the measurement signal through a junction to a control unit. The transceiver and retro reflector combine to provide the measured signals for input into the control unit (LS710). The LS710 simultaneously provides an indication of double-pass optical density and opacity corrected for stack-exit conditions. Figure 1 illustrates the arrangement of the four major components of the transmissometer system as mounted on a typical stack.

FIGURE 1
RM4200 GENERAL SYSTEM CONFIGURATION
PRIMARY COMPONENTS



- Transceiver (Analyzer/Electronics)
- Retro reflector
- J-Box (Interconnect between Analyzer and Acquisition)
- LS710 Control Unit (Data Interpretation and Acquisition)

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2.0 GENERAL SYSTEM INSPECTION and MAINTENANCE

The following section outlines basic system checks and maintenance activities that are not component specific, but cover the entire monitoring system (transceiver, retro reflector, J-box, and control unit) for the opacity monitoring system. Although each component function is critical, the operation of all components combined into a fully validated system is required to ensure acceptability of the continuous opacity monitoring system (COMS).

2.1 Daily (Weekday) Inspections

Daily (Weekday) inspections of the RM4200 system, by a qualified instrument technician, is paramount in the acceptable operation and data collection activities. Daily (Weekday) system integrity checks assist in minimizing system down time and provide an avenue of decreased long term maintenance requirements.

All inspections that are defined in these routine maintenance procedures will be recorded in the systems log book. The following section provides a brief background of the general procedures that are followed in the daily (weekday) inspection routines. The *QUALITY CONTROL GUIDELINE PROCEDURE Daily Operational Verification (Procedure 4200-01)* is provided in Appendix A of this QAOP for reference in conducting the daily inspection activities.

2.1.1 Data Assessment/Confirmation of Z/S results

To support the quality of data generated by the COMS, zero and span (Z/S) checks will be conducted once per day (every twenty three hours). The zero/span checks will be conducted using the electro-optical method (EO). The Z/S will be automated to provide unattended action. The results of the most recent zero and span values will be reviewed by the ASARCO instrument technician. If zero/span values exceed ± 3.0 percent calibration drift, calibration procedures and/or corrective action will take place to met the drift check criteria.

2.1.2 Activities and Indicators

Included in the logs are all maintenance activities, planned and unplanned, any system modifications, consumable uses, electronic checks (manual zero/span checks) that effect the digital data, changes or entries in the LS710 menu systems, and calibration/zero/span values observed during the past 24 hour period.

As a component of this inspection, review of data to determine reasonableness is extremely important. Confirmation of zero/span activity and pre and post response values (i.e. opacity levels prior to and after the calibration cycles) to confirm data acceptability is required. Any anomalies, changes, or general observations are entered in the system log book.

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Status indication of the system, as provided by the LS710 control unit display, is also reviewed and noted in the daily logs. System indicator lights and LED display on the control panel assist in identifying potential problems.

Diagnostic fault indicator lights and !FAILURE message is displayed any time a system fault is detected. Key fault indications under the DIAGNOSTIC heading and FAULT subheading of the LS710 control unit that relate to specific instrument failures (requiring immediate attention and possible component replacement) include:

- RAM (Random Access Memory)
- TIMR (Time Chip)
- WDOG (Watchdog device failure)
- DAC (Digital to Analog Converter Failure)
- EEPR (Fault in EPROM circuitry)
- ROM (Read Only Memory)
- PIC (Peripheral Interrupt Controller)
- AGC TRANS (Auto Gain Control Fault in Transceiver)
- PIO (Output Device Error)
- RM REF (Out of Tolerance Ref Signal)

If any of the diagnostic faults are indicated from this partial list, the operator must refer to the *Standard Operating Procedures for the RM4200/LS710* and corresponding manufacturers manual for specific troubleshooting and component replacement procedures.

Additional display indicators that the user must be aware of in the visual inspection deal with Calibration status outputs of the LS710. Although most of these indicators do not specifically dictate system problems, it is important that the display indications are identified and understood. They include:

- CALIB STARTED (Appears when Cal Check button is pressed)
- CALIB IN PROG (Appears during calibration cycle)
- CAL PURGE (Appears during cavity purging of process gases)
- ZERO CAL (Appears during ZERO portion of calibration cycle)
- SPAN CAL (Appears during SPAN portion of calibration cycle)
- TEMP CHECK (Appears after cal cycle completion and awaiting valid data)
- RM MANUAL (Appears when Auto/Manual Switch in J-Box set at Manual)
- CONTIN ZERO (Continuous Zero parameter entered in E-O heading)
- CONTIN SPAN (Continuous Span parameter entered in E-O heading)
- ZERO ERROR (Appears if zero for opacity falls outside ± 4%)
- SPAN ERROR (Appears when span falls outside ± 3% of value entered in SPAN OP)

2.2 *Monthly Cleaning*

Monthly inspection and cleaning of the transmissometer optical surfaces by a qualified instrument technician, is to be conducted as an additional activity to the normal daily (weekday) inspections conducted by the site technician. Monthly cleaning and verification assist in continued operation and reduce excessive maintenance. The monthly activities are directed primarily towards maintaining the system optics. All monthly inspections that are conducted will be recorded in a systems log book.

The *QUALITY CONTROL GUIDELINE PROCEDURE Monthly Cleaning (Procedure 4200-02)* is the primary guideline used in the inspection process. The individual quality assurance operating procedures (QAOP's) are provided in Appendix A of the document. For diagnostic procedures and other non-routine maintenance activities beyond the scope of these quality assurance operating procedures, the technician must refer to the manufacturer manual.

2.2.1 *Monthly Cleaning and Optics Check*

The following section provided the general procedure that is followed for the monthly activities.

1. Release the four quick-release latches that secure the transceiver to the probe assembly and swing the transceiver to the side on its hinges.

2. Clean the optical surfaces of the transceiver carefully with one of the optical cloths supplied with the maintenance kit, located in the retro-reflector unit. Re-secure the transceiver unit with the four latches when cleaning is complete.

3. Remove the black aperture plate from the retro-reflector by taking out the three screws securing it. This will allow for complete cleaning of the retro-reflector unit. Carefully clean the surface of the retro-reflector with a clean dry optical cloth.

CAUTION: DO NOT use solvents on the lens or any other materials during cleaning except for the lens cloth supplied in the maintenance kit.

4. Once cleaning is completed resecure the transceiver and retro-reflector in place. Secure the four latches.

5. Check that all mounting bolts at the probe/flange interface are secure.

NOTE: If the bolts and nuts that face the transceiver are loose, the transceiver/probe may require realignment (see the Probe Replacement Procedure in the manual for alignment instructions). However, if the bolts can be tightened without changing the previously established alignment, no adjustment is necessary.

6. Check the desiccant indicator on top of the transceiver. The center spot of the desiccant capsule should be blue. If it is not, replace the desiccant cartridge.

2.3 *Projection Lamp Replacement*

Under normal operating conditions, the projection lamp should last in excess of 20,000 hours. If the lamp fails (i.e. needs to be replaced), LAMP will be displayed on the front panel of the LS710. Appendix A contains the procedure for *QUALITY CONTROL GUIDELINE PROCEDURE Projection Lamp Replacement (Procedure 4200-03).*

2.4 *Semi-Annual Maintenance and Inspection*

Semi-annual inspections of the COMS, by a qualified instrument technician, are to be conducted as a primary activity to ensure the continued operation of the COMS and confirm the operational status of key system components and are directed primarily at the cleaning and inspection of the transceiver and retro-reflector. All semi-annual maintenance and inspection activities will be preceded by the daily (weekday) system checks. The semi-annual inspections will assist in continued operation of the COMS and track primary component performance. All semi-annual inspections are recorded in the systems log book.

The summary of the routine maintenance recommended to ensure continued trouble-free operation is followed for semi-annual maintenance.

- Inspect transceiver desiccant cartridge (Part No. 16000053)[1]
- Inspect desiccant capsules in the J-Box air filter (Part No. 80160305)

[1] If the transceiver desiccant cartridge requires replacement more frequently, the instrument air system may require more thorough drying.

NOTE: The transceiver internal optics are sealed from the electronics to prevent optical contamination during checkout, servicing, or calibration, refer to the RM4200 Instrumentation Manual if internal optics maintenance is required.

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3.0 QUALITY CONTROL

The following section summarizes the general requirements for quality assessment of the monitoring system for drift, precision and accuracy. The basis of the quality assurance requirements are derived from *40CFR60 Appendix A PS1 "Performance and Specification Procedures for Continuous Opacity Monitoring Systems in Stationary Sources."*

The general purpose of the procedures applied under these quality control guidelines is to determine the effectiveness of quality control (QC) and quality assurance (QA) procedures and the quality of the data collected by the COMS that are in place. In evaluation of the Continuous Opacity Monitoring System (COMS) it should be emphasized that the COMS is the *entire* and *total* component system required for determination of opacity in the stack or duct.

3.1 QA Program Description

The organizational development covers the basic requirements for designating individuals into a comprehensive quality control over structure. To optimize the continuous operation and proper implementation of the quality control (QC) procedures, it is important that a program structure and organization be maintained to support the monitoring and reporting objectives. Delegation of authority and responsibility among the individual involved in the program is necessary for maintenance of a quality program. The Manager of Operations, with support from site personnel, should be able to address most operational (instrument) problems or ancillary problems that may affect the data. It should be stressed that the fundamental source and focus of the quality assurance practices are maintained with personnel in the field. *Figure 2* provides a general organizational structure.

The Manager of Operations is responsible for the oversight of the day to day instrument operations, periodic review of the data records, verification of data acceptability, data validation, and reporting. The Instrument Technicians provide the day to day support of COMS operation, provide maintenance support, and report any system or data problems to the Manager of Operations. Technicians also support routine data reduction and validation.

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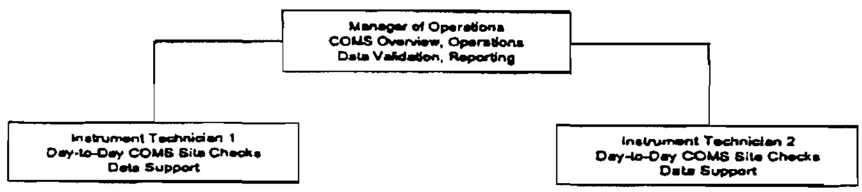
Figure 2
General Organizational Overview



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When accuracy checks are performed, the assessment is provided on the entire system response. This is not component specific but includes the analyzer, data acquisition, and final data output as a whole. The accuracy of the COMS is based upon each interrelated component working together to derive source data that is representative. If any one component of the system is inaccurate, it will cause the entire COMS response to be inaccurate. Therefore, the quality checks are designed to periodically confirm the accurate operation of the system, not an individual component. In general the key QA/QC procedures include:

- Assessment of the Quality of the Data
- Drift Determination and Correction
- Quarterly Accuracy Performance Audits

3.2 *Data Assessment/Handling/Reporting*

Data from the RM4200 opacity monitor will be collected in 6- minute rolling data blocks. The six minute data blocks will be comprised of a minimum of four valid one minute average values. The one minute values will be held as intermediate data points until each 6 minute block is recorded. The one minute data will not be recorded.

At the completion of each quarter of monitoring (within 45 days), ASARCO will submit a quarterly report of all excess emission. Periods of excess emissions will be defined as the emissions in excess of 20% opacity, as determined by the COMS on a rolling six minute basis. Each quarterly report will contain the following:

- The magnitude of excess emissions and the beginning and ending date and time of the period of excess emissions.
- Specific identification of each period of excess emissions that occurred during startup, shutdown and/or malfunctions. This will also include the corrective action taken to remedy the cause of excess emissions.
- Date and time identifying time periods when the COMS was inoperative due to repairs, calibrations or maintenance.
- If no excess emissions have been recorded, and/or the COMS has been completely operational without any required repairs or adjustments during the quarter, the report shall provide a such a statement.

- The percentage of time the COMS was operational will be reported using the following calculation:

$$\left[1 - \frac{\textit{hours of COMS downtime during quarter}}{\textit{hours the source operated during quarter}} \right] x\ 100$$

- The percentage of time the COMS indicated compliance will be reported using the following equation:

$$\left[1 - \frac{\textit{total hours of excess opacity during reporting period}}{\textit{total hours of COMS availability during reporting period}} \right] x\ 100$$

All data collected shall be maintained in a file at the ASARCO Environmental office. The data file shall contain: all measurements collected from the COMS; all performance testing measurements; all COMS performance evaluations; all COMS maintenance, calibrations, repairs and audits. The data and associated documentation will be maintained on-site for a minimum of five years after completion of the monitoring.

3.2.1 *Corrective Action*

ASARCO will flag data collected during excessive calibration drift periods. If any zero/span exceeds a 3.0 percent calibration drift the data will be flagged. If drift exceeds four times the applicable drift standard (or 12%), this is considered and "out of control" occurrence. If an out-of-control condition exists, corrective action must be taken immediately or data invalidation will continue until drift conformance (within the 12%) has been met. The data collected during this "non-conformance" cannot be used as "valid" data for reporting compliance or be counted as available hours to meet data recovery rates. The "non-conformance" period is defined as the time immediately proceeding the recorded out-of-control drift record and data is not accepted until the system has been verified to meet allowable tolerances. Adjustments with post verification of span and zero checks or system audits are acceptable corrective measures.

The "out of control" levels to exist if the following is determined:

1. Zero or Span level drifts exceed +/- 5% of full scale (FS) (2 times the applicable standard) for a period of five consecutive days.
2. The Zero or Span drifts exceed +/- 12% of full scale (FS) (4 times the applicable drift specification) during any one period the COMS is "out of control."

If the RM4200 COMS is not operating for a period greater than 24 hours, ASARCO shall monitor visible emissions from the affected stack at least once every week day (during daylight hours) using a certified visible emissions observer who will perform visible emissions observations and record the results. These observations shall be conducted in accordance with *40CFR Part 60, Appendix A, Method 9.*

3.3 *Drift Assessment*

The RM4200 system calibration (zero and span) should not be required to be adjusted on a daily (24 hour) basis. Zero and Span procedures or corrective action must be "evaluated" if the drift is found to be outside ± 3.0% calibration drift. Readjustment is required when the *system* output for zero (baseline) or span (upscale calibration) exceed the "out of control limits.

If an out-of-control condition exists (as defined above) corrective action must be taken immediately or data invalidation will continue until drift conformance has been met. The data collected during this "non-conformance" cannot be used as "valid" data for reporting compliance or be counted as available operational hours. The "non-conformance" period is defined as the time immediately proceeding the recorded out-of-control drift record and data is not accepted until adjustments have been verified to confirm system accuracy. Internal adjustments with post verification of E-O span and zero checks or system audits are acceptable corrective measures.

3.4 *Quarterly Neutral Density Audit Procedures*

The purpose of the quarterly neutral density filter audit is to demonstrate operational status of the system and provide a performance evaluation of the continuous opacity monitoring system (COMS). The audits will be conducted following the procedures defined in *40CRF60 Appendix B*, Performance Specification 1 for Continuous Opacity Monitoring Systems (COMS).

The *QUALITY CONTROL GUIDELINE PROCEDURE Quarterly Neutral Density Audit Procedure and Form (Procedure 4200-04)*, provided in Appendix A discusses the procedures required in conducting the quarterly audit.

The following calculations are used in the confirmation and determination of system accuracy as further illustrated in *Performance Specification 1, Section 8.0 Equations*; mean percent difference (*Section 8.1 equation 1-2*), confidence coefficient (*Section 8.3 equation 1-3*), and error (*Section 8.4 equation 1-5*).

$$\text{Confidence Coefficient (CC)} = t_{0.975} \times \frac{S_d}{\sqrt{n}}$$

$$\text{Calibration Err } (E_c) = |x| + |CC|$$

where:

x	=	arithmetic mean of single filter data set (absolute value)
$t_{0.975}$	=	t-value for 5 test runs (2.776)
S_d	=	Standard Deviation of single filter data set
n	=	number of test runs

All field data collected during each audit will be recorded on the field work sheets. Procedure 42000-04 provides the field forms that are completed during each quarterly verification.

4.0 REFERENCES

5.1 RM4200 Visible Emissions Monitor; INSTRUCTION MANUAL. Lear Siegler Measurement Controls Corporation, 80250255 Rev. C 11/91.

5.2 LS710 Control Unit INSTRUCTION MANUAL. Lear Siegler Measurement Controls Corporation, 80250378 September 1991 w/Addendum ECO # 3258 4/92.

5.3 Handbook Continuous Air Pollution Source Monitoring Systems. EPA 625/6-79-005. June 1979.

5.4 Code of Federal Register, Title 40 Part 60, Appendix B; Performance Specification 1.

5.7 Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III Stationary Source Specific Methods, Revision 2, January 1982.

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Lewis and Clark Co. Air Pollution Control Program

QUALITY CONTROL GUIDELINE
RM4200 VISIBLE EMISSIONS ANALYZER
Daily (Weekday) Operational Verification

PROCEDURE 4200-01
Page 1 of 1

Purpose

This procedure is used to verify the equipment is operating correctly in reporting. The procedure applies to the RM4200 Visible Emissions Analyzer and the related recording equipment, if any.

Tools and Equipment Required

No special tools or equipment are needed.

Estimated Time Required to Perform the Procedure

Approximately 5 minutes, if no corrective action is required.

Procedure

1. OPERATIONAL VERIFICATION ; Perform the following:

a. Record the Opacity Reading, as indicated on the LS710, before any other checks are performed in the logbook.

b. Using the LS710 Heading and Subheading buttons for the appropriate J box, select E/O Cal and VEZ and VES, respectively. Record the last zero and span value indicated on the LS710 panel in the log book. Verify the values are within 5% of the current values and record on data sheet.

c. Return the system to operational status.

d. Record the Opacity Reading, as indicated on the LS710, after the system has been returned to operational in the logbook.

2. DIAGNOSTIC FAULTS

a. Verify that the LS710 is clear of all fault indicators and make entry in log book to verify operational.

3. SYSTEM CONDITION

a. Provide a visual check of the transciever, weather cover (if applicable), mounting bolts, J-box, LS710 operation, cables, and air purge. Confirm that these visual checks were completed on the data form.

Corrective Action

Should corrective action be required, refer to the RM4200 instruction manual maintenance section.

Reference Documents or Procedures

RM4200 Visible Emissions Analyzer Instruction Manual.

QUALITY CONTROL GUIDELINE
RM4200 VISIBLE EMISSIONS ANALYZERS
Monthly Cleaning and Verification Procedure

PROCEDURE 4200-02
Page 1 of 1

Purpose

This procedure is used monthly to verify the equipment is operating correctly, that the optics are clean, and that the reference levels are within defined limits.

Safety Precautions

Exercise appropriate safety precautions associated with climbing, should accessing the transceiver require climbing.

Tools and Equipment Required

Clean, soft, lint-free cloth
RM4200 Visible Emissions Analyzer Instruction Manual

Time Required to Perform the Procedure

Approximately 30 minutes.

Procedure

1. Reference Verification and Documentation

   a. Perform procedure 4200-01, Operational Verification and document readings

   b. Verify that the reference reading for Opacity (OP) is within acceptable ranges and record on data sheet.

   c. Put the LS710 into the normal operating mode by selecting PANEL, subheading REF and press INCREMENT to OFF.

2. Cleaning and Optics Check

   a. Release the six latches that secure the transceiver to the probe assembly and swing the transceiver to the side on its hinges.

   b. Verify that all optical surfaces of the transceiver are clean and free of debris by cleaning the outside of the transceiver lens with a clean, dry lens cloth.

   c. Swing the transceiver back into position. Check that the transceiver is properly aligned on the alignment pins opposite the hinged side. Secure the six latches.

   d. Check that all mounting bolts at the flange interface are secure.

Corrective Action

See the RM4200 Instruction Manual maintenance section.

QUALITY CONTROL GUIDELINE
RM4200 VISIBLE EMISSIONS ANALYZERS
Semiannual Maintenance and Inspection

PROCEDURE 4200-03
Page 1 of 1

Purpose

This procedure defines the semi-annual cleaning and inspection of the RM4200 transceiver. This procedure may be performed more frequently, if needed.

Tools and Equipment Required

9/16" open end wrench
lint-free cloth or lens wipes
soap and water (optional)
1/2" open end wrench
protective gloves

Time Required to Perform the Procedure

Approximately 60 minutes.

Procedure

1. Perform procedures 4200-01 and 4200-02.
2. Place the LS710 out of service by selecting heading E/O, subheading CALIB and press CONTIN (in J-Box 2) to OUT.
3. Examine the exterior weather covers on the transceiver and clean as required.
4. Open the transceiver weather cover and release the latches securing the transceiver to the probe. Disconnect the purge line and the thermocouple connector located below the lens. Lift the transceiver off the hinge pins and place it on the deck.
5. Examine the transceiver lens and housing for cracks and particulate accumulations. Replace as necessary.
6. Mount the transceiver on the hinge pins.
7. Latch the transceiver to the probe and close the weather cover.
8. Restore the LS710 to the normal operating mode.
9. Record this activities in the log book.
   - Inspect desiccant capsules in the J-Box air filter

Reference Documents or Procedures

This procedure occurs at the time of alternating quarterly procedures and may be performed at the same time to avoid extended system downtime and lost data.

RM4200 Instruction Manual.

QUALITY CONTROL GUIDELINE
RM4200 VISIBLE EMISSIONS ANALYZERS
Quarterly Neutral Density Filter Verification

PROCEDURE 4200-04
Page 1 of 2

Purpose

Quarterly neutral density filter audits are conducted in order to meet USEPA requirements. The audit (verification) also provides an indication of the accuracy of the opacity measurements made by the RM4200.

Safety Precautions

Exercise precautions associated with climbing, should accessing the instrumentation require climbing.

Tools and Equipment Required

- large adjustable wrench
- RM4200 attenuator fixture for neutral density filters
- set of 3 (minimum) neutral density filters with calibration certification
- electrical tape (possibly required for securing neutral density filters in attenuator fixture)

Time Required to Perform the Procedure

This procedure requires approximately 60 minutes for one technician.

Procedure

1. Release the six latches that secure the transceiver to the probe assembly and swing the transceiver to the side on its hinges.
2. Secure the calibration housing to the transceiver with the mounting fixture provided with the calibrator.
3. Insert the one of the three neutral density filters into the calibration fixture following the manufacturers instructions. The filters are designated as low range (low), mid range (mid), and high range (high).
4. Once the LS710 display has stabilized, record the reading calibration form.
5. Repeat steps 3 and 4 for the other two range filters. Perform five non-consecutive runs for each range of neutral density filter (15 total runs consisting of five runs for each neutral density filter).
6. Calculate the arithmetic mean, confidence coefficient and calibration error for each set of runs for each range of neutral density filter.

$$\textit{Arithmetic Mean} = \Sigma \frac{x}{n}$$

$$\textit{Confidence Coefficient (CC)} = t_{0.975} \times \frac{S_d}{\sqrt{n}}$$

$$\textit{Calibration Err } (E_c) = |x| + |CC|$$

7. Complete all spaces on the Quarterly Neutral Density Calibration Form.

8. Perform a response time determination test using the high range neutral density filter. This is done by calculating an upscale value (0.95 x filter value) and a downscale value (0.05 x filter value).

9. Five runs are performed each for the upscale determination and for the downscale determination. From the 10 readings, an average response time is calculated.

10. Complete all spaces on the quarterly response time determination form.

Corrective Action

If the test results are not as expected, refer to the maintenance section of the RM4200 Instruction Manual.

Reference Documents or Procedures

RM4200 Visible Emissions Analyzer Instruction Manual.

Person Conducting Test ____________ Analyzer Manufacturer ____________
Affiliation ____________ Model/Serial No. ____________
Date ____________ Location ____________
Monitor Pathlength, L_1 ____________ Emission Outlet Pathlength, L_2 ____________
Monitoring System Output Pathlength Corrected? Yes_____ No_____

Calibrated Neutral Density Filter Values

Actual Optical Density (Opacity):
Low-Range ________ (________)
Mid-Range ________ (________)
High Range ________ (________)

Path Adjusted Optical Density (Opacity)
Low-Range ________ (________)
Mid-Range ________ (________)
High-Range ________ (________)

Run Number	Calibration Filter Value (Path-Adjusted Percent Opacity)	Instrument Reading (Opacity), percent	Arithmetic Difference (Opacity), percent		
			Low	Mid	High
1 – Low				–	–
2 – Mid			–		–
3 – High			–	–	
4 – Low				–	–
5 – Mid			–		–
6 – High			–	–	
7 – Low				–	–
8 – Mid			–		–
9 – High			–	–	
10 – Low				–	–
11 – Mid			–		–
12 – High			–	–	
13 – Low				–	–
14 – Mid			–		–
15 – High			–	–	–
Arithmetic Mean (Equation 1-2) $\bar{X}$					
Confidence Coefficient (Equation 1-4) CC					
Calibration Error $\bar{X}$ + CC					

Figure 1-6. Calibration error determination.

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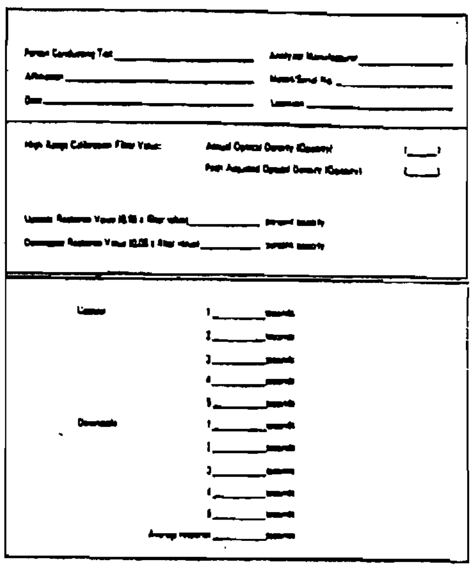

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ATTACHMENT #6
PART B

Standard Operating Procedure for RM4200 Visible Emissions Analyzer
LS710 Control Unit

Prepared by
ASARCO, Inc.

November 20, 1995

STANDARD OPERATING PROCEDURE
for
RM4200 VISIBLE EMISSIONS ANALYZER
LS710 CONTROL UNIT

Prepared for

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November 20, 1995

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1.0 OVERVIEW

This standard operating procedure (SOP) is written for the technician or plant personnel that will be responsible for the operation of the continuous opacity monitoring system (COMs). It provides an overview of the system description, function, theory, installation, operation, and maintenance of the monitoring system. This document is provided as a complete and *general* overview to assist the technician in the operational procedures of the COMs. This document is not intended to comprise the complete systems manual. Reference to the *RM4200 Instruction Manual and LS710 Control Unit Instruction Manual*, supplied by the manufacturer, is recommended for specific operational detail.

1.1 System Description

The RM4200 Visible Emissions (Opacity) Analyzer is a combined optical and electronic system that detects and measures opacity in stack emissions. By means of a path of light that protrudes through the stack wall into the stack exhaust stream, the RM4200 directly determines opacity without disturbing or modifying the effluent. The transceiver and retro-reflector include the optical and electrical system.

The RM4200 includes four basic components; probe, transceiver, J-box, and LS710 Control Unit. Signals flowing between the J-box and the LS710 are connected by the transceiver/J-box interconnect cable. The interconnect cable is a variable length communication link that transports signals between the J-box and the LS710.

The transceiver contains part of the optical system along with the electronics system located on the transceiver printed circuit board (PCB). Cooling fins are located on the PCB to minimize heat buildup and reduce lamp temperature thus extending the lamp life. Calibration access slot is provided on the transceiver to allow for ease of adjustment to the transceiver without removing the system cover during operation. The transceiver also has a desiccant cartridge chamber for maintaining proper instrument humidity. The chamber also provides a means for insertion of an external span cell for conducting functional response checks. Compressed air is provided to the transceiver housing to allow for the continuous purging of filtered air throughout the transceiver housing.

The J-box is a terminal interface unit located between the transceiver and the LS710. The J-box houses the serial data acquisition board, pressure gage and regulator, and lamp power supply board. External AC power is connected to the transceiver at the J-box.

The LS710 Control Unit is a microprocessor-based instrument that provides control, monitoring, calculation, and diagnostic functions for the RM4200 in-situ monitor. The LS710 is typically located in a control room some distance from the transceiver and J-box. It produces all system outputs that are displayed on the front panel on the unit. The LS710 also provides analog/digital output connection for recorder output and RS232 interface.

1.2 Specifications

- Transceiver Ambient Temperature - 30.4° to + 60°C
- Process Gas Temperature + 51.7° to + 426.7°C
- Process Gas Pressure 25" H_2O (nominal)

1.2.1 System Accuracy (*)

• Calibration Error	+/- 5% of Calibration value
• Zero Drift (2-hour)	+/- 2% of Full Scale
• Zero Drift (24-hour)	+/- 2% of Full Scale
• Calibration Drift (2-hour)	+/- 2% of Full Scale
• Calibration Drift (24-hour)	+/- 2.5% of Full Scale
• Response Time	less than 4 minutes
• Operational Period	3 months typical
• Accuracy	within 10% RA (40CFR60 Appendix B, PS1)

(*) *The above specifications include the effects of (1) optical contamination over the defined operational period; (2) lamp degradation over operational period; (3) opacity and other process gaseous compounds in the process gas.*

1.2.2 Calibration

Automatic, on-stack zero and span calibration at selectable intervals to 24 hours, with manual activation at any time. Additional diagnostics include:

- Manual switch controls and LED indicators for Zero, Span, shutter, and dynamic calibration

1.2.3 Optical System

Light Source: Deuterium lamp, hollow cathode discharge

1.2.4 Physical Dimensions

Transceiver	15" L x 12" W x 10" H, 50 pounds
J-Box	12" W x 14" H x 6" D, 33 pounds
Probe Assembly	3.5" OD x 6' length, with 12" L x 7.5" W x 9" H adapter flange, 30 pounds, standard

2.0 LS710 : INTRODUCTION AND OPERATING CONFIGURATIONS

The LS710 Control Unit is a microprocessor-based instrument that provides control, monitoring, calculation, and diagnostic functions for the RM4200 in-situ monitor. The LS710 is typically located in a control room some distance from the transceiver and J-box. It produces all system outputs that are displayed on the front panel on the unit. The LS710 also provides analog/digital output connection for recorder output and RS232 interface.

Two twisted, shielded pairs of wires interconnected to the J-Box provide the serial communication link between the LS710 and the RM4200 instrument. The serial data acquisition circuit board (SDA) in the RM4200 provides an RS422 link that can be net-worked between additional CEMs or COMs. The communication network enables the LS710 to control calibration and monitor instrument status and measurements from the RM4200.

LS710 instrument configurations vary according to the type and number of instruments being monitored. In this application, each J-Box accepts one auxiliary input which is scaled and displayed or logged on the LS710. Any linear 4 to 20 mA signal is acceptable (including those from oxygen analyzers and velocity monitors).

The LS710 outputs include (1) a total of six contact closures for zero, span, high alarm, low alarm, process control, and fault; (2) eight 4-20 mA outputs that allows assignment of any measured or calculated parameter of the LS710, (3) and RS232 interface to transmit ASCII data, and (4) externally mounted current isolators (optional).

2.1 Configuration

The LS710 displays measurement/calculation data and status messages. The front panel controls allow the operator to access any data and to configure operating parameters, as required. These include automated calibration intervals, alarm limits, outputs, averaging periods, alarm reset conditions, etc.

The LS710 provides automatic and manual control zero/span calibration checks for the RM4200 , Automatic calibrations are performed at operator selected intervals from one to 24 hours. Manual calibrations can be initiated at any time, using the Check Cal button on the front panel. Automatic span checks are performed through span devices internal to the RM4200 instrument.

Calibrations performed on the RM4200 allow for span corrections by adjusting the gain of each instrument to agree with the value of the specified calibration source. If the gain correction exceeds a specified value, the SPAN ERR message is displayed on the LS710 front panel.

The LS710 provides instrument (RM4200) and self diagnostics to alert the user of "out-of-limit" conditions. Fault/Upset messages notify the user when LS710 or instrument malfunctions occur or when routine maintenance is required. Each circuit board includes an LED that illuminates to indicate a problem with a system board.

2.2 Specifications

Ambient Operating Temperature	+ 40° to 100°F
Analog Outputs	8 analog outputs with a common source
Digital Output	RS232 transmits ASCII data in data logger format
Computer Interface	Direct with Measurement Controls Computer System
Data Logger	RS232 output or LS710 calculation can be assigned
Contact Closure	6 dry contacts rated at 28 Vdc maximum at 2 amps
Z/S Correction	Opacity is corrected for zero and span
Calibration	Manual or automatic (operator selected intervals)
Configuration	Factory configured non-volatile memory
Installation	automatic processing of J-Box transmitted signals
Interface	Barrier terminal block
Power Requirements	25 watts typical, 90 to 130 VAC
Current Isolator	4-20 mA stand alone single channel isolator (optional)
Physical	19" rack mount, 3-1/2" high, 12" deep; 10 pounds

2.3 Operating Configurations

The LS710 is designed and configured to be operational after installation and power-up. Some minor changes in configuration may, however, be required. The front panel controls indicators provide information for maintenance and status messages about calibration settings. A minimum number of entries are required for access to all instrument parameters and selectable functions.

2.3.1 Front Panel Display

Multi-line alphanumeric readouts provide both measurement and status displays. During normal operation, both readout lines may be used to repeatedly cycle through all measurements available to the unit. If an anomaly is detected, the measurement values on the lower readout are moved to and sequenced with those on the upper readout to allow the lower readout to display the anomaly. Therefore, the alarm or fault indicators are displayed on the lower readout at a rate of about one second each.

2.3.2 Configuration Mode

The configuration mode allows the user to display and modify instrument parameters. Parameter changes can be made while in the transaction mode by pressing the SELECT button on the panel to enter the configuration mode. Parameters can be modified in the configuration mode by using the SELECT, UP or DOWN buttons. The unit automatically exits the configuration mode and returns to the display mode in about 5 minutes after the last panel button has been pressed or until the EXIT button is pressed.

2.3.3 Menu Selection

All parameter configurations are entered by accessing the configuration menu sub menu for the desired parameter. Press the SELECT button on the panel to display the configuration menu from the measurement display mode. Press an UP or DOWN button to scroll sequentially through a list of all sub menus in the configuration menu, one at a time. To select a sub menu, press the select button when the cursor is next to the desired entry.

2.3.4 Data Entry

Each sub menu is unique and contains parameter choice lists or numeric entries related to an instrument or control function. Each time you move to a new sub menu, the cursor begins at the top of the menu. Use the UP and DOWN buttons to select a parameter and use the SELECT key to move to the entry field for that parameter.

The UP button is used to change accessible limits, ranges, calibration factors, output assignments, parameters, etc. Numeric data can be entered into the system by incrementing from zero to nine in each of the four available integer digits, using the SELECT button to increment to the next digit. When the desired numerical value is displayed, press the ENTER button to enter the new value and move to the next entry field, if one exists. Pressing the EXIT or PG button from an entry field without first pressing the ENTER button will leave the field without changing the entry. Once all the fields for a parameter have been changed to the desired values, use the PG button to exit the field entry and place the cursor on the next parameter.

2.3.5 J-Box Controls

J-Box controls provide a means of monitoring the RM4200 analog output(s) and LS710 controls. Test points (TP) at the J-Box can be used to measure approximate transceiver zero and span values. LS710 controls can be overridden with the J-Box in the MANUAL position. In the manual mode, all channels can be verified for zero (with the ZERO switch moved toward the LED) and for Span (with the Span switch moved toward the LED). Cylinder gas instrument response can also be monitored from the J-Box by activating the GAS switch, and monitoring the TP response value. With the MANUAL switch in the auto mode, all controls are provided from the LS710.

2.3.6 E-O Calibration Sequence

The Electro-Optical (E-O) calibration is configured through the front panel of the LS710. Sequence setup includes calibration intervals (INTVL) and time reference until the following calibration sequence (NEXT). Each calibration sequence calculates a zero correction to cancel out any zero calibration drift that may have occurred since the last calibration. Manual calibration checks are initiated by pressing the START button from the CALIBRATION menu of the LS710. The entire sequence is completed in less than 10 minutes.

The calibration sequence follows the following steps:

CAL PURGE	Zero solenoids activated and system purge with compressed air initiated
ZERO CAL	System zero; average values over zero period are sent to RS232 output
SPAN CAL	Calculated span is process through normal routines for display and record

For a complete breakdown of the configuration descriptions and worksheets for the LS710, pleas refer to Appendix A of the document. A listing with setup examples for each configuration menu on the LS710 is provided.

2.4 GENERAL SETUP and OPERATING PROCEDURES

The following procedures must be initiated to set up the LS710 menu when the unit is powered up for the first time and whenever a change has been made in the process-mounted instruments. The operator must be familiar with the LS710 menu configurations, including menus and sub menus, increment buttons, calibration control, and upset and fault lights, before attempting the setup procedure.

2.4.1 Unlock the Front Panel

1 Be certain that the ACCESS entry is set to OPEN.

NOTE: Whenever power is reapplied to the LS710, ACCESS entry will be LOCKED. To change most parameters, the front panel must be opened, using the following procedure:

3. Verify that the panel is locked. If attempting to open the panel when is already open, the panel will become locked. Select the menu PANEL. If the ACCESS entry is OPEN, no further action is required.

4. If the ACCESS entry is LOCKED, reset to OPEN with the SELECT key..

2.4.2 LS710 Set Up

1. Use the HOURS sub menu to set the current hour of day (0-23). It must be entered when the power is applied to the system.

2 Use the MIN sub menu to set the current minute of the hour (0-59). It must be entered when power is applied to the system.

3. Use the MONTH sub menu to set the current month (1-12). It must be entered when power is applied to the system.

4. Use the DAY sub menu to set the current day of month (1-31). It must be entered when power is applied to the system.

5. Use the SITE sub menu to set the Site ID printed at top of each page, if RS232 output is selected.

6. Use the UNIT sub menu to set the Unit number printed on top of each page, if RS232 output is selected.

7. Other sub menus are available consisting of TEMP, RECORDER, AUX and AUX FS. Refer to Page 2-15 in Appendix A for instructions on the use of these sub menus.

2.4.3 Opacity Menu Set Up

1. In the OPACITY Configuration MENU, use the following sub menus to set up the LS710:

Z COMP - Displays the zero compensation for opacity.
OP S - Displays the E-O Span value for opacity (S Values.)
OP G - The opacity gain factor used to trim out variations from instrument to instrument.
OP DS - Defines the span drift error from the last calibration.
OP DZ - Defines the zero drift error from the last calibration.
OPLR - Sets the optical path length ratio for an opacity monitor.
SPAN OP - Sets the opacity span cell value.

2.4.4 Diagnostics Menu Set Up

The DIAGNOSTICS Menu allows the user to identify the software version of the LS710 (V/R sub menu). Additionally, the total number of hours that the LS710 has been in operation can be determined (HOURS sub menu).

2.4.5 Channel Names Menu

This Menu will allow the user to select the monitored, calculated and reported values by the LS710. The user can select from the following channel names in the CHANNEL NAMES Menu:

CO PPM -	CO measurement
CO_2 PERCENT-	CO_2 measurement
H_2O PERCENT-	H_2O measurement
O_2 PERCENT-	O_2 measurement
OPACITY % -	Opacity measurement
OPAC COMB % -	Combined opacity of all non-zero instruments
DENSITY -	Optical Density measurement
VELOCITY -	Velocity measurement through auxiliary input
NO PPM -	NO measurement
NO MASS -	NO #/MBTU (GCM) calculated using measurement and fuel factors
SO_2 PPM -	SO_2 measurement
SO_2 MASS -	SO_2 #/MBTU or GCM calculated using measurement and fuel factors
TEMP -	Temperature measurement
AUXILIARY -	Auxiliary measurement

Following each channel selected, the operator will select options in the following sub menus:

RESET -	Sets the alarm handling parameters. LATCH entry holds an alarm in the active status until YES is entered. YES acknowledges and clears the alarm. AUTO causes the alarm to reset automatically when the value falls below the limit. An alarm is activated any time a value exceeds the high or low limit.
ALARM -	Selects the processing for the alarm signal. OFF deactivates the alarm processor. 5-SEC uses the 5-second instantaneous values as the alarm variable. AVG uses the average values (averaged over the time period for a specific channel menu, AVG entry) as the alarm variable. Both 5-SEC and AVG activate the alarm processor.

HI LIM -	Sets the upper alarm limit value. The HI-LIM range for OPACITY is 0-100% (or 20% if the technician wishes to be alerted of a potential exceedence).
LO LIM -	Sets the lower alarm limit value. The LO-LIM range for OPACITY is 0-100%
COLUMN -	Sets the RS232 column at which the channel value is to be printed. An entry of zero omits the measurements from printing. Columns 1 through 28 can be selected. Each column is 6 characters long.
DISPLAY -	Controls the measurements displayed on the front panel. When 0 is entered, the measurement for the channel is not displayed.
AVG -	Sets the time over which measurements for the channel are to be averaged. The time can be set for 1 to 60 minutes. AVG also sets the printing rate for a channel.
RANGE -	Sets the full-scale analog range for trend recording or process control for a channel.

Additionally, the user can select O_2 MAX and O_2 MIN if an oxygen analyzer is used.

3.0 RM4200 ; INTRODUCTION AND OPERATING CONFIGURATIONS

This section describes basic steps for operation, calibration, and maintenance of the RM4200. The operator must have an understanding of the basic operating procedures for the LS710, as described in *Section 2.0* of this standard operation procedure, before attempting to operate the RM4200.

The RM4200 has two control modes - manual and automatic. The manual mode, used during installation, maintenance calibration, and servicing, is controlled by the switches located on the Serial Data Acquisition board in the J-Box. These switches control the AUTO/MANUAL mode, zero cal solenoid, gas cal solenoid, internal span cell, and the SO_2 shutter position. The automatic mode is used for normal operation and data collection of the RM4200 and is controlled by the LS710.

3.1 OPERATING PROCEDURES

In general, the operator must be familiar with the following LS710 parameters/menu headings for proper operation. Basic RM4200 setup (results displayed on the LS710 front panel):

J-Box selection (1-4 corresponding to the SDA board jumpers)
INSTRUMENT Full Scale (can be 05-100%)
PANEL UNITS (%)
PANEL STATUS (YES)
E-O CALIB Z(ero) for OP

Calibration verification and diagnostics:

PANEL TYPE (OP for RM4200)
PANEL REF
E-O CALIB TYPE
E-O CALIB INTVL, NEXT

E-O CALIB CONT
E-O CALIB S(pan) for OP - results of last cal cycle
INSTRUMENT S(pan) for OP (reference value used in E/O cal)

Process monitoring and reporting:

LS710 SETUP - hours, minute, site, unit, and DAC
OP - Opacity Value of last average period.

3.1.1 System Parameter Setup

This section contains a setup of the parameters for system operation that do not affect or are not essential for calibration. Menu parameters pertinent to calibration are discussed in the calibration section of the RM4200 system manual.

1. Enter the calibration intervals and desired time of day for automatic calibrations. Access INTVL sub menu and increment to the desired calibration interval (e.g. 23 hours). Access the NEXT sub menu and enter the number of minutes from the present time to the desired time of day for the next automatic calibration.

2. Set up the measurement channels. Enter values for all appropriate sub menus (e.g. ALARM, HI LIM, LO LIM, etc.) for each measurement channel (e.g. OP CHAN, etc.). NOTE: To include a channel in the operator's (short) menu, the ALARM sub menu must be incremented to 5-SEC or AVG.

   Verify that each channel has a different column number, if the LS710 uses the RS232 port for a printer or data acquisition system. No two channels can have the same column.

   Go to Step 6 if an oxygen analyzer is not used with the installation.

   If the LS710 is not connected to a printer, skip to Step 6.

4. Enter HOURS and MIN under the LS710 SETUP heading.

5. Enter the printer parameters in the PRINTER heading.

NOTES: If using a data acquisition system, set the MARGIN to zero and the WIDTH to 12; Set EXCESS to INCLD; The number of columns must match the number of measurement channels. Each COLUMN is equal to a measurement output; e.g. OP %, etc.

6. *Enter SITE and UNIT numbers under the LS710 SETUP heading, if desired to print the numbers with the printer output.*

3.2 MAINTENANCE

This section provides a guide to scheduled maintenance operations such as inspection, cleaning, and various adjustments. The calibration subsection includes procedures for the adjustment of parameters used to maintain system operation within desired specifications.

For diagnostic procedures and other non-routine maintenance activities beyond the scope of this SOP, refer to the manual.

3.2.1 Visual Inspection

1. Release the six latches that secure the transceiver to the probe assembly and swing the transceiver to the side on its hinges.

2. Look into the transceiver through the front lens to confirm that the transceiver optics are reasonably free of contamination.

3. Clean the outside surface of the transceiver lens with a clean, dry lens cloth.

4. Swing the transceiver back into position. Check that the transceiver is properly aligned on the alignment pins opposite the hinged side. Secure the six latches.

3.3 FIELD TEST PROCEDURES

The following procedures can be used for initial instrument start-up and for instrument verification at any time. For a detailed step by step procedure required for each of the listed field methods, reference to the *RM4200 Instruction Manual Section 4* is required. The individual detail required for each procedure, preclude the necessity of duplication in this general operating procedure and use the manufacturers manual as the primary reference. The complexity and interactive nature of the following procedures require that an operator have RM4200 training and experience before proceeding.

These procedures must be confirmed during the initial setup:

- *Determining Zero Response*
- *Transceiver Test and Electronic Alignment*
- *Determining Span Response*
- *Neutral Density Filter Calibration*

3.4 CALIBRATION PROCEDURES

The following assumptions are made prior to performing gas calibrations; the transceiver test and electronic alignment have been completed and the optimum zero gas flow has been determined for the installed system. The operator must be familiar with the LS710 procedures and parameters before beginning this procedure.

3.4.1 Verification of Internal Span (Electronic/Optical)

1. Determine the internal span cell value on the RM4200 factory data sheet.
2. Initiate the E-O CALIB sequence on the LS710 and allow the sequence to complete.
3. Record the span value in the E-O heading (OP S sub menu).
4. Clear the SPAN ERR by entering ALL in the DIAGNOSTICS heading, CLEAR sub menu.
5. Repeat steps 2 through 4 an additional four times.
6. Enter the OP internal span value, averaged from step 5 in the INSTRUMENT heading, SPAN SD sub menu.
7. Repeat steps 2 through 4 to verify that there is no SPAN ERR message and that no faults occur.

REFERENCES

LS710 Control Unit, Instruction Manual, Lear Siegler Measurement Controls Corporation, 80250383, 1993.

RM4200 Visible Emissions Analyzer, Instruction Manual, Lear Siegler Measurement Controls Corporation, 1993.

APPENDIX A

Configurations, Operating Information and Worksheets

CHAPTER 2 - OPERATING INFORMATION AND CONFIGURATIONS

2.0 OPERATING CONFIGURATIONS

The LS710 is designed and configured to be operational after installation and power-up. However, some minor changes in configuration may be required. The front panel controls provides the means to make changes in the instrument configuration as needed for a site. These controls also provide information for maintenance and status messages about calibration settings. A minimum number of entries are required for access to all instrument parameters and selectable functions, making the LS710 easy to use. The controls provide a means of maintaining the process-mounted instruments.

2.1 FRONT PANEL DISPLAY

Multi-line alphanumeric readouts provides both measurement and status displays. During normal operation, the readout lines are used to display all measurements available to the unit. If an anomaly is detected the status line will display the anomaly. For example, if an alarm set point is exceeded, the alarm type is displayed on the status line. If, in addition to the alarm, a fault and/or warning occurs, the fault/warning type is also displayed on the status line. The alarm and fault messages are cycled on the status line at a rate of about one second each.

2.2 CONFIGURATION MODE

The configuration mode allows you to display and modify instrument parameters. Press the SELECT button on the panel to enter the configuration mode. Parameters can be changed while in the configuration mode, by using the SELECT, UP or DOWN buttons. The unit automatically exits the configuration mode and returns to the display mode about five minutes after the last panel button has been pressed or until the EXIT button is pressed while not in a field entry. The exit button returns to the panel to the display mode.

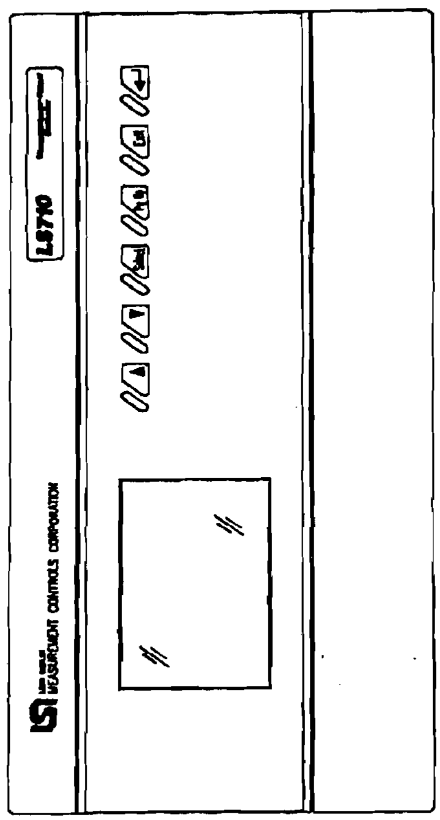

Figure 2-1

2.2.1 MENU SELECTION

All parameter configurations are entered by accessing the configuration menu and sub menu for the desired parameter. Press the SELECT button on the panel to display the configuration menu from the measurement display mode. Press an UP or DOWN button to scroll sequentially through a list of all sub menus in the configuration menu, one at a time. To select a sub menu, press the select button when the cursor is next to the desired entry.

2.2.2 MOVING TO ENTRY FIELDS

Each sub menu is unique and contains parameter choice lists or numeric entries related to an instrument or control function. Each time you move to a new sub menu, the cursor begins at the top of the menu. Use the UP and DOWN buttons to select a parameter and use the SELECT key to move to the entry fields for that parameter.

2.2.2 NUMERIC DATA ENTRY

The UP button is used to change accessible limits, ranges, calibration factors, output assignments, parameters, etc. Numeric data can be entered into the system by incrementing from zero to nine in each of the four available integer digits, using the SELECT button to increment to the next digit. When the desired numeric value is displayed, press the ENTER button to enter the new value and move to the next entry field if one exists. Pressing the EXIT or PG button from an entry field without first pressing the ENTER button will leave the field without changing the entry. Once all fields for a parameter have been changed to the desired values, use the PG button to exit field entry and place the cursor on the next parameter. Pressing EXIT from a menu selection(not a field entry) returns to the measurement display screen and pressing PG button from a menu selection returns to the configuration menu.

2.2.3 CHOICE SELECTION DATA ENTRY

Selecting an entry that is a list of choices is very similar to numeric entry. Once a choice field has been selected the UP button will select the next choice in the list. When the desired choice is displayed, press the ENTER button to finalize the choice. As with numeric entry, pressing the EXIT or PG button will leave the entry field with the original choice unchanged. Pressing EXIT from a menu selection(not a field entry) returns to the measurement display screen and pressing PG button from a menu selection returns to the configuration menu.

2.3 J BOX CONTROLS

The J box (junction box) controls allow monitoring process-mounted instrument analog outputs and the LS710 controls. Test points can be used to measure the approximate transceiver zero and span values. Controls from the LS710 can be overridden by placing the MANUAL switch on the SDA board in the J box, to the manual mode. Manual mode also enables the manual switches on the SDA board. In the manual mode, verification that all channels read zero can be made by moving the ZERO switch toward the LED and monitoring the measurement test points.

Similarly, move the SPAN and ZERO switches toward the LEDs, to verify span outputs. If a gas bottle is connected to the process-mounted instruments, instrument response can be verified at the SDA board or transceiver test points by activating the GAS switch. To do that, position both the SPAN and ZERO switches away from the LED. See Section 5 for more information about manual gas calibration. When the MANUAL switch is in auto mode, the LED next to each switch indicates the command from the LS710. The switches have control of the LEDs and resulting command only when the J box is in the manual mode.

2.4 E-O CALIBRATION SEQUENCE

The E-O (Electro/Optical) calibration sequence is the same whether activated manually or automatically. The automatic calibration system is configured through the front panel under the CALIBRATION menu. Calibration intervals are configured under the INTVL entry. The NEXT entry sets the time until the next calibration, in minutes. NEXT also indicates when the next calibration will occur. Each calibration sequence calculates a zero correction to cancel out any zero drift that might have occurred since the last calibration. Manual calibration is initiated by selecting START from the CALIBRATION menu and entering YES.

The start of a calibration sequence is indicated by the message CAL PURGE, displayed on the status line. The process control contact closes, zero solenoids are activated and diagnostics are performed during CAL PURGE.

After one minute of purge, ZERO CAL appears on the status line and the zero contact closes. The current loops output the ZERO CAL results unless SH (sample and hold) has been activated. At the completion of ZERO CAL, both the values averaged over the zero period, and the % error of span, are sent to the RS232 output and all zero correction factors are updated.

ZERO ERR is displayed on the status line when any of the zero values fall outside their specified limits. The channel that is out of tolerance can be determined by reviewing the Z values under the individual instrument menu(i.e. EX4700A, SM8100A, OPACITY) for each instrument installed.

After two minutes of ZERO CAL, SPAN CAL appears on the status line, the zero contact opens, and the span contact closes. The current loops output the SPAN CAL results unless SH (sample and hold) has been activated. During the entire span cycle, the calculated span is processed through normal routines to be displayed and recorded. All measurement and calculated alarms not pertaining to calibration are disabled. All interference table gains are set to zero. The temperature is set to 75°F with 760 mm mercury barometer. At the completion of SPAN CAL, both the values averaged over the SPAN CAL period, and the % error of span, are sent to the RS232 output, followed by the current gain settings.

After the two minute SPAN CAL, TEMP CHECK appears on the status line and the span contact opens. During TEMP CHECK, the E-O calibration and zero solenoid commands are removed to allow the process-mounted instruments to return to process sample conditions and process temperature is placed on the strip chart recorder output. During this one minute period, the recorder pens reflect temperature readings based on temperature full scale. After one minute of TEMP CHECK, the calibration sequence is completed, the status line returns to normal operation, and the process control contact opens.

2.5 DYNAMIC GAS CALIBRATION SEQUENCE

The gas calibration sequence is similar to the E-O calibration sequence. The major differences is in the use of standard gases, stack pressure and stack temperature. The standard gas values are entered under the individual instrument menus(i.e. EX4700A, SM8100A), XX C entry (where XX denotes the gas concentration, CO, NO, etc.). Gas calibration can be selected instead of E-O calibration by selecting GAS under the E-O CALIB Configuration Menu, TYPE entry.

ZERO ERR is displayed after calibration whenever any zero is outside the specified tolerance. GAS ERR is displayed, after calibration, any time either measured concentration falls outside the named calibration gas concentration by more than a prescribed value.

If the gas calibration results are within the prescribed value, the gain under the GAS CALIB Configuration Menu, XX G entry is changed as required to re calibrate the measurement(s). The choices under the E-O CALIB Configuration Menu, TYPE are E-O and GAS. If GAS is selected, gas calibration is performed instead of E-O calibration, following the same sequence at the interval selected under the E-O CALIB Configuration Menu. To return to E-O calibration, E-O must be entered under the E-O CALIB Configuration Menu, TYPE entry.

The Configuration Descriptions and Worksheets list and describe all sub menus in the configuration menu. The configuration notes column provides a place for the operator to document site specific configuration. Where there is space for only one entry, the entry is not instrument specific and therefore applies to all instruments, except in systems including an EX4700A. The EX4700A must be on either J box 1 or 2, therefore, the information is instrument specific to the EX4700A.

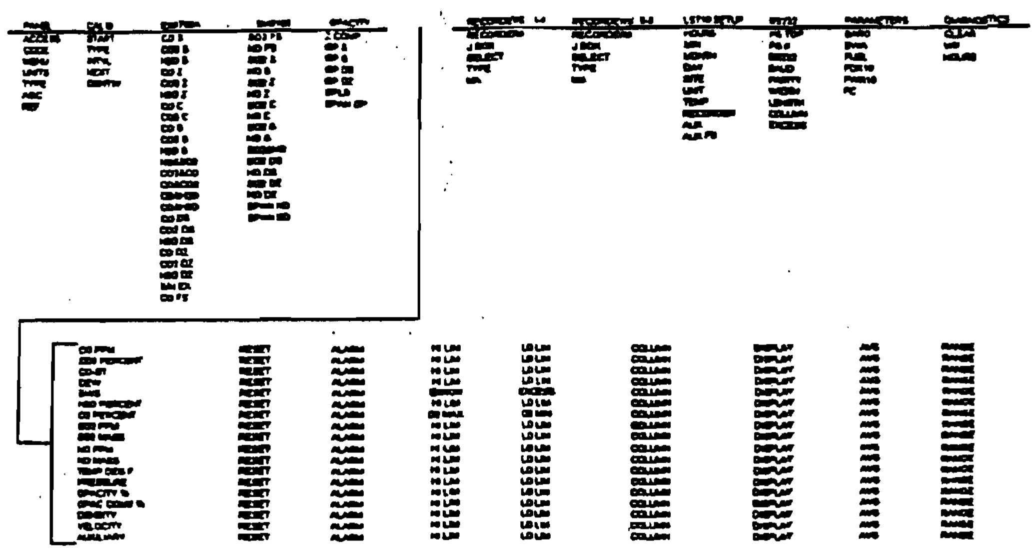

Figure 2-2

CONFIGURATION DESCRIPTIONS AND WORKSHEETS

CONFIGURATION MENU: PANEL

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
ACCESS	(D.O.)	LOCK/OPEN				
CODE	(E.N.)	0-9999				
MENU	(S)	OPER/SETUP				
UNITS	(S)	ENG/ENGAVG/MA/CGS/CGS AVG				
TYPE	(D.O.)	EX/MC/SO2/NO				
AGC	(S)	1-30				
REF	(S)	1-30				

(D.O.) = DISPLAY ONLY (S) = SELECT (E.N.) = ENTER NUMBER
(CGS) = Centimeters/Grams/Seconds, indicates metric units

DESCRIPTION:

PANEL: Access to any entry under the PANEL menu can be made when the ACCESS entry is set to OPEN.

ACCESS Displays the current status of the front panel, OPEN or LOCK.

CODE A code is used to access certain parameters. Enter 3300 to change ACCESS to OPEN. Enter the code again to change ACCESS to LOCK.

MENU Controls the display of instrument menus. If OPER is selected, sub menus will not display or allow entry of any data for an instrument that is not connected and communicating. If SETUP is selected, all entry fields are available for data entry regardless of the instruments connected. Once the complete system is in place and operating, the most efficient setting is OPER. After five minutes of no activity on the keyboard the LS710 will automatically revert to the OPER setting.

UNITS Controls the display units. ENG displays 5-second English units; ENGAVG displays average English units, averaged over the period selected under each channel. MA displays process-mounted instrument output currents, where applicable. CGS(Centimeters/Grams/Seconds, indicates metric units) and CGSAV displays metric 5-sec and average data.

TYPE Indicates the instrument type for the selected J box (EX for EX4700A $CO/CO_2/H_2O$ Analyzers, MC for opacity monitors, and SO_2 or NO for SM8100A SO_2/NO Analyzers, depending on the position of the sequential shutter in the SM8100A transceiver). If an instrument was connected and communicating but has become unavailable, a NA will follow the type to indicate that instrument is Not Active.

AGC AGC is a reading of automatic gain control current used for EX4700A Analyzers only.

REF REF is an indicator of the electro-optical condition of a process- mounted instrument.

CONFIGURATION MENU: CALIBRATION

SUB MENU		INCREMENT	CONFIGURATION 1	2	3	4
START	(S)	YES/NO	____			
TYPE	(S)	E-O/GAS	____			
INTVL	(E.N.)	0-24 hours	____			
NEXT	(E.N.)	1-1440 minutes	____			
CONTIN	(S)	OFF/ZERO/SPAN/OUT	____	____	____	____

(D.O.) = DISPLAY ONLY (S) = SELECT (E.N.) = ENTER NUMBER

DESCRIPTION:

CALIBRATION: To change any item under this Menu, the PANEL menu, ACCESS entry must be set to OPEN. When CALIBRATION settings are completed, change the ACCESS entry to LOCK.

START When YES is selected a manual calibration sequence is initiated.

TYPE means any automatic interval or manual calibrations will use internal span devices. GAS means any automatic interval or manual calibrations will use externally connected gas bottles and may correct gain values.

NOTE Opacity monitors calibrate regardless of which type of calibration is selected(E-O or GAS) but will always use internal zero and span devices.

INTVL Allows selection of how often process-mounted instruments are put into automatic E-O calibration. Use the increment buttons, to select an interval from 0 to 24 hours. A zero entry eliminates automatic calibrations.

NEXT indicates the time until the next automatic calibration. Synchronize the start of the next calibration with the time of day by manually entering the appropriate time delay. (The intervals between automatic calibrations are determined by the INTVL entry.) The time entered can be from 1 to 1440 minutes (24 hours). This parameter cannot be changed during a calibration or when INTVL is set to zero.

For example, if you want calibrations to occur each day at 9:00 a.m., then enter the value, in minutes, from the current time until 9:00 a.m. in the NEXT entry.

CONTIN Selects a continuous ZERO or SPAN calibration. Once ZERO or SPAN is entered, the calibration continues until OFF is entered to end it. If TYPE in this menu is selected as E-O and CONTIN SPAN is selected then a continuous E-O span will result. If TYPE in this menu is selected as GAS and CONTIN SPAN is selected then a continuous GAS span will result. OUT is used to identify an out-of-service instrument. Calibration information does not print if the instrument is OUT of service.

CONFIGURATION MENU: EX4700A

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
CO S	(D.O.)		____	____		
CO_2 S	(D.O.)		____	____		
H20 S	(D.O.)		____	____		
CO Z	(E.N.)	0-24.00	____	____		
CO_2 Z	(E.N.)	0-24.00	____	____		
H_2O Z	(E.N.)	0-24.00	____	____		
CO C	(E.N.)	100-5000	____	____		
CO_2 C	(E.N.)	1.0-20.0	____	____		
CO G	(E.N.)	0-2.00	____	____		
CO_2 G	(E.N.)	0-2.00	____	____		
H_2O G	(E.N.)	0-2.00	____	____		
CO_2 & CO	(E.N.)	0-2.00	____	____		
CO & CO_2	(E.N.)	0-2.00	____	____		
CD & H_2O	(E.N.)	0-2.00	____	____		
CO & H_2O	(E.N.)	0-2.00	____	____		
CO DS	(D.O.)		____	____		
CO_2 DS	(D.O.)		____	____		
H_2O DS	(D.O.)		____	____		
CO DZ	(D.O.)		____	____		
CO_2 DZ	(D.O.)		____	____		
H_2O DZ	(D.O.)		____	____		
S/N EX	(D.O)	0-999	____	____		
CO FS	(E.N.)	50-5000	____	____		

(E.N.) = ENTER NUMBER (S) = SELECT (D.O.) = DISPLAY ONLY (CD) = CO_2

DESCRIPTION:

EX4700A: To change items under this menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK entry after the settings are completed.

XX S Displays the last E-O span value for measurement XX, which can be (S values) CO, CO_2, etc.

XX Z Displays the zero offset value for measurement XX, which can be (Z values) CO, etc.

XX C Sets the concentration of NBS traceable standard gas (taken from (C values) the from supplier's cylinder tag) for gas XX, which can be CO, CO_2, etc.

CONFIGURATION MENU: EX4700A (continued)

DESCRIPTION:

XX G	Defines the gain factors used to trim out variations from instrument to instrument. The factors can be manipulated manually or are automatically adjusted during gas calibrations.
XX & YY	Defines the gain factor for interference between XX and YY (e.g., CO_2 & CO, etc.).
XX DS	Define the span drift error from the last calibration.
XX DZ	Define the zero drift error from the last calibration.
S/N EX	A display of the EX4700A calibration curve serial number. If there are no tables entered into the firmware for a particular J-box the display will be -1.
CO FS	Sets the CO full scale value in ppm.

CONFIGURATION MENU: SM8100A

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
SO_2 FS	(E.N.)	20-7500				
NO FS	(E.N.)	75-7500				
SO_2 S	(D.O.)					
NO S	(D.O.)					
SO_2 Z	(E.N.)	0-89.99				
NO Z	(E.N.)	0-89.99				
SO_2 C	(E.N.)	0-7500				
NO C	(E.N.)	0-7500				
SO_2 G	(E.N.)	0-2.00				
NO G	(E.N.)	0-2.00				
NO & SO_2	(E.N.)	0-2.00				
SO_2 DS	(D.O.)					
NO DS	(D.O.)					
O_2 DS	(D.O.)					
SO_2 DZ	(D.O.)					
NO DZ	(D.O.)					
O_2 DZ	(D.O.)					
SPAN NO	(E.N.)	0-7500				
SPAN SO	(E.N.)	0-7500				

(NOTE SO = SO_2) (E.N.) = ENTER NUMBER (S) = SELECT (D.O.) = DISPLAY ONLY

DESCRIPTION: SM8100A

The SM8100A menu is used to set parameters specific to the SM8100A SO2/NO analyzer. To change items under this Menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK entry after the settings have been completed.

XX S — Displays the last E-O span value for measurement XX, which can be NO, SO_2.(S values)

XX Z — Displays the zero offset value for measurement XX, which can be NO, SO_2.(Z values)

XX C — Sets the concentration of NBS traceable standard gas (taken from the from supplier's cylinder tag) for gas XX, which can be NO, SO_2. (C values)

XX G — Defines the gain factors used to trim out variations from instrument to instrument. The factors can be manipulated manually or are automatically adjusted during gas calibrations.

NO&SO2 — Defines the gain factor for interference between NO and SO2, SO2 & NO

DS & DZ — Defines the span and zero drift error from the last calibration.

SO_2 FS — Sets the SO_2 full scale value in ppm.

CONFIGURATION MENU: SM8100A (continued)

DESCRIPTION:

NO FS Sets the NO full scale value in ppm.

SPAN NO Sets the NO span cell value.

SPAN SO Sets the SO_2 span cell value.

CONFIGURATION MENU: OPACITY

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
Z COMP	(D.O.)					
OP S	(D.O.)					
OP G	(E.N.)	0 - 2.00				
OP DS	(D.O.)					
OP DZ	(D.O.)					
OPLR	(E.N.)	0.20 - 2.00				
SPAN OP	(E.N.)	0 - 99.9				

(E.N.) = ENTER NUMBER (S) = SELECT (D.O.) = DISPLAY ONLY

DESCRIPTION:

OPACITY: This menu is used to set parameters specific to the Opacity monitor. To change items under this Menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK entry after the settings have been completed.

Z COMP Displays the zero compensation value for opacity.

OP S Displays the last E-O span value for opacity. (S values)

OP G The opacity gain factor used to trim out variations from instrument to instrument.

OP DS Define the span drift error from the last calibration.

OP DZ Define the zero drift error from the last calibration.

OPLR Sets the optical path length ratio for an opacity monitor.

SPAN OP Sets the opacity span cell value.

CONFIGURATION MENU: RECORDER OUTPUT

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
RECORDER#	(D.O.)		1 / 5	2 / 6	3 / 7	4 / 8
J BOX	(E.N.)	1-4	/	/	/	/
SELECT	(S)	Any channel name (see below)	/	/	/	/
TYPE	(S)	5-SEC/AVG/5S-SH/AV-SH	/	/	/	/
MA	(S)	4-20/0-20	/4-20	/4-20	/4-20	/4-20

(E.N.) = ENTER NUMBER (S) = SELECT

DESCRIPTION:

RECORDERS 1-4: To change items under this menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK entry after the settings have been completed. To enable this menu for display, the RECORDER entry under LS710 SETUP must be set to 4 or 8 with a 4 or an 8 analog channel board installed.

RECORDERS 5-8: To change items under this menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK entry after the settings have been completed. To enable this Menu for display, the RECORDER entry under LS710 SETUP must be set to 8 with an 8 channel analog board installed.

J BOX Specifies the J box or instrument that the above RECORDER # will be connected to.

SELECT Assigns a measurement channel designation to a particular RECORDER # channel. Enter the desired channel name: CO/CO_2/CO-ST/H_2O/DEW/BWS/O_2/SO_2/SO_2 M/NO/NO M/TEMP/MMHG/OPAC/CB-OP(OPAC COMB%)/DENS/VEL/AUX/ZERO/ZERO/FS. ZERO and FS(Full Scale) can be entered here for recorder calibration (see Section 5).

TYPE Determines how output data is processed. 5-SEC uses a fundamental 5-second measurement. AVG uses the calculated average measurement. 5S-SH (sample/hold) means the last 5-SEC output is sampled and held through all calibration cycles or any time the instrument is placed in the manual mode. AV-SH means the last averaged output is sampled and held through calibration cycles or any time the instrument is placed in the manual mode.

MA Sets the current loop output to 0-20 mA or 4-20 mA. (Reminder: the eight recorder configuration allows only 4-20 mA output.)

CONFIGURATION MENU: RS232 (continued)

DESCRIPTION:

EXCESS The selection ONLY prints only those measurements/calculations that exceed the specified high alarm level. The selection INCLD prints all measurements/calculations that are configured in the LS710.

CONFIGURATION MENU: PARAMETERS

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
BARO F.S.	(E.N.)	500 - 800 mm mercury				
BWA	(E.N.)	0.01 - 0.05				
FUEL	(S)	ANTH/BITUM/LIQU/OTHER	____			
FDX10	(*)	700 - 2000	____			
FWX10	(*)	700 - 2000	____			
FC	(*)	500 - 4000	____			

(S) = SELECT (D.O.) = DISPLAY ONLY (*) = ENTRY MADE ONLY IF FUEL IS OTHER

DESCRIPTION:

PARAMETERS: To change items under this menu, the PANEL menu, ACCESS entry must be set to OPEN. Set the ACCESS entry to LOCK after changes are completed.

BARO Sets the full scale value for the pressure input sensor.

BWA Sets the ambient moisture in percent H_2O (site average moisture level).

FUEL Causes calculations to use the fuel factors appropriate for the selected fuel; ANTH = anthracite, BITUM = bituminous, LIQU = liquid, and OTHER = uses fuel factors entered below for any other fuel type.

FDX10 FUEL FACTOR (DRY). When entered, the numerical factor displayed, times ten, should equal fuel FD. FDX10 is entered only if FUEL is selected as OTHER.

FWX10 FUEL FACTOR (WET). When entered, the numerical value displayed, times ten, should equal fuel FW. FWX10 is entered only if FUEL is selected as OTHER.

FC FUEL FACTOR (CO_2). When entered, the numerical value displayed should equal fuel F_c. FC is entered only if FUEL is selected as OTHER.

CONFIGURATION MENU: DIAGNOSTICS

SUB MENU		INCREMENT	CONFIGURATION NOTES 1	2	3	4
CLEAR	(S)	YES/NO				
V/R	(D.O.)	5.11				
HOURS	(D.O.)					

(S) = SELECT (D.O.) = DISPLAY ONLY

DESCRIPTION:

DIAGNOSTICS: The CLEAR entry can be accessed when the PANEL menu, ACCESS entry is set to LOCK or OPEN.

CLEAR Sets the diagnostics that are to be cleared. NONE saves faults when the front panel steps to the FAULTS entry. ALL clears all LS710 faults.

V/R Displays the firmware version and revision number of your LS710.

HOURS Displays the total number of hours that the LS710 has been in operation.

CONFIGURATION MENU: Channel Names

CO PPM -	CO measurement
CO_2 PERCENT -	CO_2 measurement
H_2O PERCENT -	H_2O measurement
O_2 PERCENT -	O_2 measurement
OPACITY % -	Opacity measurement
OPAC COMB % -	Combined opacity of all non zero velocity instruments
DENSITY -	Optical density measurement
VELOCITY -	Velocity measurement through auxiliary input
NO PPM -	NO measurement.
NO MASS -	NO #/MBTU (GCM) calculated using measurement and Fuel factors.
SO_2 PPM -	SO_2 measurement.
SO_2 MASS -	SO_2 #/MBTU or GCM calculated using measurement and Fuel factors.
TEMP -	Temperature measurement
AUXILIARY -	Auxiliary measurement

These channels are used as appropriate to the site instruments. Each channel will use entries as described on the worksheets that follow the description.

SUB MENU		INCREMENT
RESET	(S)	LATCH/YES/AUTO
ALARM	(S)	OFF/5-SEC/AVG/
HI LIM	(E.N.)	#.#
LO LIM	(E.N.)	#.#
O_2 MAX	(E.N.)	##.# (Note)
O_2 MIN	(E.N.)	##.# (Note)
COLUMN	(E.N.)	0-28
DISPLAY	(S)	0-30
AVG	(E.N.)	1-61 minutes
RANGE	(E.N.)	####

(E.N.) = ENTER NUMBER (S) = SELECT (D.O.) = DISPLAY ONLY

NOTE This entry only appears with the O2 PERCENT menu. All other channel menus use HI LIM and LO LIM.

CHANNEL: With the exception of RESET, the PANEL menu, ACCESS entry must be set to OPEN for channel entries to be changed. Set the ACCESS entry to LOCK entry after the changes are completed.

DESCRIPTION:

RESET Sets alarm handling parameters. LATCH holds an alarm in the active state until YES is entered. YES acknowledges and clears the alarm. AUTO causes the alarm to reset automatically when the value falls below the limit. An alarm is activated any time a value exceeds the high or low limit. In the case of O_2, an alarm is activated when the O_2 value falls below the O_2 minimum.

CONFIGURATION MENU: Channel Names (continued)

DESCRIPTION:

ALARM	Selects processing for the alarm signal. OFF deactivates the alarm processor. 5-SEC uses 5-second instantaneous values as the alarm variable. AVG uses the average values (averaged over the time period entered for the specific channel menu, AVG entry) as the alarm variable. Both 5-SEC and AVG activate the alarm processor.
HI LIM	Sets the upper alarm limit value. The HI LIM range is 0 to 100% of full scale.
LO LIM	Sets the lower alarm limit value. The LO LIM range is 0 to 100% of full scale.
O_2 MAX	Sets the O_2 high alarm limit value. The O_2 MAX range is 0-30%.
O_2 MIN	Sets the O_2 low alarm limit value. The O_2 MIN range is 0-30%.
COLUMN	Sets the RS232 column at which a channel value is to be printed. An entry of zero omits the measurement from printing. Columns from 1 to 28 can be selected. Each column is six-characters long.
DISPLAY	Controls the measurements displayed on the front panel. When 0 is entered, the measurement for the channel is not displayed. The entered number indicates the display position. The positions are numbered in two columns starting in the upper left hand corner of the display. Numbers 1-15 are the first column and number 16 starts the second column in the upper middle of the display. The bottom line is reserved as a status line.
AVG	Sets the time over which measurements for a channel are to be averaged. The time can be set for 1 to 60 minutes. AVG also sets the printing rate for a channel. For example, an entry of six averages measurements for a channel over a six minute time period and prints the average measurement every six minutes.
RANGE	Sets the full scale analog range for trend recording or process control for a channel.

CONFIGURATION MENU: Channel Names (continued)
CONFIGURATION NOTES:

				INSTRUMENT # 1	2	3	4
CO PPM							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-5000	*			
	LO LIM	(E.N.)	0-5000	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	200-5000				
CO_2 PERCENT							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-20.0	*			
	LO LIM	(E.N.)	0-20.0	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	0-30.0				
H_2O PERCENT							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-60.0	*			
	LO LIM	(E.N.)	0-60.0	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	10.0-50.0				

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

CONFIGURATION MENU: Channel Names (continued)
CONFIGURATION NOTES:

				INSTRUMENT # 1	2	3	4
CO-ST CALC							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-9000	*			
	LO LIM	(E.N.)	0-9000	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	500-9000				
DEW CALC							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0 - 180	*			
	LO LIM	(E.N.)	0 - 180	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	10 - 180				
BWS CALC							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	EXCESS	(E.N.)	0-30	*			
	ERROR	(E.N.)	0-30	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	15.00 - 30.00				

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: ~~Lewis and Clark Co.~~ Air Pollution Control Program

CONFIGURATION MENU: Channel Names (continued)
CONFIGURATION NOTES:

			INSTRUMENT # 1	2	3	4
O_2 PERCENT						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
O2 MAX	(E.N.)	0-30.0	*			
O2 MIN	(E.N.)	0-30.0	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-61 minutes				
RANGE	(E.N.)	1.0-25.0				
SO_2 PPM						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-7500	*			
LO LIM	(E.N.)	0-7500	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-61 minutes				
RANGE	(E.N.)	0-7500				
SO_2 MASS						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-10.00	*			
LO LIM	(E.N.)	0-10.00	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-61 minutes				
RANGE	(E.N.)	0-10.00				

NOTE: Mass calculations are based upon O2 measurement. If O2 measurement is not available for the specified J-box then a calculation based upon CO2 is used. J-box 1 CO2 is used unless the mass measurement is on J-box 1. In this case J-box 2 CO2 is used. When GCS units are selected GCM is calculated. Refer to section 4 for calculations.

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

Replaced Pages:	Dated:

CONFIGURATION MENU: Channel Names (continued)
CONFIGURATION NOTES:

				INSTRUMENT # 1	2	3	4
NO PPM							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-7500	*			
	LO LIM	(E.N.)	0-7500	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	0-7500				
NO MASS							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-10.00	*			
	LO LIM	(E.N.)	0-10.00	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	0-10.00				
TEMP							
	RESET	(S)	LATCH/YES/AUTO	*			
	ALARM	(S)	OFF/5-SEC/AVG	*			
	HI LIM	(E.N.)	0-800	*			
	LO LIM	(E.N.)	0-800	*			
	COLUMN	(E.N.)	0-28				
	DISPLAY	(S)	0-30				
	AVG	(E.N.)	1-61 minutes				
	RANGE	(E.N.)	500-800				

NOTE Mass calculations are based upon O2 measurement. If O2 measurement is not available for the specified J-box then a calculation based upon CO2 is used. J-box 1 CO2 is used unless the mass measurement is on J-box 1. In this case J-box 2 CO2 is used. When CGS(Centimeters/Grams/Seconds) units are selected GCM(Grams per Cubic Meter) is calculated. Refer to section 4 for calculations.

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

CONFIGURATION MENU: Channel Names (continued)
CONFIGURATION NOTES:

			INSTRUMENT # 1	2	3	4
OPACITY						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-100.0	*			
LO LIM	(E.N.)	0-100.0	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-60 minutes				
RANGE	(E.N.)	0-100.0				
OPACITY COMB						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-100.0	*			
LO LIM	(E.N.)	0-100.0	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-60 minutes				
RANGE	(E.N.)	0-100.0				
DENSITY						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-2.0	*			
LO LIM	(E.N.)	0-2.0	*			
COLUMN	(E.N.)	0-28				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-60 minutes				
RANGE	(E.N.)	0.09-1.80				

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

LS710 CONTROLLER — SECTION 2

CONFIGURATION MENU: Channel Names (standard)
CONFIGURATION NOTES:

			Instrument # 1	2	3	4
VELOCITY						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-80.0	*			
LO LIM	(E.N.)	0-80.0	*			
COLUMN	(E.N.)	0-20				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-60 minutes				
RANGE	(E.N.)	0-80.0				
AUXILIARY						
RESET	(S)	LATCH/YES/AUTO	*			
ALARM	(S)	OFF/5-SEC/AVG	*			
HI LIM	(E.N.)	0-999.9	*			
LO LIM	(E.N.)	0-999.9	*			
COLUMN	(E.N.)	0-20				
DISPLAY	(S)	0-30				
AVG	(E.N.)	1-60 minutes				
RANGE	(E.N.)	0-999.9				

*ENTRY EFFECTS ALL INSTRUMENTS
(S) = SELECT (E.N.) = ENTER NUMBER

LEAR SIEGLER MEASUREMENT CONTROLS CORPORATION 80250383 2-27

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: ~~Lewis and Clark~~ Co. Air Pollution Control Program

ATTACHMENT #7

Baghouse Inspection and Maintenance Program

Prepared by
ASARCO, Inc.

January 1996

Replaced Pages:	Dated:

ASARCO, INCORPORATED

EAST HELENA, MONTANA PLANT

BAGHOUSE

INSPECTION & MAINTENANCE

PROGRAM

JANUARY 1996

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I. INTRODUCTION

On August 4, 1995, the Montana Board of Review approved the Department of Environmental Quality (DEQ) Air Quality Division (AQD) State Implementation Plan (SIP) for Lead in the East Helena Area. The control strategy described in the East Helena Lead SIP has been designed to reduce lead emissions from Asarco's East Helena plant and from areas in and around the city of East Helena. A component of the control strategy involves a baghouse inspection and maintenance program to be developed as Attachment #7 in the lead SIP, as required under Section 11 (C).

This program meets all of the requirements of Section II (C) of the SIP, signed August 4, 1995. These requirements include:

1. Procedures for handling bag removal and disposal;
2. Procedures for documenting broken bags by location in order to identify installation or equipment problems and to determine the type of failure (i.e., abrasion or chemical);
3. Requirements for investigating, addressing, and correcting problems in baghouses after the activation of a bag break detector or, for those stacks equipped with COMS, a substantial increase of opacity above normal baseline measurements; and
4. Requirements for inspection and maintenance of the following on a routine basis:
   - (a) Damaged bags;
   - (b) Air leaks;
   - (c) Caking and blinding of bags
   - (d) Proper bag cleaner functioning and cycling;
   - (e) Bag break detectors
   - (f) All moving parts for loose parts and unusual wear; and
   - (g) Fans for wear, material buildup, and corrosion.

Asarco has had a baghouse inspection and maintenance program in place for many years. This inspection and maintenance program has ensured that the numerous baghouses are operating at optimal levels.

As part of the control strategy described above, Asarco will upgrade its existing baghouse inspection and maintenance program through better documentation. This written program has been prepared to address baghouse inspection and maintenance. The program will additionally delineate the necessary procedures, frequencies, responsibilities, and record keeping.

II. BAGHOUSE TYPE and DESCRIPTION

ASARCO currently operates numerous baghouse units throughout the East Helena facility. These baghouses provide ventilation to various processes and material handling operations. There are two distinct baghouse styles used in East Helena: 1) the Pulse-Jet System and 2) the Mechanical Shaker System. The following narrative discusses the characterization of the two baghouse styles.

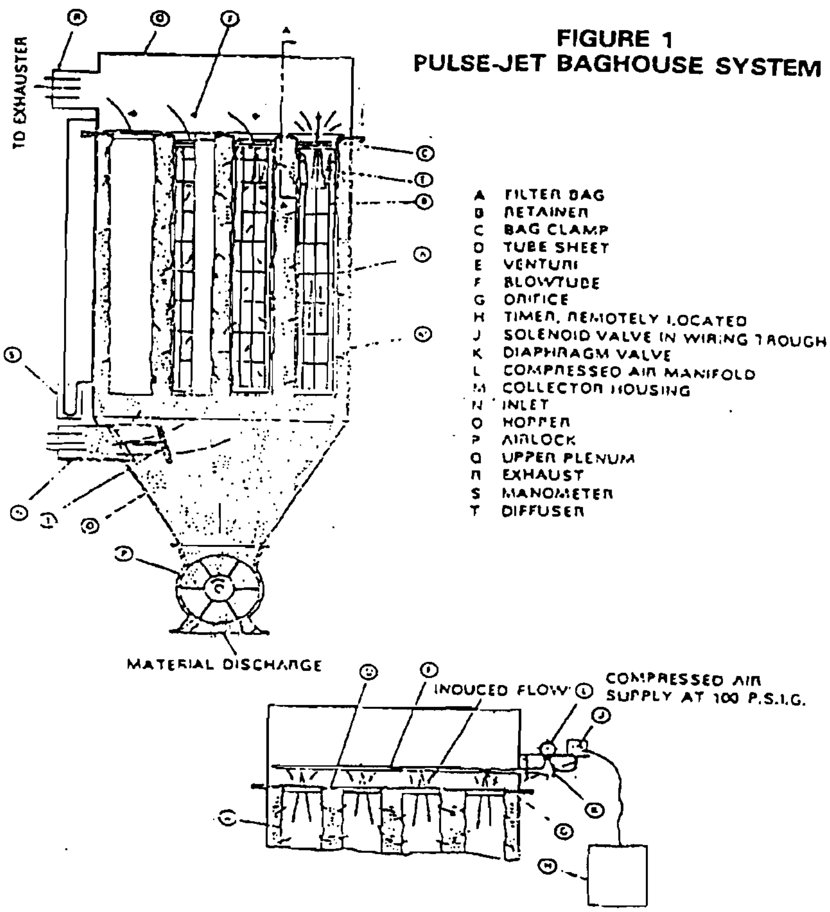
A. PULSE JET SYSTEM

The Pulse-Jet baghouses receive dust laden air that has been vented from specific ventilation systems. This air, under suction or pressure, enters the lower section of the collector (Figure 1). Most of the Pulse-Jet baghouses have a baffle (which works on the same principle as a diffuser) located in the hopper area of the collector, which distributes the air flow as it enters the baghouse. This system decreases the gases velocity and assists in uniform particle dispersion. Basic air flow in this type of baghouse is from the bottom outside of the bag to the inside top of the bag. Particulate remains on the outside of the fabric filter and air, cleaned of particulate, is vented to an exhaust stack. As dust collects on the filter bags, it reduces the bag porosity, resulting in an increase pressure differential across the collector.

Dust remains on the bags exterior until a preset pressure differential is reached thereby triggering a pulse jet cleaning system. At preset intervals, governed by the differential pressure gauge settings, a timer actuates a series of normally closed solenoid valves causing them to open. Diaphragm valves open as a result allowing a momentary in rush of high pressure air (90-110 PSI). The air flows from a compressed air manifold, through a diaphragm valve into a blow-tube, from which it is expelled at a high velocity through a number of strategically placed blow-tube orifices. Air from each orifice induces a secondary airflow, counter to the primary, several times the volume of the cleaning air. The air pulse causes an instantaneous pressure rise on the clean side (inside of the filter bags) which flexes the fabric and causes a momentary reverse flow of air through the filter bags sufficient for cleaning. Since only a fraction of the total filter area of the collector is cleaned at any one instant, continuous flow through the collector at rated capacities is assured.

Through this mechanism, the collected dust is discharged from the bags and falls into the collection hopper. The dust is then

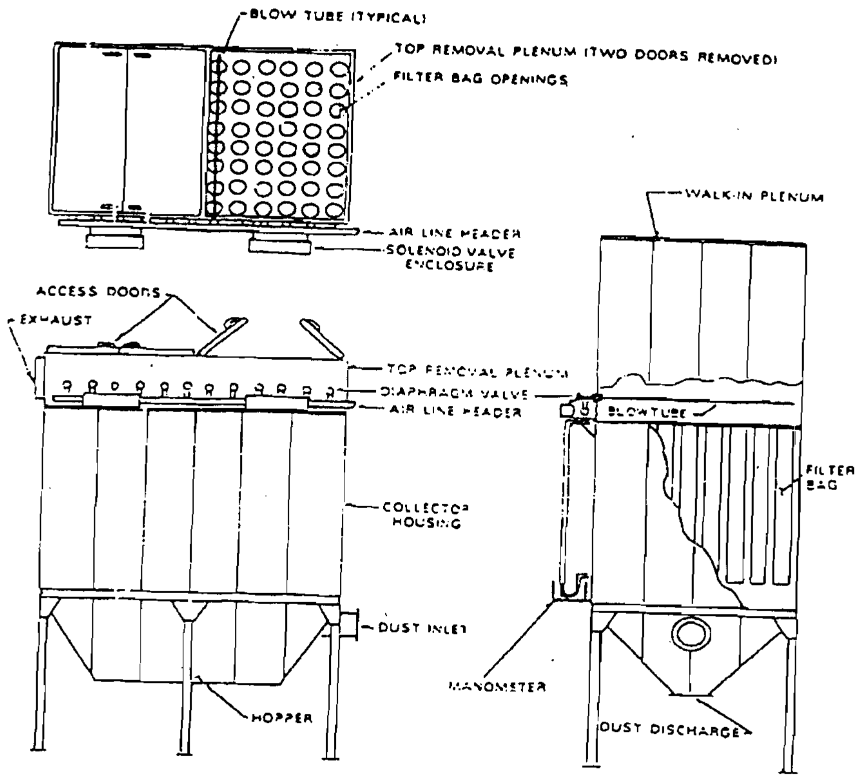
FIGURE 1
PULSE-JET BAGHOUSE SYSTEM



A FILTER BAG
B RETAINER
C BAG CLAMP
D TUBE SHEET
E VENTURI
F BLOWTUBE
G ORIFICE
H TIMER, REMOTELY LOCATED
J SOLENOID VALVE IN WIRING TROUGH
K DIAPHRAGM VALVE
L COMPRESSED AIR MANIFOLD
M COLLECTOR HOUSING
N INLET
O HOPPER
P AIRLOCK
Q UPPER PLENUM
R EXHAUST
S MANOMETER
T DIFFUSER

3

FIGURE 1 (CONTINUED)
PULSE-JET BAGHOUSE SYSTEM



periodically removed from the hopper via screw conveyor, or other reclaiming device for recovery of valuable metals.

Although most of the pulse Jet baghouses utilized at Asarco are manufactured by the MikroPul Company, (now known as the Hasokawa MicroPul Environmental Systems), there are characteristics unique to individual baghouse systems. Characterized below are the Pulse-Jet baghouses utilized at Asarco's East Helena facility.

1. Concentrate Storage and Handling Building (CSHB) (North), general building ventilation
2. Concentrate Storage and Handling Building (CSHB) (Middle), general building ventilation
3. Concentrate Storage and Handling Building (CSHB) (south), ventilates the feeder area.
4. Sinter Plant Ventilation System (SPVS), #6 Ventilation Baghouse System.
5. Crushing Mill/Sinter Plant #1
6. Sinter Storage
7. Acid Dust Handling

CSHB North

Manufacturer	MikroPul
Style	Pulse-Jet
Serial Number	North 890326 H1
Model	1700J-10-20 TRH "C"
Design Flow Rate	107,500 ACFM
Air to Cloth Ratio	5.4:1
Filter Cloth Area	20,018 ft^2
Number of Bags	1,700
Bag Size	4½" X 10'

CSHB Middle

Manufacturer	MikroPul
Style	Pulse-Jet
Serial Number	Middle 890326 H2
Model	1700J-10-20 TRH "C"
Design Flow Rate	107,500 ACFM
Air to Cloth Ratio	5.4:1
Filter Cloth Area	20,018 ft²
Number of Bags	1,700
Bag Size	4½" X 10'

CSHB Feeder Area South

Manufacturer	Mikro-Pul
Style	Pulse-Jet
Serial Number	890326H3
Model	360S-10-TRH
Design Flow Rate	25,400 ACFM
Air to Cloth Ratio	6:1
Filter Cloth Area	4,241 ft²
Number of Bags	360
Bag Size	4½" X 10'

#6 VENTILATION FAN (SPVS)

Manufacturer	Mikro-Pul
Style	Pulse-Jet
Serial Number	#1 North 930172H4 #2 930172H3 #3 930172H2 #4 South 930172H1
Model	289S-10-TRH
Design Flow Rate	52,000 ACFM
Air to Cloth Ratio	3.8:1
Filter Cloth Area	13,616 ft^2
Number of Bags	1,156
Bag Size	4½" X 10'

Crushing Mill/Sinter Plant #1 [1]

Manufacturer	Mikro-Pul
Style	Pulse-Jet
Serial Number	845172H1
Model	360S-10-20-TRH
Design Flow Rate	20,000 ACFM
Air to Cloth Ratio	4.47:1
Filter Cloth Area	4,476 ft^2
Number of Bags	380
Bag Size	4½" X 10'

7

Sinter Storage Area

Manufacturer	Mikro-Pul
Style	Pulse-Jet
Serial Number	845209H1
Model	720K-10-20 TRH
Design Flow Rate	40,000 ACFM
Air to Cloth Ratio	4.7:1
Filter Cloth Area	8,482 ft²
Number of Bags	720
Bag Size	4½" X 10'

[1] This system will be dedicated full-time to Sinter Plant Ventilation by October 4, 1996 (Lead SIP).

Acid Dust[2]

Manufacturer	C P Environmental Filters
Style	Pulse-Jet
Serial Number	3292
Model	843F064C
Design Flow Rate	2000 ACFM
Air to Cloth Ratio	3.1:1
Filter Cloth Area	641 ft²
Number of Bags	64
Bag Size	4½" X 8½'

[2] This baghouse is part of the new dust pneumatic conveying system which transports dust from the D&L baghouse and Cottrell dust capture system to the Concentrate Storage and Handling Building (CSHB).

B. MECHANICAL/SHAKER SYSTEM

A mechanical shaker system is used on some of Asarco's baghouses. Air flow dynamics are subject to the same behavior patterns as the Pulse-Jet system (previously described). Gaseous and/or particulate laden air is vented into the lower section of the dust collector and travels upward through the collection bags (which retains the particulate). Basic airflow is from the bottom inside of the bag to the top outside of the bag. Accordingly, the mechanical "shaker" system is designed to collect dust on the inside of the filter bags (unlike the Pulse-Jet system where particulate is collected on the bags exterior). The air, cleaned of particulate is vented to an exhaust stack. Dust remains on the bags interior until a predetermined differential pressure, or preset time (where applicable) is reached. Filter bags are affixed to thimbles, at the bottom of the bag section of the baghouse, and the top of the bags are fastened to a shaker bar. Movement of the "shaker bar" is produced by a number of different methods. Two of the types are illustrated in Figure 2. One is a pneumatic cylinder system, the other an electric driven crankshaft design. Since the tops of the bags are fastened to the shaker bars, movement of the bars shake the bags and causes the collected particulate to fall off of the bags into a collection hopper. The particulate "dust" is then periodically removed from the hopper for recovery of valuable metals.

Characterized below are the mechanical shaker type baghouses utilized at Asarco's East Helena facility.

1. Crushing Mill/Sinter Plant #2
2. Crushing Mill #3
3. Sample Mill (Bucking Room)
4. Sinter Plant (D&L)
5. Blast Furnace

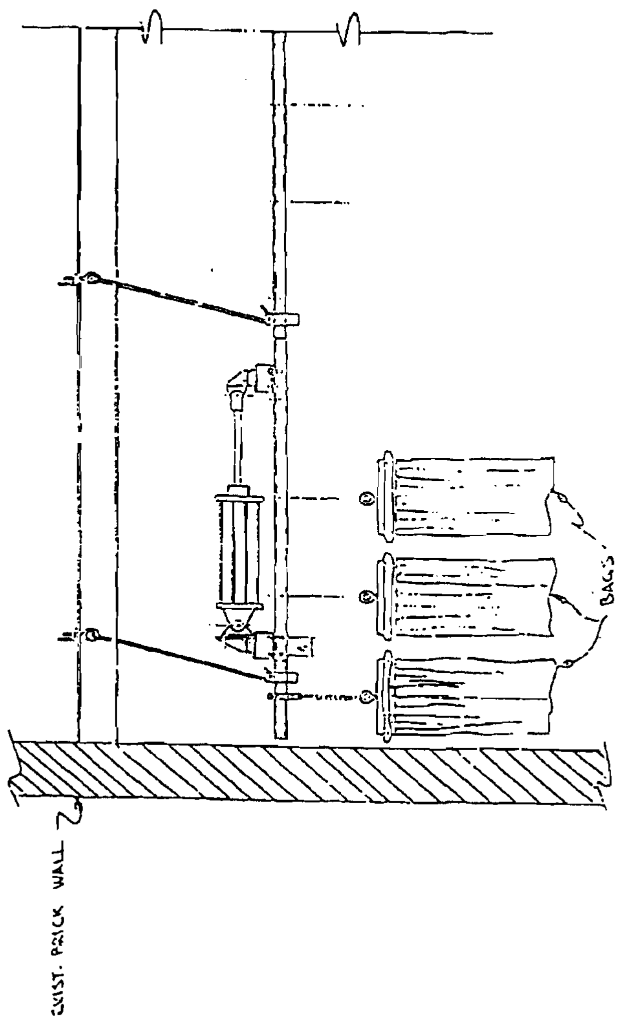
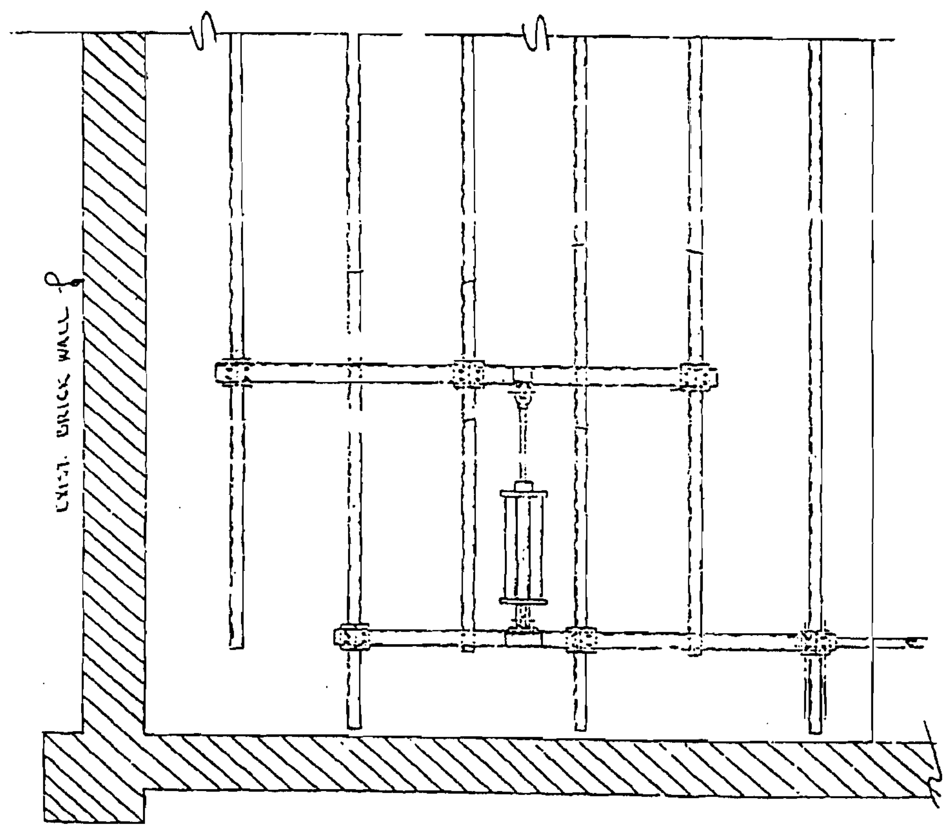


FIGURE 2
MECHANICAL "SHAKER" SYSTEM (pneumatic type)

FIGURE 2 (CONTINUED)
MECHANICAL "SHAKER" SYSTEM (pneumatic type)



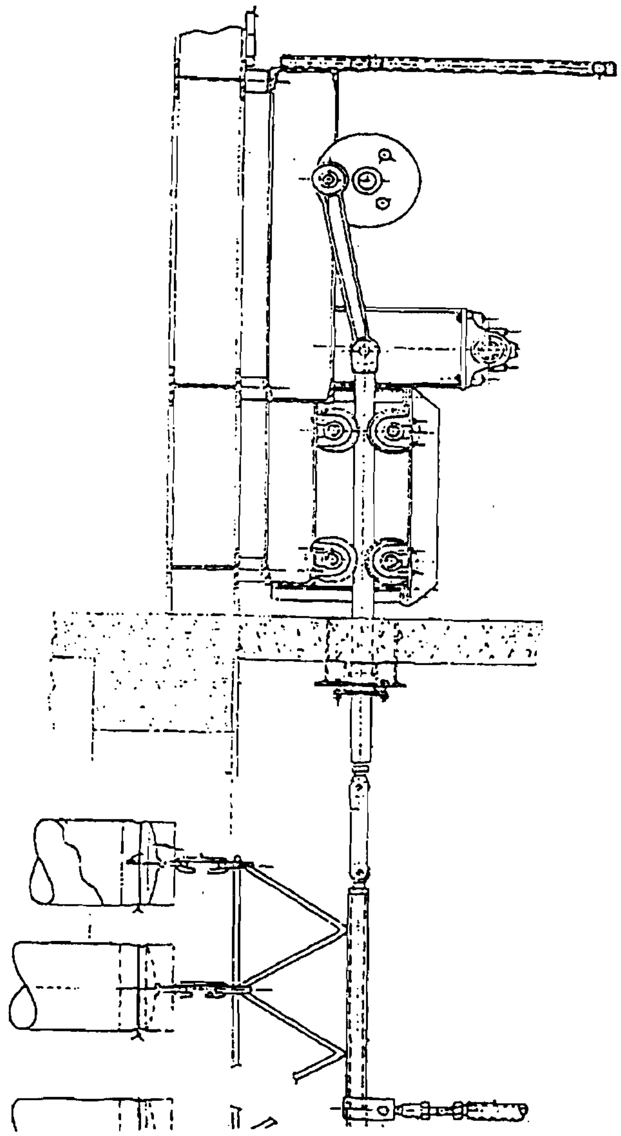


FIGURE 2 (CONTINUED)
MECHANICAL "SHAKER" SYSTEM (crankshaft type)

Crushing Mill/Sinter Plant #2[3]

Manufacturer	Rees
Style	Shaker
Serial Number	#48
Model	Dust Arrester
Design Flow Rate	21,500 ACFM
Air to Cloth Ratio	3.8:1
Filter Cloth Area	5,702 ft^2
Number of Bags	480
Bag Size	5½" X 99"

[3] This system will be dedicated full-time to Sinter Plant Ventilation by October 4, 1996 (Lead SIP).

Crushing Mill #3[4]

Manufacturer	Rees
Style	Shaker
Serial Number	#16
Model	Dust Arrester
Design Flow Rate	8,000 ACFM
Air to Cloth Ratio	4.5:1
Filter Cloth Area	1,759 ft^2
Number of Bags	160
Bag Size	5½" X 8'

Sample Mill (bucking room)

Manufacturer	American
Style	Shaker
Serial Number	A79089
Model	185
Design Flow Rate	12,500 ACFM
Air to Cloth Ratio	3:1
Filter Cloth Area	4,145 ft^2
Number of Bags	432
Bag Size	5" X 88"

[a] This system will not be used to ventilate the Crushing Mill while crushing material after October 4, 1996 (Lead SIP).

Blast Furnace

Manufacturer	ASARCO Incorporated
Style	Shaker
Serial Number	N/A
Model	N/A
Design Flow Rate	350,000 ACFM
Air to Cloth Ratio	.87:1
Filter Cloth Area	400,930 ft^2
Number of Bags	2,836
Bag Size	18" X 30'

D&L

Manufacturer	ASARCO Incorporated
Style	Shaker
Serial Number	N/A
Model	N/A
Design Flow Rate	124,800 ACFM
Air to Cloth Ratio	97:1
Filter Cloth Area	128,177 ft²
Number of Bags	1,632
Bag Size	12½" x 24'

III. EQUIPMENT USED

A. DIFFERENTIAL PRESSURE INDICATOR/CONTROLLER

The differential pressure indicator/controller is an instrument which registers the pressure differential across the baghouse collector or individual baghouse modules. The device is an effective tool for monitoring the efficiency of the Pulse-Jet cleaning system. The device monitors differential pressures, and maintains a manually set differential pressure range in the baghouse by controlling the frequency of cleaning. A typical differential pressure indicator/controller is illustrated in figure 3.

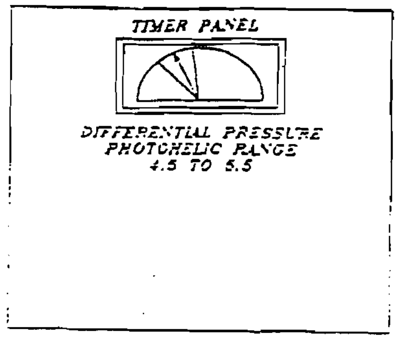
B. HOURLY OPERATING METERS

Asarco will install hour meters on baghouse fans that are not already connected and monitored by the plant computer tracking system. The hour meters and the computer tracking system records the hours of operation of the baghouse fans. The meter readings will be documented for submittal in the quarterly Lead SIP report, as required in Section 9 (B), of the Lead SIP.

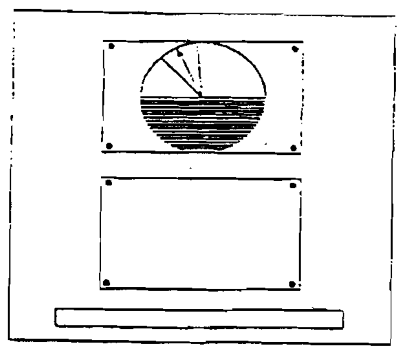
C. Bag Break Detectors

Asarco shall install, operate, and maintain bag break detectors on all baghouses except those that have

FIGURE 3
DIFFERENTIAL PRESSURE INDICATOR/SWITCH
(EXAMPLE ONLY)



FRONT PANEL VIEW



SUB PANEL VIEW

Continuous Opacity Monitoring Systems (COMS) on their stacks as outlined in Section 11 (B) of the lead SIP. These detectors shall be installed by August 4, 1996 except that unfinished baghouses (under construction) must have detectors installed were applicable by January 6, 1997.

The broken bag detectors are designed to determine changes in particulate, which pass by a sensor that is located in the baghouse exhaust flue. The rise in particulate as measured by the sensor could indicate various things, such as a shake or pulse cycle to clean the bags, as well as, a broken bag or dameged tube sheet. For this reason, it will take time after installation of the broken bag detectors located at each baghouse to build up a profile of each unit. This profile will help in setting the early detection alarm levels. The alarm levels are manually set, and will be used to help in detection of failed or broken bags. The bag break detectors will also be equipped with data loggers which will record variations of particulate as measured by the bag break detectors. The early alarm levels will be set on an individual basis, as determined by the baghouse maintenance person. These levels will be set after installation and shake down of the bag break detectors, and a profile of each baghouse has been determined.

D. CONTINUOUS OPACITY MONITORING SYSTEM (COMS)

There is an opacity monitor currently located on the blast furnace baghouse stack. Another opacity monitor will be installed on the new dross plant baghouse stack by January 6, 1997. These COMS will be used to demonstrate compliance with opacity limits on the individual stacks, as well as to provide detection of increased opacity which may indicate baghouse malfunctions. The COMS will have an alarm setting of less than 20% opacity, which will be used to trigger inspection of a baghouse for abnormal operation.

IV. PROCEDURE FOR ENSURING GOOD OPERATION

Routine inspections and preventive maintenance activities are the core to continued proper operating status of any piece of equipment. Baghouses are no exception. Asarco has successfully maintained its baghouses for years, and fully intends to continue this practice. In order to document future maintenance activities, ASARCO will utilize a series of baghouse inspection forms for the inspections, (see Appendix A, for form samples). Frequency of inspections will be as provided on the forms. These inspection forms are designed to document the following:

a. Damaged bags;
b. Air leaks;
c. Caking and blinding of bags;
d. Proper bag cleaner functioning and cycling;
e. Bag break detectors;
f. All moving parts or loose parts and unusual wear; and
g. Fans for wear, material buildup, and corrosion.

Completed inspection forms will be maintained in the Environmental Sciences Department.

A. DAILY INSPECTIONS

The Differential pressure of the baghouses, which reflect caking and blinding of the bags and the effectiveness of the cleaning system, will be measured on a daily basis. Some baghouses have more than one unit, such as the Sinter Plant baghouse. This particular baghouse has 8 units. The daily inspection form includes enough differential pressure boxes for documenting each unit of any operating baghouse. One of the requirements in the lead SIP is determinations of air leaks and baghouse fan operating hours. A space has also been provided so these can be inspected and documented on a daily basis. In order to test for broken bags, or other malfunctions of the baghouse which could allow more particulate to pass through the baghouse, broken bag detectors are being installed on all baghouses which don't already have a COMS. The daily inspections will also require that the broken bag detectors or COMS readings be documented on a daily basis. A column is included for any abnormalities or maintenance items needed to insure proper operation of the baghouses. Once a maintenance item has been identified, it is the responsibility of the inspector to notify his supervisor who will take appropriate action to insure that the situation is reported and repaired. At the bottom of the form is a location for the zero test of all of the differential pressure indicators/controls on each baghouse unit on a monthly basis.

B. ANNUAL BAGHOUSE INSPECTIONS

Annual baghouse inspections serve as an extension to the daily baghouse inspections. The annual baghouse inspection will be performed to check items which are not generally covered by the daily inspections. These include: 1) checking the differential pressure indicator/controller high and low set points where applicable; 2) checking the cleaning cycle of the Pulse-Jet baghouse; 3) checking the cleaning cycle of the Mechanical shaker type baghouse; 4) checking shakers, seals and suspension mechanisms, to insure all moving parts are operating properly; 5) black light tests to check for damaged bags, or tube sheets holes; 6) check door gaskets; 7) check tube sheets for structural damage; 8) check hopper baffles where applicable; 9) check that bags are hanging properly; 10) check screw conveyor where applicable; 11) check fan housing for corrosion; 12) inspect fan wheel for wear or buildup; and 13) inspect the broken bag detector probe for abnormal wear or build-up. This annual inspection process, along with the daily inspections will help insure that all of the ASARCO baghouses are checked for proper operation on a regular basis. A copy of this inspection form can be found in Appendix A.

1. FLUORESCENT-TRACER INSPECTION (BLACK LIGHT TEST)

The increasing attention placed on baghouse performance and efficiencies has made it more apperent that an effective method for checking the integrity of baghouse bags is required to meet expected baghouse performance. To accomplish this, ASARCO will utilize a visilight system for conducting annual baghouse inspections. The visilight process is a method used to check the condition of bags, as well as tube sheets and thimble floors. The procedure utilizes a incandescent tracer compound and a monochromatic or blacklight detector to locate dust leaks in the filter bags and/or tube sheet.

The visilight inspection procedure begins by introducing fluorescent powder into the "upstream flue" air stream of the baghouse. Powder size is critical and should be 2 to 4 microns aerodynamic diameter. Due to the nature of the powder, it stays dispersed in the air stream and distributes itself throughout the baghouse. Approximately 30 seconds after introduction of the fluorescent powder, the baghouse fan should be shut down, and the clean side of the baghouse inspected. All evenues where light may enter this area are covered giving the inspector an atmosphere void of natural light. A blacklight is then used to inspect the bags, tube sheet or thimble floor.

This particular procedure can supply valuable information by helping to spotlight problem areas. Information gained may help identify: 1) broken, leaking, or misaligned bag gaskets; 2) cracks, breaks, or loose caulking in the tube sheet; 3) ripped, torn, or worn filter bags, 4) cracks in seams, 5) leaks in seals, or any other issue which would allow materials to penetrate the barrier between the dirty and clean side of the baghouse. Each issue mentioned above is made visible by the fluorescent powder when viewed under blacklight. The problem area is then pinpointed and corrective action initiated.

C. **BAGHOUSE MAINTENANCE**

While the above mentioned inspections are necessary to insure that any abnormalities or malfunctions of a baghouse are documented, the following will list how the maintenance or repair of any baghouse related equipment will be documented. A Baghouse Maintenance Form, (found in Appendix A) will be used to document all repairs to baghouse equipment. Once a problem has been encountered with a piece of baghouse equipment, the baghouse supervisor will notify the proper maintenance supervisor (i.e., welding, pipe fitter, etc...), of the need to have the item repaired. Obviously this will only happen when repairs are needed other than that which will be done by the baghouse maintenance personnel. When repairs are necessary by the baghouse personnel, they will perform the required maintenance and document it on the attached maintenance form. Maintenance of the baghouses by the maintenance and baghouse personnel will be documented on the Baghouse Maintenance Inspection form. Completed forms will be kept on file at the environmental office.

1. **Broken Bag Detector Maintenance.**

ASARCO has not yet ordered these items, and can not finalize this section until seeing the units operation and maintenance manual.

2. **BROKEN BAG DETECTOR/COMS ALARMS.**

Since the broken bag detectors and the COMS will be used as a detection device for abnormal operations of a baghouse, the response to these alarms is very critical. ASARCO intends to have the alarms for each of the units placed in a central location, were they can be monitored 24 hours a day. This system is currently being used for the sulfur dioxide CEMS on the stacks. After a bag break detector alarm setting has been determined, and an alarm is activated, the

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baghouse maintenance crew will be called to investigate the alarm. They will determine the cause of the alarm, and perform maintenance to repair the condition which caused the alarm. These actions will be documented and submitted with the normal maintenance forms.

D. BAGHOUSE BAG IDENTIFICATION FORM

The Baghouse Bag Identification form will be used as a tracking device to record filter bag problems and repairs. Each incident in which maintenance is performed on a bag will be documented on this form. This particular information may be used in determining the typical life of the filter bags or reoccurrence of similar problems in the same area. Since each baghouse is different, a Baghouse Bag Identification form will be developed for each individual baghouse. See Appendix A for Baghouse Bag Identification form sample.

V. DISPOSAL OF USED BAGHOUSE BAGS.

ASARCO will dispose of exposed or used baghouse bags by smelting them in the blast furnace. This method will insure recovery of valuable metals found in the exposed bags, and reduce the risk of baghouse dust being distributed outside of the plant. The bags will be rolled up, and placed in a portable container for disposal. The bags will be directly charged to the furnace charge car by appropriate means. (payloader or forklift). After the bags have been loaded on to the charge car they are automatically conveyed to the blast furnace for smelting.

VI. RECORD KEEPING

All completed data collection records are kept at Asarco's East Helena Plant Environmental Sciences Department. All records will be retained for at least five years and are made available for review and inspection.

APPENDIX A

DAILY BAGHOUSE INSPECTION FORM

MONTH AND YEAR:

BAGHOUSE NAME:

DATE

EAST HELENA PLANT
ANNUAL BAGHOUSE INSPECTION FORM

BAGHOUSE INSPECTED	
DATE INSPECTED	
INSPECTOR(S)	

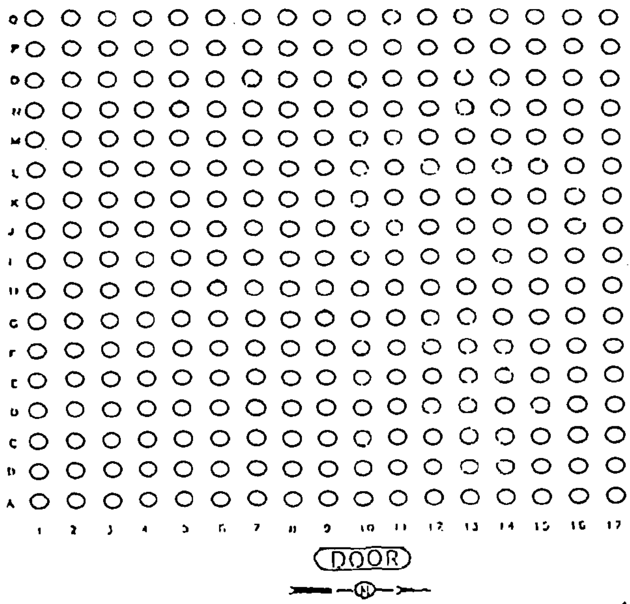
	ITEM INSPECTED	ANSWERS / COMMENTS	ACTION REQUIRED
1.	What is the Differential Pressure Indicator Range and Set Points (where applicable)		
2.	Cleaning Cycle Inspections for Pulse-Jet Systems		
a.	Check that all Solenoid/Diaphragm Valves are Operating Correctly (where applicable)		
b.	Check Unit Pulsing (e.g., every 1/10 second when actuated)		
c.	Estimate Length Between Pulses (i.e., 5-10 seconds)		
3.	Cleaning Cycle Inspections for Shaker Systems		
a.	Length of Time Between Shakes (i.e., 55 Minutes)		
b.	Time Allowed for Damper to Close (where applicable) in seconds		
c.	Initial Null (time between damper being closed and initiation of shaking) in seconds		
d.	What is the Length of the Shaking Period (in seconds)		
e.	Final Null (time between termination of shaking and initiation of damper opening) in seconds		
f.	Do Dampers Close Tightly During Shaking Cycle? "Y"/"N"		
4.	Check all Shakers, Shaker Rod Seals, and Suspension Mechanisms are Operating correctly		
5.	Blacklight: Check all Bags, Gaskets, etc...		
6.	Check Door Gasket in Good Condition (where applicable)		
7.	Check that Tube Sheet is Straight		
8.	Check that the Hopper Baffle is Clean and Straight (where applicable)		
9.	Check to see that Bags are Hanging Straight		
10.	Check Screw Conveyor, to see if it is Operating Properly		
11.	Check Fan Housing for Corrosion		
12.	Inspect Fan Wheel for Wear and Material Build-up		
13.	Inspect Broken Bag Detector Probe for Abnormal Wear		

EAST HELENA PLANT
BAGHOUSE MAINTENANCE FORM

BAGHOUSE NAME:

DATE	TIME	PERSON RESPONSIBLE FOR REPAIR	DATE PROBLEM REFERRED TO MAINTENANCE DEPARTMENT	NATURE OF PROBLEM	ACTION TAKEN TO REPAIR THE PROBLEM	DATE OF REPAIR

BAGHOUSE BAG IDENTIFICATION FORM (SAMPLE)



MIKRO PULSAIRE D & L NO.6 VENT. BAGHOUSE NO. 1 (NORTH)
NO. 2
NO. 3
NO. 4 (SOUTH)

Date of Inspection ______________
Name of Inspector ______________

LOCATION OF FAILURE

1. Top of bag

2. Middle of bag

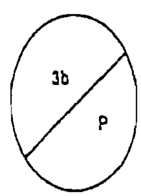
3. Bottom of bag

TYPE OF FAILURE

a. Vertical rip
b. Hole
c. Installation damage
d. Ring
e. Seam
f. Crease
g. Secondary

ACTION TAKEN

N-New bag installed
P-Plugged



AIR QUALITY PERMIT

Issued to: Plum Creek Manufacturing, Inc.
Columbia Falls Operations
P. O. Box 160
Columbia Falls, Montana 59912

Permit #2667-M
Date of Final
Modification: 1/24/92

SECTION I: Permitted Facilities

An air quality permit is hereby granted to the above-named permittee, hereinafter referred to as recipient, pursuant to Sections 75-2-204 and 211, MCA, as amended, and Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1113 as amended, for the entire mill site located at P. O. Box 160, Columbia Falls, MT, for the following:

A. MDF - face dryer, with a high efficiency cyclone control, and a design capacity of 45,000 lbs/hr of dry wood fiber, resin, and wax. The face dryer is heated with two Energex sanderdust burners with a combined capacity of 45 MMBtu/hr.

B. MDF - core dryer, with a high efficiency cyclone control, and a design capacity of 45,000 lbs/hr of dry wood fiber, resin and wax. The core dryer is heated with one Coen sanderdust burner with a capacity of 50 MMBtu/hr.

C. Two plywood veneer dryers, with a wet ESP control, and a combined design capacity of 20,000 square feet/hr of plywood on a 3/8" basis. The veneer dryers are heated with a Wellons unit which has a design capacity of 30 MMBtu/hr.

D. One wood-fired boiler, with a design input capacity of 192 million Btu/hr firing rate.

E. Wood waste cyclones and baghouses.

F. Fugitive dust from mill vehicles and log yard activity.

G. Two gas boilers with design capacities of 20,000 pounds per hour steam and 10,500 pounds per hour steam.

SECTION II: Limitations and Conditions

A. MDF - Face Dryer

1. Face dryer emissions of total particulate shall be limited to the maximum allowable emission rate as determined by ARM 16.8.1403, Particulate Matter, Industrial Process, but in no case shall emissions of total particulate exceed 40.83 lbs/hr.

2. Face dryer emissions of PM-10 shall be limited to the maximum allowable emission rate as determined by ARM

16.8.1403, Particulate Matter, Industrial Process, but in no case shall emissions of PM-10 exceed 40.83 lbs/hr.

3. Visible emissions shall be limited to 20% opacity.

4. A source test shall be required to show compliance with Conditions A.1 and A.2 above every three years. The test methods shall conform to 40 CFR Part 51, Appendix M including back-half, for PM-10 and 40 CFR Part 60, Appendix A including back-half, for total particulate. Only a total particulate test is required if it is used as a surrogate for PM-10.

B. MDF - Core Dryer

1. Core dryer emissions of total particulate shall be limited to the maximum allowable emission rate as determined by ARM 16.8.1403, Particulate Matter, Industrial Process, but in no case shall emissions of total particulate exceed 40.92 lbs/hr.

2. Core dryer emissions of PM-10 shall be limited to the maximum allowable emission rate as determined by ARM 16.8.1403, Particulate Matter, Industrial Process, but in no case shall emissions of PM-10 exceed 40.92 lbs/hr.

3. Visible emissions shall be limited to 20% opacity.

4. A source test shall be required to show compliance with Conditions B.1 and B.2 above every three years. The test methods shall conform to 40 CFR Part 51, Appendix M including back-half, for PM-10 and 40 CFR Part 60, Appendix A including back-half, for total particulate. Only a total particulate test is required if it is used as a surrogate for PM-10.

C. Plywood Veneer Dryer

1. Plywood veneer dryer emissions shall be limited to 25.0 lbs/hr of PM-10, and 25.0 lbs/hr of total particulate.

2. Visible emissions shall be limited to 20% opacity.

3. A source test shall be required to show compliance with Condition C.1 above every three years. The test methods shall conform to 40 CFR Part 51, Appendix M including back-half, for PM-10 and 40 CFR Part 60, Appendix A including back-half, for total particulate. Only a total particulate test is required if the back half is included and it is used as a surrogate for PM-10.

D. Wood-Fired Boiler

1. Boiler emissions shall be limited to 0.30 lbs of total particulate per million Btu fired, but in no case shall emissions exceed 57.6 pounds of total particulate per hour.

2. Boiler emissions shall be limited to 0.30 lbs of PM-10 per million Btu fired, but in no case shall emissions exceed 57.6 pounds of PM-10 per hour.

3. Visible emissions shall be limited to 20% opacity.

4. A minimum of two source tests shall be completed to show compliance with Conditions D.1 and D.2 above within the first two years. The test frequency shall be reviewed after two years and an appropiate schedule shall be determined. The test methods shall conform to 40 CFR Part 51, Appendix M including back-half, for PM-10 and 40 CFR Part 60, Appendix A including back-half, for total particulate. Only a total particulate test is required if it is used as a súrrogate for PM-10. The source test results shall be converted to pounds of particulate per million BTUs through an F-factor calculation. A standard F-factor approved by the department shall be utilized by Plum Creek in the calculation. The department may require Plum Creek to verify the F-factor for their boiler using a procedure approved by the department.

E. Wood Waste Cyclones and Baghouses

1. Combined Sawmill and Planer Process

a. This process includes the following emission points:

Description	Flow (SCFM)
Planer #3 Cyclone	24000
Planer #4 Cyclone	60000
Planer Shavings Bin Cyclone	6000
Planer Chip Bin Cyclone	6000
Sawmill chip bin cyclone	6000

b. The combined sawmill and planer process shall be limited to a total of 2.5 lbs total particulate per thousand board feet (MBF), a maximum of 25.84 lbs/hr of total particulate, and a maximum of 12.92 lbs/hr of PM-10.

c. Visible emissions from each of the emission points listed in (a) above shall be limited to 20% opacity as determined by 40 CFR 60 Appendix A, Method 9.

d. Compliance with the above limitations shall be determined visually as described in (c) above. If a violation of the 20% opacity requirement is documented, or if the department has evidence that the emission limitations contained in (b) above are being exceeded, the department may require source testing of any or all of the emission points listed in (a) above. These tests shall conform with EPA test specifications under 40 CFR 60 Appendix A including back-half. PM-10 tests shall conform to 40 CFR 51, Appendix M including back-half. All sources where tests are required must be equipped with stacks and sampling ports, with safe access for the sampling personnel.

2. Total Plywood Process Excluding the Veneer Dryers

   a. This process includes the following:

Description	Flow (SCFM)
Plywood #1 chip bin cyclone	2800
Plywood #2 chip bin cyclone	2800
Plywood Lilly Pad cyclone	2800
Plywood Sander Baghouse	35000
Plywood 18" Trim Baghouse	15000
Plywood 30" Trim Baghouse	15000

   b. The total plywood process excluding veneer dryers shall be limited to 0.25 lbs of total particulate per thousand square feet (MSF) of plywood on a 3/8" basis, a maximum of 5.0 lbs/hr of total particulate, and a maximum of 2.5 lbs/hr of PM-10.

   c. Visible emissions from each of the emission points listed in (a) above shall be limited to 20% opacity as determined by 40 CFR 60 Appendix A, Method 9.

   d. Compliance with the above limitations shall be determined visually as described in (c) above. If a violation of the 20% opacity requirement is documented, or if the department has evidence that the emission limitations contained in (b) above are being exceeded, the department may require source testing of any or all of the emission points listed in (a) above. These tests shall conform with EPA test specifications under 40 CFR 60 Appendix A including back-half. PM-10 tests shall conform to 40 CFR 51, Appendix M including back-half. All sources where tests are required must be equipped with stacks and sampling ports, with safe access for the sampling personnel.

3. Total MDF Process Excluding Drying

   a. This process shall include the following emission points:

Description	Flow (SCFM)
MDF chip cyclone	10000
MDF N. Surge Bin Cyclone	7500
MDF S. Surge Bin Cyclone	7500
MDF N. Sander Baghouse	55000
MDF S. Sander Baghouse	55000
MDF Board Trim Baghouse	5000
MDF Sanderdust Fuel Baghouse	5000
MDF Hogfuel Blr Sndrdst Bghs	15000
MDF In-line Baghouse	50000
MDF CPS & In-line Baghouse	50000
MDF Metering Bin Baghouse	50000
MDF Fire Dmp Cyc (emerg. only)	
MDF Felter Baghouse #1	50000
MDF Felter Baghouse #2	50000
MDF Reject Fiber Cyc & Baghouse	50000

b. The MDF process excluding drying shall be limited to 1.5 lbs of total particulate per thousand square feet (MSF) on a 3/4" basis, a maximum of 19.69 lbs/hr of total particulate, and a maximum of 9.85 lbs/hr of PM-10.

c. Visible emissions from each of the emission points listed in (a) above shall be limited to 20% opacity as determined by 40 CFR 60 Appendix A, Method 9.

d. Compliance with the above limitations shall be determined visually as described in (c) above. If a violation of the 20% opacity requirement is documented, or if the department has evidence that the emission limitations contained in (b) above are being exceeded, the department may require source testing of any or all of the emission points listed in (a) above. These tests shall conform with EPA test specifications under 40 CFR 60 Appendix A including back-half. PM-10 tests shall conform to 40 CFR 51, Appendix M including back-half. All sources where tests are required must be equipped with stacks and sampling ports, with safe access for the sampling personnel.

F. Fugitive Dust from Mill Vehicles and Log Yard Activity

1. Chemical dust suppressant shall be applied to the major roads on the log yard to control fugitive dust from all log handling equipment. The application schedule shall be no less than once per year. Water sprays shall be used as necessary to control dust emissions on active areas of the log yard. The opacity of the log yard dust emissions shall not exceed 20% at any time.

2. Chemical dust suppressant shall be applied to the major haul routes throughout the plant to control fugitive dust from the haul trucks. The application schedule shall be not less than once per year. The opacity of the haul road dust emissions shall not exceed 20% at any time.

G. Gas Boilers

1. Boiler emissions shall be limited to 0.40 lbs of total particulate per million Btu fired, but in no case shall emissions exceed 17.92 pounds of total particulate per hour.

2. Boiler emissions shall be limited to 0.40 lbs of PM-10 per million Btu fired, but in no case shall emissions exceed 17.92 pounds of PM-10 per hour.

3. Visible emissions shall be limited to 20% opacity.

H. Recipient shall comply with all other applicable state, federal and local air quality rules.

SECTION III: Monitoring and Reporting

No ambient monitoring will be required at this time.

SECTION IV: General Conditions

A. Inspection - The recipient shall allow the bureau's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein doses not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the bureau to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in § 75-2-401, MCA.

E. Appeals - Any person or persons who are jointly or severally adversely affected by the bureau's decision may request, within fifteen (15) days after the bureau renders its decision, upon affidavit, setting forth the grounds therefore, a hearing before the Board. A hearing shall be held under the provision of the Montana Administrative Procedures Act. The bureau's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the bureau's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Application Data - Information submitted on behalf of an air quality permit application is hereby incorporated as a condition of that permit including commencement and completion dates of construction.

G. Permit Inspection - As required by ARM 16.8.1115 Inspection of Permit, a copy of the air quality permit shall be made available for inspection by air quality personnel at the location of the permitted source.

H. Permit Duration - This permit is null and void if the MDF, plywood plant, sawmill or boiler is torn down, removed, or not capable of being operated for two years.

I. Permit Fees - Pursuant to Section 75-2-211, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required by that Section and rules adopted thereunder by the Board of Health and Environmental Sciences.

SECTION V: Operational Reporting Requirements

Plum Creek shall submit the following production and operation information annually to the AQB by March 1st of each year. This information is required for use in calculation of the annual emission inventory.

A. Annual production information calculated on a calendar year basis for the previous calendar year.

Source	Units of Material Processed
MDF Plant	Million sq ft produced 3/4" basis
Plywood Plant	Million sq ft produced 3/8" basis
Lumber Mill	Million board ft produced
Wood-fired Boiler	Millions of BTUs produced
Cyclones and Baghouses	Hours of operation
Veneer Dryer	10^4 ft^2 of plywood on a 3/8" basis processed
Face Dryer	Tons of fiber dried including resin and wax
Core Dryer	Tons of fiber dried including resin and wax

B. Hours of operation for the following sources:

MDF Plant
Plywood Plant
Lumber Mill
Wood-fired Boiler

C. Fugitive dust information consisting of a listing of all plant vehicles including:

Vehicle type;
Vehicle weight;
Number of tires on vehicle;
Average trip length;
Number of trips per day;
Average vehicle speed;
Area of activity;
Vehicle fuel usage (gasoline or diesel) - annual total;
Hours of operation of water trucks;
Chemical dust suppressant application schedule.

Permit Analysis

Plum Creek - Columbia Falls
Permit Modification - Columbia Falls Facility

A. Introduction

Plum Creek Manufacturing currently operates a sawmill, planer, plywood plant, and a medium density fiberboard plant at the Columbia Falls site. Prior to this permit modification only the plywood veneer dryer (AQB #2667), the Wellons unit (AQB #1501), the MDF fiber dryers (AQB #2233), new baghouses at the MDF plant (AQB #2174), and the original MDF plant (AQB #5640051073) were subject to air quality permits. The sawmill and the plywood plant predate the Montana Clean Air Act and were not required to obtain a permit unless a modification of the source occurred, or a standard changed affecting the facility.

On July 1, 1987, the Environmental Protection Agency (EPA) promulgated new ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The annual standard is 50 $\mu g/m^3$ and the 24-hour standard is 150 $\mu g/m^3$. These standards were in turn adopted by the Montana Board of Health and Environmental Sciences on April 15, 1988. On August 7, 1987, EPA designated Columbia Falls as a PM-10 Group II area. Subsequent ambient air monitoring showed violations of the 24-hour PM-10 standard. On November 15, 1990, the 1990 amendments to the Federal Clean Air Act designated Columbia Falls as a nonattainment area. As a result of this designation, the department was required to develop a PM-10 emission control program as part of the State Implementation Plan (SIP) to bring the Columbia Falls area into compliance with the PM-10 standards and demonstrate maintenance of the standards.

In order to identify the emission sources which were contributing to violations of the PM-10 standards, the department conducted a chemical mass balance study (CMB). Plum Creek was identified by this study as contributing 18% to the source apportionment. The veneer dryers contributed 12.73%, the fiber dryers contributed 5.21%, and the boiler contributed 0.96% to the apportionment. The majority of the problem was determined to be re-entrained road dust.

The sources contributing to the PM-10 problem have been identified by the CMB analysis. Control plans are being developed for each source or source category including industrial sources (Plum Creek Manufacturing). Since the SIP must also demonstrate maintenance of the standards, the control plan must also contain enforceable limits on emission points which were not identified as contributing to the problem, but could contribute if emissions were allowed to substantially increase over what they were during the CMB study period. Therefore, this permit sets allowable limits for wood-waste transfer cyclones, fugitive dust, and baghouses as well as limits for the veneer dryers, the fiber dryers and the boiler.

B. Process Description

This facility consists of three plants which are all located at the same site: the sawmill, the plywood mill, and the MDF fiberboard plant. The sawmill and plywood mill receive raw logs by truck. The logs are stored and sorted before being transferred to the mill for sawing into dimension lumber, or to the plywood plant for peeling into veneer. Waste wood such as chips and planer shavings are transferred to the MDF plant for processing into fiberboard. Wood shavings are also received from outside facilities as raw material for the fiberboard plant. All three plants share one boiler as a source of process steam for their operations. The boiler uses wood as a fuel and burns a mixture of bark, sawdust, sanderdust, and reject material from the plywood and fiberboard operations. The veneer dryer is also heated with wood through the use of a Wellons cell. The exhaust gases from the Wellons unit make direct contact with the veneer and then exit to atmosphere through an E-tube wet electrostatic precipitator. This scrubber was installed during the summer of 1991 and should reduce veneer dryer emissions from that recorded during the study period of September 1989 through April 1990.

The fiber dryers are also heated primarily with wood. One Coen and two Energex sanderdust burners heat the flash-tube dryers to dry the wood fiber for fiberboard manufacture. The dryers are controlled with long cone high efficiency multiclones.

Fugitive emissions from wood-waste transfer are controlled with baghouses or cyclones. Fugitive emissions from haul roads and the log deck are controlled with chemical dust suppressant.

The only change reflected in this permit is to include the entire facility in the permit. Also, a reduction in fugitive dust occurs due to chemical stabilization of plant roads and log yard areas.

C. Applicable Regulations

1. ARM 16.8.821 Ambient Standards for PM-10

   Plum Creek must demonstrate compliance with the applicable ambient air quality standards. The latest ambient data is showing compliance with the standards and the permit requirements are designed to establish enforceable limits in order to maintain compliance into the future.

2. ARM 16.8.1113(a) Modification of Permit

   The department is allowed to modify Plum Creek's permit due to a change in the applicable PM-10 standard adopted by the Board of Health and Environmental Sciences. Plum Creek may appeal the department's modification to the Board.

3. ARM 16.8.1113(b) Modification of Permit

   Plum Creek may request a modification of the permit for changed conditions of operation at a source or stack which do not result in an increase in emissions beyond those found in its permit.

4. ARM 16.8.1115 Inspection of Permit

   Plum Creek must maintain a copy of their air quality permit at the mill site and make that copy available for inspection by department personnel upon request.

5. ARM 16.8.1117 Compliance with Other Statutes and Rules

   Plum Creek must comply with all other applicable state, federal, and local laws and regulations.

6. ARM 16.8.1401 Particulate Matter, Airborne

   This section requires reasonable precautions for fugitive emission sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization on major haul roads and on major roads in the log decks, in conjunction with watering, will satisfy these requirements.

7. ARM 16.8.1402 Particulate Matter, Fuel Burning Equipment

   This rule applies to the boiler which was installed during the building of the fiberboard plant (1972).

8. ARM 16.8.1403 Particulate Matter, Industrial Process

   This rule applies to the MDF fiber dryers, and the veneer dryers. This rule allows the weight of the fuel used in the process to be included as part of the process weight.

   Fiber Dryer Calculation:

   Maximum dryer capacity 45000 lb/hr dry (10% moisture)
   - 4500 lb/hr subtract moisture
   41500 lb/hr

   This material consists of 91.5% wood, 8% resin, and 0.5% wax.

   (41500 lb/hr)(0.915) = 38000 lb/hr wood
   (41500 lb/hr)(0.08) = 3300 lb/hr resin
   (41500 lb/hr)(0.005) = 200 lb/hr wax

Input material to dryer

wood 45% moisture	= (38000 lb/hr)(1.45)	=	55100 lb/hr
resin 45% moisture	= (3300 lb/hr)(1.45)	=	4800 "
wax 53% moisture	= (300 lb/hr)(1.53)	=	300 "
Total wt into dryer			60200 "

Add fuel to face dryer

Capacity of Energex burners - 45 million Btu/hr
Fuel heat content - 7450 Btu/lb
(45 MMBtu/hr)/7450 Btu/lb = 6040 lb/hr fuel

Total process weight = 60200 + 6040 = 66240 lb/hr for the face dryer

The allowable calculation for the core dryer is the same for material input. The fuel calculation is different because of the Coen burner with a capacity of 50 million Btu per hour.

Capacity of Coen - 50 MMBtu/hr
Fuel heat content - 7450 Btu/lb
(50 MMBtu/hr)/7450 Btu/lb = 6711 lb/hr fuel

Total process weight = 60200 + 6711 = 66911 lb/hr for the core dryer.

9. ARM 16.8.1404 Visible Air Contaminants

RACT requirements have been set at 20% opacity, and require all existing sources in nonattainment areas to comply.

10. ARM 16.8.900 PSD

The Plum Creek-Columbia Falls facility is a major stationary source; however, it is an existing plant and this permit is a reduction in emissions. Therefore, PSD is not applicable to this permit review.

11. ARM 16.8.1423 NSPS

There is no New Source Performance Standard for plywood plants or medium density fiberboard plants. Therefore, NSPS does not apply to this permit review.

12. Plum Creek - Columbia Falls RACT Analysis

a. Wood-fired Boiler - This boiler was not shown to impact the nonattainment area significantly. Therefore, no change in allowable emissions is applicable to this unit. The fuel burning rule continues to apply.

b. MDF Fiber Dryers - The emission controls for both the face and core dryer were replaced in 1988 and 1989. The emissions for the fiber dryers were compared with other dryers throughout the country in 1987. At that time the average emission limit from fiber dryers surveyed was 70.3 lbs of particulate per hr, while the Plum Creek dryers were limited to 36 lbs/hr. Since this emission level is approximately one-half of the current average in the industry it qualifies as RACT for fiber dryers.

c. Plywood Veneer Dryers - A new wet electrostatic precipitator has just been installed on the two veneer dryers at Columbia Falls to control emissions from both dryers. The dryers are wood-fired and contain the combustion emissions. Source tests from Oregon show control efficiencies between 76% and 86% as BACT. Since some control of this source is needed to show attainment with the SIP, RACT is required in setting the allowable. The existing process rate rule allows up to 28 lb/hr depending on moisture content of the wet veneer. This would allow 123 tons per year from this source which threatens to exceed the compliance demonstration for the SIP. Therefore, a reduction in the allowable emissions for this source is required by the SIP. The state SIP analysis shows that 110 tons per year will give a sufficient safety margin to assure PM-10 compliance in the area. This calculates to an allowable of 25 lbs/hr for both veneer dryers. In August of 1990, the uncontrolled emissions for these dryers were measured at 32.73 lb/hr of total particulate.

d. Wood-Waste Transfer Systems - These systems use baghouses and cyclones for control of air emissions. These controls have been accepted as RACT for these sources when a 20% visible limitation is included.

e. Fugitive Emissions: Haul roads, Log Deck, and Raw Material Storage - Plum Creek has used watering for dust control on all roads and log yards. This permit has required chemical dust suppression on haul roads and the major runways in the log yard area, and 20% opacity. This is determined to be RACT for these sources. Fugitive emissions from raw material storage are included here also.

D. Department Review of Modification

1. Existing Air Quality

The Columbia Falls area is currently a nonattainment area for the PM-10 standards. However, this area has shown attainment over the last three seasons, and is expected to continue in attainment if the controls instituted by the company and the community are maintained. This permit will make those controls enforceable, which will ensure future compliance with the PM-10 regulations.

2. PM-10 Emission Inventory

a. Summary of Allowable Emissions

Summary of Allowable Emissions	Existing	Proposed
Boiler - 192 x 10^6 MMBtu/hr	254 TPY	254 TPY
Face Dryer	157	157
Core Dryer	159	159
Veneer Dryer	110	110
Cyclones and Bghs	73	73

b. Estimate of Maximum Fugitive Emission from Facility

	TSP (TPY)	PM-10 (TPY)
Planer Process		
Shaving Bin Loadout	1.4	0.8
Chip Bin Loadout	0.6	0.3
Sawmill Process		
Debarker	4.4	2.0
Block Saw	9.1	5.4
Hog (wet)	0.5	0.2
Chip Bin	5.1	3.1
Sawdust Bin	3.6	2.1
Plywood Veneer Prep.		
Debarker	3.8	1.7
Block saw	7.9	4.7
Hog (wet)	0.5	0.2
Lily Pad Chipper	0.05	0.02
Wet Fuel Target Boxes		
Silo 70%	7.1	4.3
Truck Bin 28%	2.8	1.7
Storage Pile 2%	0.4	0.2
Wet Fuel Bin Loadout	0.6	0.3
Chip Bin Loadout	4.1	2.5
Wet Fuel Pile	3.3	2.0
Plywood Layup and Sanding		
Dry Fuel Bin loadout	9.2	5.5
Dry Fuel Silo vent (Wellons)	1.4	0.9
MDF Materials Handling		
Truck Dump	0.8	0.3
Stacker	7.8	3.1
Frontend Loader	2.1	1.3
Raw Material Cleaning	13.0	5.2
Raw Material Storage	3.2	1.3
MDF Forming and Finishing		
Press Vents (6 fans)	52.6	26.3
Board Cooler Fans (10 fans)	21.9	11.0
Press Unload Fans (3 fans)	26.3	13.1

	TSP (TPY)	PM-10 (TPY)
Hog Boiler Fuel Handling		
Sanderdust Silo	3.6	1.4
Truck Dump	0.3	0.1
Hog conveyor	0.3	0.1
Stacker	5.0	2.0
Front End Loader	0.8	0.3
Fuel Pile	6.5	2.6
Mobile Sources		
Log Trucks	18.8	9.4
Chp, Shavg, Sawdst Trks	6.7	3.3
Lumber Trucks	0.9	0.5
Le Tourneaus	8.7	4.4
Front End Loaders (MDF)	0.2	0.1
Front End Loaders (Log Yard)	2.6	1.3
Dump Trucks	0.6	0.3
Employee Vehicles	1.8	0.9
Total Fugitive Estimate	250.35	126.22

3. Impact Analysis

No modeling has been required for this permit because it is a modification of previous permits with a reduction in allowable emissions. This permit modification is necessary to cap the emissions from all sources at the Plum Creek facility. The reduction in emissions from all sources in the Columbia Falls area will ensure compliance with the PM-10 regulations in the area.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: This is a permit modification for the existing Plum Creek facilities located at Columbia Falls, MT. The modification is needed due to the change in the particulate regulations from TSP to PM-10 required by the federal Clean Air Act.

Description of Project: There is no physical change to the facility required by this permit. Fugitive dust control measures have been added to reduce allowable fugitive emissions.

Benefits and Purpose of Proposal: This permit modification will add enforceable provisions to the Plum Creek permit which will help attain PM-10 compliance in the Columbia Falls area.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: The permit modification is required by the changes in federal air quality laws. This permit modification has been discussed with company officials and is the best alternative to bring the Columbia Falls nonattainment area into compliance.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: See permit limitations.

Recommendation: An EIS is not needed for this modification.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA: NA

If an EIS is not required, explain why the EA is an appropriate level of analysis: This is a modification of a permit for an existing facility, with a reduction in allowable emissions. Environmental impacts will decrease as a result, and it will help the area come into compliance with federal and state air quality regulations.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: AQB staff

EA prepared by: Warren Norton

Date: October 4, 1991

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. TERRESTRIAL AND AQUATIC LIFE AND HABITATS	1.			X			
2. WATER QUALITY, QUANTITY AND DISTRIBUTION	2.			X			
3. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE	3.			X			
4. VEGETATION COVER, QUANTITY AND QUALITY	4.			X			
5. AESTHETICS	5.			X			
6. AIR QUALITY	6.		X				X
7. UNIQUE ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCE	7.			X			
8. DEMANDS ON ENVIRONMENTAL RESOURCE OF WATER, AIR AND ENERGY	8.			X			
9. HISTORICAL AND ARCHAEOLOGICAL SITES	9.			X			
10. CUMULATIVE AND SECONDARY IMPACTS	10.			X			

POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. SOCIAL STRUCTURES AND MORES	1.			X			
2. CULTURAL UNIQUENESS AND DIVERSITY	2.			X			
3. LOCAL AND STATE TAX BASE AND TAX REVENUE	3.			X			
4. AGRICULTURAL OR INDUSTRIAL PRODUCTION	4.			X			
5. HUMAN HEALTH	5.			X			
6. ACCESS TO AND QUALITY OR RECREATIONAL & WILDERNESS ACTIVITIES	6.			X			
7. QUANTITY AND DISTRIBUTION OF EMPLOYMENT	7.			X			
8. DISTRIBUTION OF POPULATION	8.			X			
9. DEMANDS FOR GOVERNMENTAL SERVICES	9.			X			
10. INDUSTRIAL AND COMMERCIAL ACTIVITY	10.			X			
11. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS	11.		X				X
12. CUMULATIVE AND SECONDARY IMPACTS	12.			X			

Additional Comments to EA

Potential Impact on Physical Environment

6. Air Quality - The new air quality control equipment installed by industry in the area will enhance the visibility of the airshed and help to attain and maintain the PM-10 attainment levels.

Potential Impact on Human Environment

11. Locally Adopted Environmental Plans and Goals - The city council has worked for the last two seasons to curb emissions from city streets and wood stoves. The additional controls installed by industry in the area will help attain the PM-10 standards in Columbia Falls.

AIR QUALITY PERMIT

Issued To: Champion International Corp.
Libby Operations
P.O. Box 1570
Libby, MT 59923

Permit #2627-M
Notification of Permit Modification: 7/10/91
Date of Final Modification: 7/25/91

SECTION I: Permitted Facilities

An air quality permit is hereby granted to the above-named permittee, hereinafter referred to as recipient, pursuant to Section 75-2-204 and 211, MCA, as amended, and Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1101 through 16.8.1118 as amended, for the entire mill site located at P. O. Box 1570, Libby, MT, including the following:

A. The No. 7 boiler with a multiclone control and a slip stream scrubber, design capacity of 132 million Btu/hr.

B. The No. 8 boiler with a full stream wet scrubber, design capacity of 200 million Btu/hr.

C. The No. 9 boiler with a full stream wet scrubber, design capacity of 256 million Btu/hr.

D. Fugitive dust from mill vehicles and log yard activity.

E. Veneer dryers.

F. Wood waste cyclones and baghouses.

SECTION II: Limitations and Conditions

A. Boiler No. 7

1. Total particulate emissions shall be limited to 29.7 lbs/hr, and 130 tons per year.

2. PM-10 emissions shall be limited to 20.8 lbs/hr, and 91 tons per year.

3. Total particulate emissions shall be limited as per ARM 16.8.1402.

4. Visible air contaminants shall be limited to 20% opacity, as measured by Method 9, 40 CFR Part 60, Appendix A.

5. A stack test shall be required to determine compliance with the total particulate limitation, and to determine what steam production rate can be achieved while meeting the total

particulate and PM-10 limitations of Conditions A.1 and A.2. This test shall be performed prior to December 31, 1991, and is required annually for three years. The testing frequency will be re-evaluated after that time. The test methods shall conform to 40 CFR Part 51, Appendix M, for PM-10 and 40 CFR Part 60, Appendix A, for total particulate. Any exceedance of this steam production limitation will be considered an exceedance of Conditions A.1 and A.2.

6. For all stack tests, a pretest conference shall be held between the applicant, the testing firm and the department at least 30 days prior to the test. The department may require a written test protocol, including quality assurance procedures, prior to the pretest conference.

7. Champion shall maintain steam flow charts showing the firing rate of Boiler No. 7. A monthly report shall be submitted to the department showing the average daily steam flow from No. 7, and the highest hourly steam flow for that day. If records show that hourly steam flow exceeds the steam flow limit associated with the emission limits established in Conditions A.1 and A.2., it shall be considered a violation of this permit. The steam flow limit shall be established as per Condition A.5.

8. Champion may operate Boiler No. 7 at emission levels higher than the limits set in Conditions A.1 and A.2. above provided either Boiler No. 8 or No. 9 is down for maintenance. Emissions from Boiler No. 7 are limited to 0.391 lb/10^6 Btu fired during this time. At no time will the combined particulate emissions from all three boilers exceed 93.5 lbs/hr. During periods of elevated ambient particulate levels, such as air pollution alerts, the department may rescind Condition A.8 for this boiler.

9. Champion shall measure the Btu, moisture and fuel input to the boiler during the stack tests required in Condition A.5.

B. Boiler No. 8

1. Total particulate emissions shall be limited to 0.14 lbs per million Btu fired, and 28 lbs/hr, and 123 tons per year.

2. PM-10 emissions shall be limited to 0.14 lbs/10^6 Btu fired, and 28 lbs/hr, and 123 tons/yr.

3. Nitrogen oxide emissions shall be limited to 0.3 lbs/10^6 Btu fired, and 60 lbs/hr, and 263 tons/yr.

4. Carbon monoxide emissions shall be limited to 4 lbs/10^6 Btu fired, and 800 lbs/hr, and 3504 tons/yr.

5. Visible air contaminants shall be limited to 20% opacity, averaged over six consecutive minutes, as specified by 40 CFR Part 60, Appendix A, Method 9.

6. Every three years, a stack test shall be required to verify Conditions B.1, B.3, and B.4. These tests shall be performed in accordance with 40 CFR Part 60, Appendix A, Methods 1 through 10, for total particulate, NOx and CO. The department reserves the right to require additional testing in accordance with the provisions of ARM 16.8.704 as it deems necessary to inventory air pollution emissions or to verify compliance with this permit or any other air quality rule.

7. For all stack tests, a pretest conference shall be held between the applicant, the testing firm and the department at least 30 days prior to the test. The department may require a written test protocol, including quality assurance procedures, prior to the pretest conference.

8. The scrubber shall include a measuring device to measure the pressure drop across the scrubber. A graph of pressure drop versus boiler steam load shall be developed to check on scrubber operation. A liquid level gauge to measure scrubber liquid levels shall be installed. A record of pressure drop and scrubber liquid levels shall be recorded once per hour. This record shall be available for review by the department when requested.

9. Champion shall measure the Btu, moisture and fuel input to the boiler during the stack test required in Condition B.6.

C. Boiler No. 9

1. Total particulate emissions shall be limited to 0.14 lbs/10^6 Btu fired, and 35.8 lbs/hr, and 157 tons/year.

2. PM-10 emissions shall be limited to 0.14 lbs/10^6 Btu fired, and 35.8 lbs/hr, and 157 tons/year.

3. Nitrogen oxide emissions shall be limited to 0.3 lb/10^6 Btu fired, and 76.8 lbs/hr, and 336 tons/year.

4. Carbon monoxide emissions shall be limited to 1.9 lbs/10^6 Btu fired, and 486 lbs/hr, and 2130 tons/year.

5. Visible air contaminants shall be limited to a maximum of twenty percent (20%) opacity, averaged over six consecutive minutes, as specified by 40 CFR Part 60, Appendix A, Method 9.

6. Every three years, a stack test shall be required to verify Conditions C.1, C.3, and C.4. These tests shall be performed in accordance with 40 CFR Part 60, Appendix A, Methods 1

through 10 for total particulate, NOx, and CO. The first test is required by October 21, 1991, in accordance with the consent decree and letter authorizing the extension. The department reserves the right to require additional testing in accordance with the provisions of ARM 16.8.704 as it deems necessary to inventory air pollution emissions or to verify compliance with this permit or any other air quality rule. A one-time PM-10 test is required for this boiler for the purpose of inventorying actual PM-10 in the airshed. The PM-10 test shall conform to 40 CFR Part 51, Appendix M.

7. For all stack tests, a pretest conference shall be held between the applicant, the testing firm and the department at least 30 days prior to the test. The department may require a written test protocol, including quality assurance procedures, prior to the pretest conference.

8. The scrubber shall include a measuring device to measure the pressure drop across the scrubber. A graph of pressure drop versus boiler steam load shall be developed to check on scrubber performance. A liquid level gauge to measure scrubber liquid levels shall be installed. A record of pressure drop and scrubber liquid levels shall be recorded once per hour. This record shall be available for review by the department when requested.

9. Champion shall measure the Btu, moisture and fuel input to the boiler during the stack test required in Condition C.6.

D. Fugitive Dust Controls

1. Chemical dust suppressant shall be applied to the major haul routes throughout the plant to control fugitive dust from haul trucks. The application schedule shall be not less than once per year. If the opacity of the haul road dust emissions exceeds 15% at any time, reapplication of the dust suppressant shall be required.

2. Chemical dust suppressant shall be applied to the major roads on the log yard to control fugitive dust from all log handling equipment. The application schedule shall be no less than once per year. Water sprays shall be used as necessary to control dust emissions on active areas of the log yard. If the opacity of the log yard dust emissions exceeds 15% at any time, reapplication of the dust suppressant shall be required.

E. Veneer Dryers

1. PM-10 emissions shall be limited to the following:

Large dryer (15000 sq-ft/hr) - 16.85 lb/hr, and 74 TPY;
small dryer (10500 sq-ft/hr) - 13.27 lb/hr, and 58 TPY.

2. Visible air contaminants shall be limited to a maximum of 20% opacity averaged over six consecutive minutes as specified by 40 CFR Part 60, Appendix A, Method 9.

F. Wood Waste Cyclones and Baghouses

1. PM-10 emissions shall be limited to:

Cyc#	Description	SCFM	Allowable lbs/hr	TPY
4	Ply Sand Bghs	36000	0.6	3
5	Ply Hog, T&G Saw cyc	28000	3.7	16
6	Ply #1 cyc	15000	2.0	9
7	Ply #2 cyc	22500	2.9	12
8	Ply #3 cyc	20000	2.7	12
9a	Ply chp load cyc	5000	.7	3
9b	Std chp ld cyc	9000	1.2	5
9c	Saw chp ld cyc	9200	1.2	5
10	Ply hgfuel to fuel cyc	6000	.8	4
12	Stud Plnr#1 cyc	16300	2.1	9
13	Stud Plnr#2 cyc	30000	3.9	17
15	Stud trk bn cyc	9000	1.2	5
19	Saw shvg bn cyc	6000	.8	4
20	Saw plnr shvg cyc #8	38000	4.9	21
21a	Plnr trim saw cyc	16500	2.1	9
21b	Plnr hog cyc	10700	1.4	6
21c	Saw plnr cyc #7	27000	3.5	15
22	Finger Jointer	10000	1.3	6
29	Lily pad chp cyc	2500	.4	2
30	Pwrhs cyc	10000	1.3	6
31	Stud trm cyc	20000	2.7	12
32	Stud salv & Gn chp cyc	9200	1.2	5
37	Stractan Bghs	10000	.2	1
	Total Cyclone Allowable Emissions			187

2. Visible air contaminants shall be limited to a maximum of 20% opacity averaged over six consecutive minutes as specified by 40 CFR Part 60, Appendix A, Method 9.

G. Recipient shall comply with all other applicable state, federal and local rules.

SECTION III: Monitoring and Reporting

No ambient monitoring will be required at this time.

SECTION IV: General

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 et seq., MCA.

E. Appeals - Champion may request, within fifteen (15) days after the department issues its "Notification of Permit Modification," upon affidavit, setting forth the grounds therefore, a hearing before the Board. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the permit modification is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

Permit Analysis

Champion-Libby
Permit Modification - Libby Mill

A. Introduction

Champion International Corporation currently operates a stud sawmill and planer, finger jointer, stractan, and plywood mill in Libby, Montana. Prior to this permit modification only boilers #8 (#2380) and #9 (#2627) were subject to an air quality permit. All other emission points at the Champion mill predated the Montana permit requirements and were not required to obtain a permit unless a modification of the source occurred, or a standard changed affecting the facility.

On July 1, 1987, the Environmental Protection Agency (EPA) promulgated new ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The annual standard is 50 $\mu g/m^3$ and the 24-hour standard is 150 $\mu g/m^3$. These standards were in turn adopted by the Montana Board of Health and Environmental Sciences on April 15, 1988. On August 7, 1987, EPA designated Libby as a PM-10 Group I area, due to numerous violations of both the annual and the 24-hour PM-10 standards. On November 15, 1990, the 1990 amendments to the Federal Clean Air Act designated the Libby Group I area as a PM-10 nonattainment area. As a result of these designations, the department was required to develop a PM-10 emission control program as part of the State Implementation Plan (SIP) to bring the Libby area into compliance with the PM-10 standards and demonstrate maintenance of the standards.

In order to identify the emission sources which were contributing to the violations of the PM-10 standards, the department conducted a chemical mass balance study (CMB). The only Champion International emission points which were identified as contributors in the CMB study were the three boilers. Specifically, the contributions from the boilers to the PM-10 annual and the exceedance day ambient levels were 1.6% (1.1 $\mu g/m^3$) and 0.7% (1.4 $\mu g/m^3$), respectively.

Since the sources contributing to the violations of the PM-10 standards have been identified, control plans are being developed for each source or source category (wood stove control programs, sanding material specifications, and street sweeping) including industrial sources (Champion International Corp.). Since the SIP must also demonstrate maintenance of the standards, the control plans must also contain enforceable limits on emission points which were not identified as contributing to the problem (Champions veneer dryers, wood transfer cyclones, and fugitive dust) but could contribute if their emissions were allowed to substantially increase over what they were during the CMB study period. Therefore, this permit not only reduces allowable emissions for the boilers, but also establishes enforceable allowable emission limits on the veneer dryers, wood waste transfer cyclones and baghouse, and fugitive dust.

This permit modification serves as the legal basis to reduce the allowable emissions at the boilers and establish allowable emissions on other emission points which were unpermitted in the past. Specifically this permit reduces the allowable emissions on boiler #8, incorporates a recently issued permit to install a new high efficiency scrubber on boiler #9 and thereby reduce both the actual and allowable emissions, reduces the allowable emissions from boiler #7 by restricting its operating level, and establishes allowable emission limits on all other Champion emission points.

Using the CMB study period (10/87 through 11/88) as the base year, this permit will result in a 55% reduction in allowable emissions from the boilers.

B. Process Description

Raw logs are received by truck and rail and unloaded at the plant. Log handlers sort the logs and transport them to various log decks. Additional log handlers transport the logs to the studmill, sawmill or plywood mill.

Upon arrival at the mills the logs are debarked and processed through the headrig (saw) and several resaws until the logs are converted to raw lumber. The raw lumber is transported by forklifts to various storage areas where it will remain until it is again transported by forklift to the kilns for drying. The slabs which are generated at the sawmill are chipped and transported by a high pressure air system to the chip storage bins and subsequent loadout to chip trucks destined for other wood product facilities. The sawdust and bark are also transported by a high pressure air system conveyor to the hogged fuel pile to be used as fuel for boilers #7, #8, and #9.

The dried lumber is transported by forklift to the planer mill for planing. The planer shavings are transported by a high pressure air system to the hogged fuel pile or truck bins for loadout to other facilities. The finished lumber is stored on the mill site until it is loaded on commercial trucks or railroad cars for transport to wholesale markets.

Raw logs also enter the plywood mill where the lathe turns the log in to thin pieces of veneer. The veneer is dryed in the veneer dryers and conveyed on to the plywood press where glue is applied and various sheets of veneer are pressed into plywood. The 4' by 8' sheets of plywood are sanded to produce a smooth surface and transported to covered storage areas for subsequent shipment to wholesale outlets by commercial truck or railroad car.

The boilers serve as a source of steam for the drying kilns, veneer dryers, and turbine generators producing electricity for mill use or sale on the utility grid as a cogenerator.

Since this permit primarily deals with tightening allowable emission limits, establishing allowable emission limits, and combining all existing permits (including the permit for the new scrubber on boiler #9) into one permit, the only physical change which will occur at the mill as a result of this permit is to limit the steam production on boiler #7 in order to reduce the overall boiler emissions.

C. Applicable Regulations

1. ARM 16.8.821 Ambient Standards for PM-10. Champion International Corp. must demonstrate compliance with the applicable ambient air quality standards. The preliminary SIP demonstration of attainment performed by the department indicates that the emission limitations contained in this permit, along with control measures applied to other sources, will bring Libby into compliance with the PM-10 standards.

2. ARM 16.8.1113(a) Modification of Permit. The department is allowed to modify Champion International Corporations' permit due to a change in an applicable standard (PM-10) adopted by the Board of Health and Environmental Sciences. Champion may appeal the departments modification to the Board.

3. ARM 16.8.1115 Inspection of Permit. Champion must maintain a copy of their air quality permit at the mill site and make that copy available for inspection by department personnel upon request.

4. ARM 16.8.1117 Compliance with Other Statues and Rules. Champion International Corporation must comply with all other applicable state, federal, and local laws and regulations.

5. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization on major haul roads and as needed on major roads in the log decks, in conjuction with watering, will satisfy these requirements.

6. ARM 16.8.1402 Particulate Matter, Fuel Burning Equipment. Boiler #7 must meet the requirements of this rule. However, the more stringent limits contained in this permit supersede this rule for boilers #8 and #9.

7. ARM 16.8.1403 Particulate Matter, Industrial Process. The requirements of this rule are superseded by the stricter emission limits established in the permit, except that this rule requires an emission limit of 16.85 lbs/hr on the large veneer dryer and 13.27 lbs/hr on the small dryer.

8. ARM 16.8.1404 Visible Air Contaminants. The requirements of this permit either supersede this rule because they are more stringent or they are equivalent.

9. Libby RACT Analysis

   a. No. 7 Boiler

This is an old wood-fired boiler which has air emission controls consisting of multiclones and a side stream scrubber. The side stream scrubber was added in 1976 to comply with the Montana fuel burning rule. EPA policy has indicated that multiclones are not to be given credit as RACT for SIP purposes in nonattainment areas. Therefore, an emission limit was imposed on the boiler by the SIP process which, when added to other emission reductions in the area, will show attainment with federal and state PM-10 regulations. The new boiler limit will be met by de-rating the boiler with source tests to show compliance. This emission reduction is equivalent to the reduction which is attainable with a qualified RACT scrubber.

b. No. 8 Boiler

This is an old wood-fired boiler which has recently been updated by adding an automatic stoker and feed controls, and installation of a new full stream wet scrubber. This scrubber was determined to be BACT in the permitting process and, therefore, meets the requirements for RACT.

c. No. 9 Boiler

This is an old wood-fired stoker boiler which is currently undergoing an upgrade. A new full stream wet scrubber is being installed during the summer of 1991, and this scrubber has also been determined to meet BACT requirements in the permit process. Therefore, it also meets the requirements of RACT.

d. Veneer Dryers

These two dryers are existing units which were installed prior to 1968. These sources were not identified in the CMB study as contributing to the PM-10 nonattainment area. Therefore, these sources are included in the emission inventory and no control is credited to the PM-10 SIP. A new opacity limitation of 20% has been placed on this source to comply with RACT guidelines. It is also noted that EPA RACT guidelines do not require control of all sources if they are not shown to be a part of the problem.

e. Cyclones and Baghouses

These sources were not covered under permit in the past. The SIP inventory asked for all emission sources down to 1 ton per year. These have been inventoried and new emission limits have been included on the permit. The CMB did not identify these sources as contributing to the problem and were not included in the SIP compliance plan.

f. Fugitive Dust

Emission limits for this source are also included in the new permit with chemical stabilization required as control. This is acknowledged as best available work practice in the mining industry, and meets RACT for the plywood industry also.

D. Department Review of Modification

1. Existing Air Quality

The Libby area is currently a nonattainment area for PM-10 standards. The department has determined, based on its preliminary demonstration of attainment, that the emission limitations contained in this permit, along with control measures applied to other sources, will bring Libby into compliance with the PM-10 standards.

2. Emission Inventory

Summary of Allowable Emissions		Existing	Proposed
No. 7 Boiler	Total Particulate	.391 lb/mmBtu	.391 lb/mmBtu
		51.6 lb/hr	29.7 lb/hr
		226 TPY	130 TPY
	PM-10	51.6 lb/hr	20.8 lb/hr
		226 TPY	91 TPY
No. 8 Boiler	Total Particulate and PM-10	.23 lb/mmBtu	.14 lb/mmBtu
		46 lb/hr	28 lb/hr
		201 TPY	123 TPY
	NOx	*	0.3 lb/mmBtu
		*	60 lb/hr
		*	263 TPY
	CO	*	4 lb/mmBtu
		*	800 lb/hr
		*	3504 TPY

*These limits have been adjusted based on information from stack tests conducted in 1989 and 1990.

No. 9 Boiler	Total Particulate and PM-10	.351 lb/mmBtu	.14 lb/mmBtu
		89.7 lb/hr	35.8 lb/hr
		393 TPY	157 TPY
	NOx	--	0.3 lb/mmBtu
		--	76.8 lb/hr
		--	336 TPY
	CO	--	1.9 lb/mmBtu
		--	486 lb/hr
		--	2130 TPY

Veneer Dryers PM-10

Large Dryer	16.85 lb/hr 74 TPY	16.85 lb/hr 74 TPY
Small Dryer	13.27 lb/hr 58 TPY	13.27 lb/hr 58 TPY
Cyclones and Baghouses*	187 TPY	187 TPY

*NOTE: These emission limits were established by multiplying the maximum emissions which could be emitted considering an AP-42 PM-10 emission factor and continuous operation by 1.25. Since these emission factors have an error band and because these emission points never had an emission limit in the past, the department chose to multiply the maximum emissions by 1.25. This assures the source and the department that compliance can be maintained. Baghouse emissions are based on an emission factor of 0.002 gr/dscf. This was derived from a cyclone factor of 0.16 gr/dscf (AP-42, 10.4.1) and 99% control.

3. Impact Analysis

No modeling has been required for this permit because it is a modification of previous permits with a reduction in allowable emissions. This permit modification is necessary to achieve emission reductions at the boilers and cap the emissions from other Champion emission points. These reductions, in conjunction with reductions at other sources, will provide the emission reduction necessary to bring Libby into compliance with the PM-10 standards.

4. Analysis of Permit Limitation No. 8 for the #7 Boiler, Champion, Libby

Champion has requested to operate the #7 boiler at full load when either #8 or #9 are down for maintenance. The allowable emission rate for the #7 boiler at full load has been established at 51.6 lb/hr by the fuel burning rule. This emission rate plus the emission from either #8 or #9 still falls below the 93.5 lb/hr allowable determined as acceptable by the SIP process.

If No. 9 is down:	No. 7 - 51.6 lb/hr
	No. 8 - 28.0 lb/hr
	Total - 79.6 lb/hr
If No. 8 is down:	No. 7 - 51.6 lb/hr
	No. 9 - 35.8 lb/hr
	Total - 87.4 lb/hr

Therefore, the SIP-based permit limitation of 93.5 lb/hr is protected at all times. Compliance is demonstrated by source tests and scrubber monitoring on a regularly scheduled basis.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Modification of Champion International Corporation permits #2380 and #2627.

Description of Project: This permit modification will reduce Champion's allowable emissions to a level where compliance with the PM-10 standards can be demonstrated. This is part of a control plan developed by the department to bring the Libby area into compliance with the ambient PM-10 standards, and is required as part of the State Implementation Plan (SIP).

Benefits and Purpose of Proposal: This modification will reduce Champion's allowable emissions and, in conjunction with control plans for other sources, bring the Libby PM-10 nonattainment area into compliance with the ambient PM-10 standards.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives were available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A complete listing of enforceable permit conditions and a permit analysis is contained in permit #2627M. Further information is contained in the Libby SIP.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: This modification will reduce allowable particulate emissions from Champion.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: AQB staff.

EA prepared by: Warren Norton

Date: May 7, 1991

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. TERRESTRIAL AND ACQUATIC LIFE AND HABITATS	1.			X			
2. WATER QUALITY, QUANTITY AND DISTRIBUTION	2.			X			
3. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE	3.			X			
4. VEGETATION COVER, QUANTITY AND QUALITY	4.			X			
5. AESTHETICS	5.			X			
6. AIR QUALITY	6.		X				X
7. UNIQUE ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCE	7.			X			
8. DEMANDS ON ENVIRONMENTAL RESOURCE OF WATER, AIR AND ENERGY	8.			X			
9. HISTORICAL AND ARCHAEOLOGICAL SITES	9.					X	
10. CUMULATIVE AND SECONDARY IMPACTS	10.			X			

- -

POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. SOCIAL STRUCTURES AND MORE	1.				X		
2. CULTURAL UNIQUENESS AND DIVERSITY	2.				X		
3. LOCAL AND STATE TAX BASE AND TAX REVENUE	3.			X			
4. AGRICULTURAL OR INDUSTRIAL PRODUCTION	4.			X			
5. HUMAN HEALTH	5.			X			X
6. ACCESS TO AND QUALITY OR RECREATIONAL & WILDERNESS ACTIVITIES	6.			X			
7. QUANTITY AND DISTRIBUTION OF EMPLOYMENT	7.			X			
8. DISTRIBUTION OF POPULATION	8.			X			
9. DEMANDS FOR GOVERNMENTAL SERVICES	9.			X			
10. INDUSTRIAL AND COMMERCIAL ACTIVITY	10.			X			X
11. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS	11.			X			
12. CUMULATIVE AND SECONDARY IMPACTS	12.			X			

Potential Impact on Physical Environment

6. Air Quality - This permit modification will have a moderate impact on air quality in that it is part of the overall control strategy to bring the Libby area into compliance with the ambient PM-10 standards. Allowable emissions from the boilers will be reduced 55% as a result of this permit. This permit will also establish allowable emission limits for other emission points within the Champion facility which did not have emission limits in the past.

Potential Impacts on Human Environment

5. Human Health - This permit modification will have a small but positive impact on human health. The permit modification is part of the control strategy to bring the Libby area into compliance with the ambient PM-10 standards. Compliance with this standard should have a positive effect on the health of the citizens of Libby.

10. Industrial Commercial Activity - While this modification will have only a minor effect on the current level of industrial activity at Champion, their allowable operating rate for boiler #7, under this permit modification, will be limited to less than their previous allowable operating rate. Champion could, however, increase the allowable operating rate for boiler #7 contained in this permit modification if additional emission controls beyond those controls contained in this permit modification are applied to the boiler or to other sources in the area. The overall mill production levels could also be increased if substantive process changes occur which lower the emissions or the control strategy applied in Libby lowers ambient PM-10 levels below the standard and the area is designated attainment for the particulate standards. Any such change must be approved by the department as a permit modification.

If this modification were not imposed, the department would not be able to show compliance with the PM-10 standard. Libby would then be subjected to EPA penalties such as withholding of highway funds and emission offsets for new industry. This would have far more serious consequences for the industrial sector and commercial activity in Libby.

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

STAN STEPHENS, GOVERNOR

COGSWELL BUILDING

STATE OF MONTANA

FAX # (406) 444-2606

HELENA, MONTANA 59620

(406) 444-3454
FAX # (406) 444-1374

NOTIFICATION OF PERMIT MODIFICATION

Date of Mailing: January 8, 1992

Name of Applicant: Louisiana-Pacific Corporation

Location: Missoula, Township 13 North, Range 19 West, Section 8, Missoula County, Montana.

Proposed Action: The department proposes to issue a permit modification, with conditions, to the above-named permittee. The permit will be assigned number 2303-M.

Proposed Conditions: See attached permit. More stringent emissions limitations may be necessary in the future if the present SIP fails to show attainment with federal and state air quality regulations.

Procedures for Appeal: The permit shall be deemed modified in accordance with this notice within 15 days of this notice, which is January 23, 1992, unless the permittee requests a hearing before the Montana Board of Health and Environmental Sciences. Any appeal must be filed within fifteen (15) days after the department notifies the permittee of its intention to modify the permit. The request for hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for hearing in triplicate to: Chairman, Board of Health and Environmental Sciences, Cogswell Building, Helena, Montana 59620. The filing of a request for hearing postpones the effective date of the modifications to the permit until the decision of the board becomes final or judicial review has been concluded.

Sincerely,

Jeffrey T. Chaffee, P.E.
Chief

AIR QUALITY PERMIT

Issued to: Louisiana-Pacific Corp.
Missoula Operations
P. O. Box 4007
Missoula, MT 59806

Permit # 2303-M
Notification of Permit Modification: 1-8-92
Date of Final Modification: 1-23-92

SECTION I: Permitted Facilities

An air quality permit is hereby granted to the above-named permittee, hereinafter referred to as Louisiana-Pacific, pursuant to Section 75-2-204, and 211, MCA, as amended, and Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1101 through 16.8.1118 as amended, for the entire mill site located at P. O. Box 4007, Missoula, MT, including the following:

A. Six direct contact wood particle dryers with multiclone control. Each of the six dryers has a rated capacity of 20,000 lb/hr of wood. These dryers are heated with the exhaust gases from the sander dust boiler, the Roemmc sander dust burner, and the Coen sander dust burner. The sander dust boiler has a capacity of 55 million Btu/hr, the Roemmc sander dust burner capacity is 50 million Btu/hr, and the Coen sander dust burner capacity is 35 million Btu/hr. Each of the combustion units has an abort stack to divert the hot gases to the atmosphere in case of fire or other problems.

B. Two direct contact predryers with multiclone control. Each predryer has a rated capacity of 17,000 lb/hr of wood. These predryers are also heated with the exhaust from the Coen sander dust burner.

C. A Geka hot oil heater with a capacity of 20 million Btu/hour fired with natural gas. The hot oil is used in the continuous press line.

D. Wood waste cyclones and baghouses.

Source	Description	Control	Flow Rate
PC 301	Rej hopper	Bghs G&H	
PC 302	Blending area	"	26680 CFM
PC 401A	Form mach to face	"	26680 "
PC 401B	Form mach to core	"	
PC 404	Mat trim saw pneu	Cyclone	
PC 405	Line clean up pneu	Cyclone	
PC 501 A & B	5X25 Saws & hog	Bghs I	
PC 503 A & B	5X16 Saws & hog	"	48000 CFM
PC 502 A, B & C	Sander	Bghs M	48000 "
PC 504	Saws & hog to stor	Bghs A	
PC 602	Reman relay	"	8000 CFM
PC 507	Saws & hog edging	Bghs E&F	30000 "
			30000 "

Source	Description	Control	Flow Rate
PC 508	Saws & hog edging	Bghs B&C	26680 CFM
			26680 "
PC 509	New sander	Bghs K&L	47000 "
			47000 "
PC 510	Sanderdust relay	Bghs D	1000 "
PC 601	Reman pneu	Bghs J	16000 "
PC 805	Bullnose & saws	Bghs N	48000 "

E. Fugitive dust from receiving, storage and handling of raw material wood particles. This includes the receiving of shavings and sawdust by truck, unloading and conveying to the press line, the indoor storage area, or the outdoor storage pile via the radial stacker. It also includes fugitive emissions from the reclaiming of this material from the outdoor storage pile by front-end loader and conveying back to the press line.

F. This plant was existing in 1968 and operated with grandfather status until 1986 when a fifty percent expansion of the plant capacity was permitted (AQ Permit #2303 - dated September 15, 1986).

SECTION II: Limitations and Conditions

A. Plantwide Conditions:

1. All information contained in the 1986 permit application including, but not limited to, equipment lists, drawings, and specifications are considered conditions of the permit, except where more specific requirements are specified in this permit.

2. All stack and vent emissions are limited to 20% opacity. Compliance with this condition shall be determined by visual observation in accordance with 40 CFR Part 60, Appendix A, Method 9.

3. Louisiana-Pacific may be required to reduce emissions beyond the levels specified in this permit and accept more stringent limitations in a permit modification if, in the opinion of the department, future studies identify the particleboard plant as a significant contributor to ambient pollutant concentrations where these concentrations exceed or may exceed Montana or federal ambient air quality standards.

B. Wood Particle Dryers (1, 2, 3, 4, C, D, and predryers A and B)

1. Particulate emissions from each dryer and predryer shall not exceed 6.0 lb/hr of total particulate and 6.0 lb/hr of PM-10.

2. In order to demonstrate compliance with the emission limitations contained in paragraph B.1 above, Louisiana-Pacific shall perform annual source tests on one existing dryer (dryer 1, 2, 3, or 4) and one new dryer (dryer C or D) or one predryer (dryer A or B). The exact dryers to be tested shall be at the discretion of Louisiana-Pacific except that all dryers must be tested at least once during each five years of operation.

3. The source testing required in paragraph B.2 above shall consist of three complete test runs performed in accordance with department procedures and in accordance with 40 CFR Part 60, Appendix A (total particulates) and 40 CFR Part 51, Appendix M (PM-10). Louisiana-Pacific may utilize the total particulate test method (40 CFR Part 60, Appendix A) as a surrogate method for PM-10, but testing results in excess of 6.0 lb/hr shall constitute a violation of the total particulate and PM-10 limitations. Louisiana-Pacific shall also comply with the following source testing requirements:

   a. All dryers and predryers must be capable of accommodating the above-mentioned source testing.

   b. Louisiana-Pacific shall provide the department with at least a 15-day prior notice before the tests are performed.

   c. Reports of the source test results shall be submitted to the department within 60 days following each test.

4. Louisiana-Pacific shall install and operate temperature sensors at the inlet of each wood particle dryer and predryer. The temperature sensors shall have a remote readout and audible alarm. The alarm system shall be audible to the dryer or predryer operator and the operator(s) of all three combustion units. The alarm system shall become activated when exhaust gas exceeds 475 degrees F. Data from the temperature sensors shall be maintained for a period of at least 2 years and shall be available to the department upon request.

5. Emissions from each dryer or predryer shall not exceed 20% opacity as determined in accordance with 40 CFR Part 60, Appendix A, Method 9.

C. Baghouse Emission Limitations

1. All emission points equipped with baghouses are required to meet an emission limitation of 0.02 grains per dry standard cubic foot of exhaust gas for total particulate and 0.02 grains per dry standard cubic foot of exhaust gas for PM-10. Compliance with this emission limitation shall be by visual inspection unless such inspections indicate, in the opinion of the department, probable noncompliance with the 0.02

gr/dscf limitation, at which time source testing may be required.

2. All sander dust handling systems are to be enclosed and equipped with baghouse control. No outside storage of sander dust shall be allowed.

3. Contaminated floor sweepings commonly used for suspension burner fuel may be stored outside if the material is limited to no more than 50 cubic yards and the material is enclosed, covered, or surrounded by a windbreak in such a manner as to prevent blowing dust.

D. Cyclone Emission Limitations

All emission points equipped with cyclones are required to meet a 20% opacity limitation, 2.0 lbs/hr for total particulate, and 0.8 lbs/hr for PM-10. Compliance with this emission limitation shall be by visual inspection unless such inspections indicate, in the opinion of the department, probable noncompliance with this limitation at which time source testing may be required.

E. Particleboard Press Vent Limitations

1. The three batch press vent fans shall be limited to 5.75 lb/hr of total particulate and 5.75 lb/hr of PM-10.

2. The batch prepress vent fans shall be limited to 1.92 lb/hr of total particulate and 1.92 lb/hr of PM-10.

3. The continuous press vent fans shall be limited to 1.92 lb/hr of total particulate and 1.92 lb/hr of PM-10.

4. The continuous prepress vent fans shall be limited to 1.92 lb/hr of total particulate and 1.92 lb/hr of PM-10.

5. Compliance with this emission limitation shall be by visual inspection unless such inspections indicate, in the opinion of the department, probable noncompliance with this limitation at which time source testing may be required.

F. Fugitive Emission Controls

1. All fugitive emissions are limited to 20% opacity. Compliance with this condition shall be determined by visual observation in accordance with 40 CFR Part 60, Appendix A, Method 9.

2. Paving or dust suppressant shall be applied to all routinely used haul roads within the plant area. If dust suppressant is used it shall be reapplied at least once per year. Additional application of dust suppressant may be required if fugitive dust exceeds 20% opacity from the haul roads at

any time. Opacity shall be determined by EPA Method 9, CFR Part 60, Appendix A.

3. Dust suppressant measures shall be applied to the shavings and sawdust storage pile sufficient to control airborne wood dust. The opacity of these emissions shall not exceed 20% opacity as determined by EPA Method 9, 40 CFR Part 60, Appendix A.

4. Fugitive particulate emissions from the raw material storage pile including unloading, conveying to the pile, and transfer back to the mill shall not exceed 320 lbs/day for total particulate emissions, or 115 lbs/day PM-10. Compliance with these limitations shall be determined as follows:

Emissions (TSP or PM-10) = E(OU) + E(TP) + E(RP)

Where:
OU = Outside raw material unloading (tons)
TP = Raw material transfer to outside storage (tons)
RP = Raw material reclaim from outside storage (tons)
E(OU) = (OU)(1 - control eff)(Emiss Fact)(.33)
E(TP) = (TP)(1 - cont eff)(Emiss Fact)(.33)
E(RP) = (RP)(1 - cont eff)(Emiss Fact)(.33)
Emission Factor = 1.0 lb/tn for total particulate
and 0.36 lb/tn for PM-10

Notes:

1) The control efficiencies as of 12/10/91 are considered to be zero.

2) The 0.33 is utilized to distribute the emission factor to each emission point within the process since the 320 lb/day and the 115 lb/day limits are based on 50% of the raw material passing through the outside unloading and the outside storage pile.

3) Louisiana-Pacific shall keep records of raw material receipts at the outside unloading station, the amount transferred to outside storage, and the amount reclaimed from outside storage on a daily basis. These records shall be made available to the department for inspection when requested.

G. Emission Monitoring Requirements:

1. An electric eye monitor, similar to those used in incinerators, shall be installed in the abort stack to the sander dust boiler. The monitor shall have a remote readout visible or audible to the operator of the boiler. Louisiana-Pacific shall immediately initiate corrective action whenever emissions in excess of 20% are observed.

Data from the monitor need not be recorded and digitized unless the department has reason to believe violation of the opacity standard exists.

2. The department reserves the right to require opacity monitors at the Coen burner abort stack, sander dust boiler abort stack, hot oil heater stack, and the Roemmc sander dust burner abort stack. The decision to require this monitoring shall be based upon whether or not the department has reason to believe a violation of the opacity standard may exist. If excess emissions exist or may exist at these locations, further opacity monitoring may be required.

H. General Conditions

1. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

2. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

3. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

4. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 _et seq_., MCA.

5. Appeals - Any person or persons who are jointly or severally adversely affected by the department's decision may request, within fifteen (15) days after the department renders its decision, upon affidavit, setting forth the grounds therefor, a hearing before the Board. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

6. Application Data - Information submitted on behalf of an air quality permit application is hereby incorporated as a condition of that permit including commencement and completion dates of construction.

7. Permit Inspection - As required by ARM 16.8.1115 Inspection of Permit, a copy of the air quality permit shall be made available for inspection by air quality personnel at the location of the permitted source.

8. Construction Commencement - Construction must begin within one year of permit issuance or the permit will be considered withdrawn.

9. Permit Fees - Pursuant to Section 75-2-211, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required by that Section and rules adopted thereunder by the Board of Health and Environmental Sciences.

Permit Analysis

Louisiana-Pacific - Missoula

Permit Modification - Missoula Plant

A. Introduction

This particleboard plant was existing in the Missoula area prior to 1968. The original mill had a capacity of one hundred million square feet of 3/4-inch particleboard. Louisiana-Pacific expanded the mill capacity in 1987 by fifty percent by using the offsets provided by the closure of the Evans Products plant. The expanded mill has a capacity of one hundred and fifty million square feet of 3/4-inch particleboard. The existing mill consisted of four rotary dryers heated by the exhaust gases from the sander dust boiler and a sander dust burner. The old press line utilized a batch press with a capacity of 100 million square feet 3/8-inch basis. The 1987 expansion added two new wood particle dryers, two new predryers with a Coen sander dust burner, and a new press line with a continuous press. A Konus natural gas heater was also added to heat the new press line.

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The annual standard is 50 micrograms per cubic meter and the 24-hour standard is 150 micrograms per cubic meter. These standards were in turn adopted by the Montana Board of Health and Environmental Sciences on April 15, 1988. Due to violations of these standards, Missoula has been designated as a PM-10 nonattainment area. As a result of this designation the Montana Department of Health and Environmental Sciences and the Missoula County Air Pollution Control Agency are required to develop a plan to control these emissions and bring the area into compliance with the federal and state ambient air quality standards.

In order to identify the emission sources which were contributing to the violation of the PM-10 standard, Missoula County conducted a chemical mass balance study (CMB) of the area. The Louisiana-Pacific mill was not identified as a significant contributor to the problem by this method, but fugitive dust has been a problem at the plant and is being addressed at all other point sources in nonattainment areas. Therefore, this permit modification is adding general fugitive dust control measures to this facility.

B. Process Description

This plant processes raw wood fiber into particleboard by refining the fiber, adding resin and pressing the mat into boards. The raw material, primarily wood shavings from the planing process in sawmills, is transported to Missoula by truck. This material is unloaded at the plant and moved by conveyor to the dryers and the press line, or out to the storage pile. The material is reclaimed from the pile by front-end loader and conveyed to the dryers and the press line. Approximately 50% of the plant production is stored in this pile during the year. The wood fiber is then dried, blended with resin, and introduced to the press line for particleboard production. Many baghouses and cyclones are used in the wood fiber handling systems. Sawdust and sander dust is used as fuel for the boiler and sander dust burners. This plant also contains a remanufacturing section which processes the particleboard into finished wood which is used in furniture production.

Since the SIP process did not identify this source as a significant contributor to the Missoula nonattainment problem, no emission limitations were changed in this permit. Only cyclone-controlled and fugitive dust sources were addressed in more detail.

C. Applicable Regulations

1. ARM 16.8.821 Ambient Standard for PM-10. Louisiana-Pacific must demonstrate compliance with the applicable ambient air quality standards. The SIP demonstration of attainment indicates that the emission limitations contained in this permit, along with control measures applied to other sources, will bring the Missoula area into compliance with the PM-10 standards.

2. ARM 16.8.1113(a) Modification of Permit. The department is allowed to modify Louisiana-Pacific Corporation's permit due to a change in an applicable standard (PM-10) adopted by the Board of Health and Environmental Sciences. Louisiana-Pacific may appeal the department's modification to the Board.

3. ARM 16.8.1115 Inspection of Permit. Louisiana-Pacific must maintain a copy of their air quality permit at the mill site and make that copy available for inspection by department personnel upon request.

4. ARM 16.8.1117 Compliance with Other Statutes and Rules. Louisiana-Pacific must comply with all other applicable state, federal, and local laws and regulations.

5. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

6. ARM 16.8.1402 Particulate Matter, Fuel Burning Equipment. More stringent limits contained in this permit supersede this rule.

7. ARM 16.8.1403 Particulate Matter, Industrial Process. The requirements of this rule are superseded by the stricter emission limits established in the permit.

8. ARM 16.8.1404 Visible Air Contaminants. The requirements of this permit either supersede this rule because they are more stringent or they are equivalent.

9. Louisiana-Pacific Missoula RACT Analysis

The Louisiana-Pacific plant in Missoula has six wood particle dryers and two predryers which are heated with direct contact combustion gas from a sander dust boiler, a Roemmc sander dust burner, and a Coen sander dust burner. All dryers are connected by a manifold system and are controlled by high efficiency multiclones. All combustion emissions as well as dryer emissions exit to atmosphere through the multiclones. Therefore, the primary emissions points at this facility are:

a. Eight wood particle dryers;
b. Cyclones and baghouses from wood handling systems;
c. Fugitive emissions from raw material handling and storage;
d. Particleboard prepresses and final presses.

Mr. Martin Hills, project engineer for Louisiana-Pacific, submitted the RACT justification. He listed both the electrified filter bed and the E-tube as systems which may increase the degree of control on their dryer emissions. He stated that the amount of increased control must be significant to justify the investment in the control system. Martin then referenced the recent source tests to show that the actual emissions are very close to the emissions rates reported for the EFB and the E-tube systems. He concluded that there is no significant increase in control with the new systems.

The BACT-LAER clearinghouse for wood dryers has been reviewed. The following list shows the BACT determinations made from 1985 through 1990.

Louisiana-Pacific, CA Wood Fiber Dryer (600,000 lb/hr)	.032 gr/scf 25.3 lb/hr	High Eff Cyc Control
Potlatch, MN Wood Gasifier Dryer (36,000 lb/hr)	.015 gr/acf 19.3 lb/hr	EFB
Louisiana-Pacific, VA Wafer Dryer	9 lb/hr	EFB
Weyerhauser, MI Wood Dryer (22,000 lb/hr)	19 lb/hr	Cyclone
Louisiana-Pacific Wood Particle Dryer (20,000 lb/hr) Missoula, MT	.035 gr/dscf 6 lb/hr/unit	Multiclone Control

From the above information and that submitted by Louisiana-Pacific, the department has determined that the Missoula dryers meet RACT requirements for wood particle dryers.

All wood handling systems are controlled by baghouses or cyclones which are considered to be RACT. The fugitive emissions from raw material handling and storage have been the source of public complaints during periods of high winds. The state currently has an enforcement action addressing this problem. Louisiana-Pacific has made some recent changes in operation to control this source better. These emissions are generally large particles typical of fugitive sources.

D. Department Review of Modification

1. Existing Air Quality

The Missoula area is currently a nonattainment area for PM-10 standards. The department has determined, based on its preliminary demonstration of attainment, that the emission limitations contained in this permit, along with control measures applied to other sources, will bring Missoula into compliance with the PM-10 standards.

2. Emission Inventory - Particulate TSP (Allowable)

Summary of Allowable Emissions	Existing	Proposed
PC 206 Dryer #1-multiclone	25.2 TPY	26.3 TPY
PC 207 Dryer #2 "	25.2	26.3
PC 208 Dryer #3 "	25.2	26.3
PC 209 Dryer #4 "	25.2	26.3
PC 210 Predryer A-multiclone	25.2	26.3
PC 211 Predryer B "	25.2	26.3
PC 212 Dryer #C "	25.2	26.3
PC 213 Dryer #D "	25.2	26.3
PC 301 Rej hopper - baghouse	*	+
PC 302 Blending area, shavings to storage, cycl (10% use)	0.8	+
PC 401A Form mach to face bghs	*	20.0
PC 401B Form mach to core bghs	*	20.0
PC 404 Mat trim saw cyclone	8.0	8.0
PC 405 Line cleanup cyclone	2.1	2.1
PC 501A&B 5X25 Saw & blow hog bghs	*	+
PC 502A Sander baghouse	*	36.0
PC 502B Sander baghouse	*	+
PC 502C Sndr dust to dust bin, bghs	*	+
PC 503 A&B 5X16 saws & blowhog bghs	*	36.0
PC 504 Saws & hog to storg bghs	*	+
PC 507 Saws & hogged edge-new bghs	*	45.2
PC 508 Saw & hog relay-new bghs	*	40.0
PC 509 Sander bghs-new	*	70.4
PC 510 Sanderdst relay-baghouse	*	0.8

Summary of Allowable Emissions		Existing	Proposed
PC 601	Reman pneu. baghouse	*	12.0
PC 602	Reman relay baghouse	*	6.0
PC 805	Bullnose & trim saws	*	36.0
PC 701	3 hot press vent fans	25.2	26.3
PC 702	Pre press vent fans	8.4	8.8
PC 703	Hot press vents - new	8.4	8.8
PC 704	Pre press vent fans-new	8.4	8.8
PC ---	Fugitive emissions from storage & handling of raw material	58.5	58.5
Total TSP Emissions		321.4	595.6

*Negligible emissions.
+Included with another emission point (see Sec.I.D)
Note: See expansion permit analysis for calculation of existing emission estimates. The proposed emission estimate includes dryer emissions at 6 lb/hr for 8760 hr/yr. Baghouse emissions were calculated at 0.02 gr/dscf and 8760 hrs/yr. The press vent emissions use 2.0 lb/hr and 8760 hr/yr. The fugitive emission estimate has been changed to include the raw material storage pile, unloading, storage, and reclaiming. The following estimates are from Mr. Charles Likes, mill manager:

Raw material required to operate the plant for one year - 195,000 bone dry units. Mr. Likes estimates 50% of this wood is unloaded, stored, and reclaimed from the pile at some time during the year, and he uses 2400 lbs/BDU.

(195,000 BDU/Yr)(50%)(2400 lb/BDU)(1 tn/2000 lb) = 117,000 tn/yr wood through the pile

E. F. = 1.0 lb/tn for unloading, loading and storage of sawdust (AP-42, 10.3-1 sawdust handling)

Calculate emissions:
(117,000 tn wood/yr)(1.0 lb/tn)(1/2000) = 58.5 tn/yr fugitive emissions

The September 15, 1986 permit allowed 27.8 tn/yr for fugitives; however, this estimate did not include raw material storage. The new fugitive estimate is 30.7 tns/yr larger than the estimate made in 1986. This has been added to the fugitive emission estimate for this permit and incorporated into the allowable emission limits of 320 lb/day for total particulate and 115 lb/day for PM-10.

4. Emission Inventory - Gaseous Pollutants (Potential)

The gaseous pollutants are generated by the combustion units which exhaust through the six dryers or two predryers, except for the hot oil heater which has a separate stack.

Emissions in Tons/Yr

Source	SOx	NOx	VOC	CO
Sander dust boiler	2.1	9.6	19.8	56.7
Roemmc dust burner	1.9	8.8	18.0	51.5
Coen dust burner	1.3	6.1	12.6	36.1
Geka hot oil htr	0.0	11.2	0.2	2.8
Totals	5.3	35.7	51.4	147.1

Note: Additional VOC emissions originate from the finished board print line (Reman section), but have not been quantified in this table.

Calculations:

Sander Dust Boiler - 55 million Btu/hr capacity

1. Assume sander dust has 8500 Btu/lb.
2. Then (55 mmBtu/hr)(1 lb sander dust/8500 Btu) = 6470 lb/hr or 28,334 tn/yr fuel (8760 hr/yr)
3. Emission factor = (1-02-009-04) EPA 450/4-90-003 (AIRS Doc)
   SOx - 0.15 lb/tn burned
   (28,334 tn/yr)(0.15 lb/tn)(1/2000) = 2.1 TPY
   NOx - 0.68 lb/tn burned
   (28,334 tn/yr)(0.68 lb/tn)(1/2000) = 9.6 TPY
   VOC - 1.4 lb/tn burned
   (28,334 tn/yr)(1.4 lb/tn)(1/2000) = 19.8 TPY
   CO - 4.0 lb/tn burned
   (28,334 tn/yr)(4.0 lb/tn)(1/2000) = 56.7 TPY

Roemmc Sander Dust Burner - 50 million Btu/hr capacity

1. Assume sander dust has 8500 Btu/lb.
2. Then (50 mmBtu/hr)(1 lb sander dust/8500 Btu) = 5882 lb/hr or 25,763 tn/yr fuel (8760 hr/yr)
3. Emission factor = (1-02-009-04) wood-fired boiler
   SOx - 0.15 lb/tn burned
   (25,763 tn/yr)(0.15 lb/tn)(1/2000) = 1.9 TPY
   NOx - 0.68 lb/tn burned
   (25,763 tn/yr)(0.68 lb/tn)(1/2000) = 8.8 TPY
   VOC - 1.4 lb/tn burned
   (25,763 tn/yr)(1.4 lb/tn)(1/2000) = 18.0 TPY
   CO - 4.0 lb/tn burned
   (25,763 tn/yr)(4.0 lb/tn)(1/2000) = 51.5 TPY

Coen Sander Dust Burner - 35 million Btu/hr capacity

1. Assume sander dust has 8500 Btu/lb.
2. Then (35 mmBtu/hr)(1 lb sander dust/8500 Btu) = 4117 lb/hr or 18,032 tn/yr fuel (8760 hr/yr)
3. Emission factor = (1-02-090-04) wood-fired boiler

SOx - 0.15 lb/tn burned
(18,032 tn/yr)(0.15 lb/tn)(1/2000) = 1.3 TPY
NOx - 0.68 lb/tn burned
(18,032 tn/yr)(0.68 lb/tn)(1/2000) = 6.1 TPY
VOC - 1.4 lb/tn burned
(18,032 tn/yr)(1.4 lb/tn)(1/2000) = 12.6 TPY
CO - 4.0 lb/tn burned
(18,032 tn/yr)(4.0 lb/tn)(1/2000) = 36.1 TPY

<u>Geka Hot Oil Heater</u> - 20 million Btu/hr capacity

1. Natural gas-fired - 1100 Btu/CF
2. Then (20 mmBtu/hr)(1 CF/1100 Btu) = 18182 CF/hr
   or 159.3 million CF/yr (8760 hr/yr)
3. Emission Factor - (1-02-006-02)
   SOx - 0.6 lb/MMCF burned
   (159.3 MMCF/yr)(0.6 lb/MMCF)(1/2000) = 0.0 TPY
   NOx - 140.0 lb/MMCF burned
   (159.3 MMCF/yr)(140 lb/MMCF)(1/2000) = 11.2 TPY
   VOC - 2.8 lb/MMCF burned
   (159.3 MMCF/yr)(2.8 lb/MMCF)(1/2000) = 0.2 TPY
   CO - 4.0 lb/MMCF burned
   (159.3 MMCF/yr)(4.0 lb/MMCF)(1/2000) = 2.8 TPY

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Modification of the Louisiana-Pacific Corporation air quality permit #2303 for the Missoula particleboard plant.

Description of Project: This permit modification will establish definitive emission limits for all emission points within the plant and require fugitive dust control on those haul roads within the plant area.

Benefits and Purpose of Proposal: Louisiana-Pacific (LP) is currently not a significant contributor to the Missoula PM-10 nonattainment problem. This permit modification will establish definitive enforceable emission limits for all sources at the LP facility and, therefore, ensure that their contribution to Missoula's PM-10 problem will not increase beyond known limits.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: One alternative would be to require greater degrees of control from other sources in the nonattainment area. The SIP control plan worked out by Missoula County has attempted to distribute the control burden fairly across the area. The controls required of Louisiana-Pacific are minimal fugitive dust controls which have been required to match the city, county, and state efforts to control road and street dust emissions.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A complete listing of enforceable permit conditions and a permit analysis is contained in permit 2303-M. Further information is contained in the Missoula SIP.

Recommendation: No EIS required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA: N/A

If an EIS is not required, explain why the EA is an appropriate level of analysis: This modification will reduce fugitive emissions from the LP plant in Missoula, and assist in attaining compliance with the PM-10 regulations for the area. This is a small change to the existing permit, and the EA is sufficient environmental review.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.
Individuals or groups contributing to this EA: AQB staff
EA prepared by: Warren Norton
Date: December 3, 1991.

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. TERRESTRIAL AND AQUATIC LIFE AND HABITATS	1.			X			
2. WATER QUALITY, QUANTITY AND DISTRIBUTION	2.			X			
3. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE	3.			X			
4. VEGETATION COVER, QUANTITY AND QUALITY	4.			X			
5. AESTHETICS	5.			X			
6. AIR QUALITY	6.			X			
7. UNIQUE ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCE	7.			X			
8. DEMANDS ON ENVIRONMENTAL RESOURCE OF WATER, AIR AND ENERGY	8.			X			
9. HISTORICAL AND ARCHAEOLOGICAL SITES	9.					X	
10. CUMULATIVE AND SECONDARY IMPACTS	10.			X			

POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. SOCIAL STRUCTURES AND MORES	1.			X			
2. CULTURAL UNIQUENESS AND DIVERSITY	2.			X			
3. LOCAL AND STATE TAX BASE AND TAX REVENUE	3.			X			
4. AGRICULTURAL OR INDUSTRIAL PRODUCTION	4.			X			
5. HUMAN HEALTH	5.			X			X
6. ACCESS TO AND QUALITY OR RECREATIONAL & WILDERNESS ACTIVITIES	6.			X			
7. QUANTITY AND DISTRIBUTION OF EMPLOYMENT	7.			X			
8. DISTRIBUTION OF POPULATION	8.			X			
9. DEMANDS FOR GOVERNMENTAL SERVICES	9.			X			
10. INDUSTRIAL AND COMMERCIAL ACTIVITY	10.			X			
11. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS	11.			X			
12. CUMULATIVE AND SECONDARY IMPACTS	12.			X			

.otential Impacts on Human Health

5. Human Health - The permit modification is part of the control strategy to bring the Missoula area into compliance with the ambient PM-10 standards. Compliance with this standard should have a positive effect on the health of the citizens of the Missoula valley.

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

AIR QUALITY BUREAU

STAN STEPHENS, GOVERNOR | COGSWELL BUILDING

STATE OF MONTANA

FAX # (406) 444-2606 | HELENA, MONTANA 59620

(406) 444-3454
FAX # (406) 444-1374

January 8, 1992

NOTIFICATION OF PERMIT MODIFICATION

Date of Mailing: January 8, 1992

Name of Applicant: Stone Container Corporation

Location: Missoula, Township 14 North, Range 21 West, Section 24
Missoula County, Montana.

Proposed Action: The department proposes to issue a permit modification, with conditions~~,~~ to the above-named permittee. The permit will be assigned number 2589-M.

Proposed Conditions: See attached permit. More stringent emissions limitations may be necessary in the future if the present SIP fails to show attainment with federal and state air quality regulations.

Procedures for Appeal: The permit shall be deemed modified in accordance with this notice within 15 days of this notice, which is January 23, 1992, unless the permittee requests a hearing before the Montana Board of Health and Environmental Sciences. Any appeal must be filed within fifteen (15) days after the department notifies the permittee of its intention to modify the permit. The request for hearing shall contain an affidavit setting forth the grounds for the request. Any hearing will be held under the provisions of the Montana Administrative Procedures Act. Submit requests for hearing in triplicate to: Chairman, Board of Health and Environmental Sciences, Cogswell Building, Helena, Montana 59620. The filing of a request for hearing postpones the effective date of the modifications to the permit until the decision of the board becomes final or judicial review has been concluded.

Sincerely,

Jeffrey T. Chaffee, P.E.
Chief

AIR QUALITY PERMIT

Issued to: Stone Container Corporation
P. O. Box 4707
Missoula, MT 59806-4707

Permit #2589-M
Notification of
Modification: 1-8-92
Date of Final
Modification: 1-23-92

SECTION I: Permitted Facilities

An air quality permit is hereby granted to the above-named permittee, hereinafter referred to as recipient, pursuant to Section 75-2-204 and 211, MCA, as amended, and Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1113 as amended, for the entire mill site located at the Frenchtown mill site for the following:

The entire facility at the Frenchtown site, including:

A. Three Recovery Boilers

1. #3 Recovery Boiler has a capacity of 385 million Btu per hour input, and is controlled with an electrostatic precipitator. It has continuous emission monitors for TRS required by state permit.

2. #4 Recovery Boiler has a capacity of 825 million Btu per hour input, and is controlled with an electrostatic precipitator. It has continuous emission monitors for TRS required by state permit.

3. #5 Recover Boiler has a capacity of 330 million Btu per hour input, and is controlled with an electrostatic precipitator. This boiler is subject to NSPS and has continuous emission monitors for opacity and TRS.

B. Four Lime Kilns

1. #1 Lime Kiln has a capacity of 6.1 tons per hour of lime mud and is controlled with a wet venturi scrubber. The kiln has a continuous emission monitor for TRS.

2. #2 Lime Kiln has a capacity of 6.1 tons per hour of lime mud and is controlled with a wet venturi scrubber. The kiln has a continuous emission monitor for TRS.

3. #3 Lime kiln has a capacity of 15.6 tons per hour of lime mud and is controlled with a wet venturi scrubber. The kiln has a continuous emission monitor for TRS.

4. #4 Lime Kiln has a capacity of 12.7 tons per hour of lime mud and is controlled with a wet venturi scrubber. The kiln has a continuous emission monitor for TRS. This lime kiln is subject to NSPS Subpart BB.

C. Three Dissolving Tanks

1. #3 Smelt Dissolving Tank has a capacity of 29 tons per hour of black liquor solids. This dissolver is controlled with a wet scrubber.

2. #4 Smelt Dissolving Tank has a capacity of 62.5 tons per hour of black liquor solids. This dissolver is controlled with a wet scrubber.

3. #5 Smelt Dissolving Tank has a capacity of 25 tons per hour of black liquor solids. This dissolver is controlled with a wet scrubber, and is subject to NSPS Subpart BB.

D. Three Lime Slakers

1. The #1 Lime Slaker has a capacity of 7.7 tons per hour of lime. This slaker is controlled with a wet scrubber.

2. The #2 Lime Slaker has a capacity of 9.0 tons per hour of lime. This slaker is controlled with a wet scrubber.

3. The #3 Lime Slaker has a capacity of 7.9 tons per hour of lime. This slaker is controlled with a wet scrubber.

E. Two Wood-Fired Boilers

1. Waste Fuel Boiler - This boiler is primarily fueled with waste wood and bark. It has an input capacity of 537 million Btu per hour, and has the capability to fire natural gas or heavy fuel oil. The boiler is controlled with a wet venturi scrubber. The boiler is subject to NSPS Subpart D and has continuous emission monitors for both NOx and SO_2.

2. Hog Fuel Boiler - This boiler is only fired with waste wood and bark, and has a capacity of 200 million Btu per hour input to the fire box. This boiler is controlled with a wet venturi scrubber.

F. Two Natural Gas-Fired Boilers

1. #2 Package Boiler - This boiler is fired only with natural gas, and has a capacity of 72 million Btu per hour. This boiler has no emission control on the stack.

2. Power Boiler - This boiler is fired only with natural gas, and has a capacity of 297 million Btu per hour. This boiler has no emission control on the stack.

G. Five Pulp Washers

1. The PC Washer has a capacity of 20.2 tons per hour of air dried pulp (ADP). This washer is controlled by a wet scrubber.

2. The M&D Washer has a capacity of 17.2 tons per hour of air dried pulp (ADP). This washer is a compaction baffle-type washer with no particulate emissions.

3. The No. 1 Base Washer has a capacity of 38.6 tons per hour of air dried pulp (ADP). This washer is controlled by a wet scrubber.

4. The No. 2 Base Washer has a capacity of 38.6 tons per hour of air dried pulp (ADP). This washer is controlled by a wet scrubber.

5. The Top Washer has a capacity of 25.5 tons per hour of air dried pulp (ADP). This washer is controlled by a wet scrubber.

H. Three Paper Machines

1. #1 Paper Machine has a capacity of 29.5 tons per hour of ADP. There is no control on the paper machine ventilation.

2. #2 Paper Machine has a capacity of 29.5 tons per hour of ADP. There is no control on the paper machine ventilation.

3. #3 Paper Machine has a capacity of 59.6 tons per hour of ADP. There is no control on the paper machine ventilation.

I. Three Unloading Stations

1. Salt Cake/Lime Unloading has a capacity of 20.0 tons per hour, and is controlled with a baghouse.

2. Starch Unloading has a capacity of 7.5 tons per hour, and is controlled with a baghouse.

3. Clay Unloading has a capacity of 13.0 tons per hour, and is controlled with a baghouse.

J. Sawdust, Chip, and Hog Fuel Unloading and Conveying

1. Sawdust is conveyed from storage to the digesters with covered conveyers and no other control.

2. Chips are conveyed from storage to the digesters with covered conveyers and no other control.

3. Hog fuel is conveyed from storage to the boilers with covered conveyers and no other control.

K. Sawdust and Chip Cyclones

1. M&D Cyclone delivers sawdust to the M&D Digester.

2. Pins Cyclone delivers chips to the Pins Digester.

3. Batch Cyclone delivers chips to the Batch Digesters.

SECTION II: Limitations and Conditions

The results of any single emission test or daily average from the continuous opacity monitors shall be evaluated against the specified hourly and daily maximum. Emission tests shall be conducted on the recovery boilers and the waste fuel boiler quarterly.

All other sources listed, with the exception of conveying systems, brown stock washers, and unloading systems shall be tested once per year. Results of such tests shall be evaluated against the specified hourly and daily maximum.

A. #3 Recovery Boiler

1. Total suspended particulate emissions from this boiler shall not exceed 979 lbs/calendar day, and 40.79 lbs/hr.

2. PM-10 emissions from this boiler shall not exceed 979 lbs/calendar day, and 40.79 lbs/hr.

3. Total sulfate emissions from this boiler shall not exceed 979 lbs/calendar day, and 40.79 lbs/hr.

4. Total reduced sulfur emissions from this boiler shall not exceed 5 ppm, 24-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half. TRS emissions are determined by continuous monitoring with 24-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

7. The monthly average total suspended particulate shall not exceed 451 lbs/day. Monthly average emissions shall be determined by continuous opacity monitoring. Stone shall maintain a correlation between opacity and particulate emissions and use this correlation to calculate daily and monthly averages.

B. #4 Recovery Boiler

1. Total suspended particulate emissions from this boiler shall not exceed 1253 lbs/calendar day, and 52.21 lbs/hr.

2. PM-10 emissions from this boiler shall not exceed 1253 lbs/calendar day, and 52.21 lbs/hr.

3. Total sulfate emissions from this boiler shall not exceed 1253 lbs/calendar day, and 52.21 lbs/hr.

4. Total reduced sulfur emissions from this boiler shall not exceed 5 ppm, 24-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate. TRS emissions are determined by continuous monitoring with 24-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

7. The monthly average total suspended particulate shall not exceed 928 lbs/day. Monthly average emissions shall be determined by continuous opacity monitoring. Stone shall maintain a correlation between opacity and particulate emissions and use this correlation to calculate daily and monthly averages.

C. #5 Recovery Boiler (NSPS-BB)

1. Total suspended particulate emissions from this boiler shall not exceed 0.044 gr/dscf, and in no case shall exceed 633.6 lbs/day and 26.4 lbs/hr. This is consistent with 0.044 gr/dscf at a maximum flow rate of 70,000 dscf per minute as required by NSPS.

2. PM-10 emissions from this boiler shall not exceed 633.6 lbs/day, and 26.4 lbs/hr.

3. Total sulfate emissions from this boiler shall not exceed 633.6 lbs/day, and 26.4 lbs/hr.

4. Total reduced sulfur emissions from this boiler shall not exceed 5 ppm, 12-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M. TRS emissions are determined by continuous monitoring methods specified in 40 CFR Part 60, Appendix B, Performance Specifications 1 through 6 as applicable. Back-half is not required since this is an NSPS source.

6. Continuous emission monitors for opacity, and total reduced sulfur compounds are required for this source.

7. The monthly average total suspended particulate shall not exceed 384 lbs/day. Monthly average emissions shall be determined by continuous opacity monitoring. Stone shall maintain a correlation between opacity and particulate emissions and use this correlation to calculate daily and monthly averages.

D. #3 Smelt Dissolving Tank

1. Total suspended particulate emissions from this source shall not exceed 140 lbs/day and 5.83 lbs/hr.

2. PM-10 emissions from this source shall not exceed 140 lbs/day and 5.83 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M.

E. #4 Smelt Dissolving Tank

1. Total suspended particulate emissions from this source shall not exceed 607 lbs/day and 25.29 lbs/hr.

2. PM-10 emissions from this source shall not exceed 607 lbs/day and 25.29 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M.

F. #5 Smelt Dissolving Tank (NSPS)

1. Total suspended particulate emissions from this source shall be limited to 0.2 lb/ton black liquor processed, but in no case shall it exceed 120 lbs/day and 5.0 lbs/hr. This is consistent with the 0.2 lb/ton NSPS limit since this dissolver has a capacity of 25 tons/hour of black liquor solids.

2. PM-10 emissions from this source shall not exceed 120 lbs/day and 5.00 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M.

G. #1 Lime Kiln

1. Total suspended particulate emissions from this source shall not exceed 288 lbs/day and 12.0 lbs/hr.

2. PM-10 emissions from this source shall not exceed 288 lbs/day, and 12.0 lbs/hr.

3. Total sulfate emissions from this source shall not exceed 259 lbs/day, and 10.79 lbs/hr.

4. Total reduced sulfur emissions shall not exceed 20 ppm, 24-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate. TRS emissions are determined by continuous monitoring with 24-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

H. #2 Lime Kiln

1. Total suspended particulate emissions from this source shall not exceed 266 lbs/day and 11.08 lbs/hr.

2. PM-10 emissions from this source shall not exceed 266 lbs/day, and 11.08 lbs/hr.

3. Total sulfate emissions from this source shall not exceed 239 lbs/day, and 9.96 lbs/hr.

4. Total reduced sulfur emissions shall not exceed 20 ppm, 24-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate. TRS emissions are determined by continuous monitoring with 24-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

I. #3 Lime Kiln

1. Total suspended particulate emissions from this source shall not exceed 359 lbs/day and 14.96 lbs/hr.

2. PM-10 emissions from this source shall not exceed 359 lbs/day, and 14.96 lbs/hr.

3. Total sulfate emissions from this source shall not exceed 323 lbs/day, and 13.46 lbs/hr.

4. Total reduced sulfur emissions shall not exceed 20 ppm, 24-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate. TRS emissions are determined by continuous monitoring with 24-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

J. #4 Lime Kiln (NSPS)

1. Total suspended particulate emissions from this source shall be limited to 0.067 gr/dscf, but in no case shall it exceed 204.0 lbs/day and 8.50 lbs/hr. This limitation is consistent with a maximum flow rate of 14,800 dscfm. The analysis for the coke conversion shows no increase in particulate emissions from this source.

2. PM-10 emissions from this source shall not exceed 204.0 lbs/day, and 8.50 lbs/hr.

3. Total sulfate emissions from this source shall not exceed 204.0 lbs/day, and 8.50 lbs/hr.

4. Total reduced sulfur emissions shall not exceed 8.0 ppm, 12-hour average.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M. TRS emissions are determined by continuous monitoring with 12-hour averages.

6. A continuous emission monitor for total reduced sulfur compounds is required for this source.

NOTE: The permit analysis for the coke conversion project permitted in January 1987 shows no increase in the allowable particulate from the #4 Lime Kiln. Therefore, the department feels that the NSPS limit of 0.067 gr/dscf is still applicable to this source.

K. #1 Lime Slaker

1. Total suspended particulate emissions from this source shall not exceed 110 lbs/day and 4.58 lbs/hr.

2. PM-10 emissions from this source shall not exceed 110 lbs/day and 4.58 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate.

L. #2 Lime Slaker

1. Total suspended particulate emissions from this source shall not exceed 146 lbs/day and 6.08 lbs/hr.

2. PM-10 emissions from this source shall not exceed 146 lbs/day and 6.08 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate.

M. #3 Lime Slaker

1. Total suspended particulate emissions from this source shall not exceed 72 lbs/day and 3.00 lbs/hr.

2. PM-10 emissions from this source shall not exceed 72 lbs/day and 3.00 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulate. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulate.

N. Hog Fuel Boiler

1. Total suspended particulate emissions from this boiler shall not exceed 446 lbs/day, and 18.58 lbs/hr.

2. PM-10 emissions from this boiler shall not exceed 446 lbs/day, and 18.58 lbs/hr.

3. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A, including back-half particulates. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M, including back-half particulates.

O. Waste Fuel Boiler (NSPS Subpart D)

1. Total suspended particulate emissions from this boiler shall not exceed 0.1 lbs/million Btu fired, and 52.04 lbs/hr, and 1249 lbs/day.

2. PM-10 emissions from this boiler shall not exceed 1249 lbs/day, and 52.04 lbs/hr, and 0.1 lbs/million Btu fired.

3. Sulfur dioxide emissions from this source shall not exceed 0.8 lb/million Btu, and 429.6 lb/hr when firing liquid fossil fuel or liquid fossil fuel and wood residue.

4. Nitrogen dioxide emissions from this boiler shall not exceed 0.30 lbs/million Btu, and 161.1 lbs/hr when firing liquid or gaseous fossil fuel and wood residue.

5. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M.

6. Continuous emission monitors for sulfur dioxide and nitrogen oxides is required for this source.

P. Sawdust, Chips, and Hog Fuel Unloading, Storage, and Handling

1. Sawdust - This activity is limited to 1.0 lb/ton of sawdust handled (SCC #3-07-008-03).

2. Chips - This activity is limited to 0.18 lb/ton of chips handled (State emission estimate).

3. Hog Fuel - This activity is limited to 0.18 lb/ton of hog fuel handled (State emission estimate).

Q. Brown Stock Washers

1. Brown Stock Washers shall be limited to a total of 128 lb/day, and 5.33 lb/hr.

2. Compliance with the above standards shall be determined by EPA source sampling methods specified in 40 CFR Part 60, Appendix A. PM-10 sampling methods are specified by 40 CFR Part 51, Appendix M.

R. Batch and Continuous Digesters

1. All gaseous emissions from these units shall be ducted to the lime kilns for oxidation of all reduced sulfur compounds.

2. All gaseous emissions from the air stripper shall be ducted to the lime kilns for oxidation of all reduced sulfur compounds.

S. Scrubber Operational Checks

The following scrubber operational checks shall be performed on a weekly basis.

1. Lime Kilns

   a. Scrubber water flow
   b. Scrubber water solids
   c. Scrubber pressure differential

2. Smelt Tank Vents

   a. Scrubber shower water flows
   b. Scrubber pressure differential
   c. Bypass conditions

3. Waste Fuel Boiler

   a. Scrubber shower water flows
   b. Scrubber water solids
   c. Scrubber pressure differential
   d. Scrubber water pH check (pH 7-9)

4. Hog Fuel Boiler

   a. Scrubber water flow and weir overflow
   b. Scrubber shower water pressure
   c. Scrubber pressure differential
   d. Scrubber water pH check (pH 7-9)

5. Stone shall maintain a record of such checks which the department may inspect at any time.

T. Plant-Wide Sulfur Dioxide Limitation

Total sulfur dioxide emissions from the mill shall not exceed 5000 lbs/day. In the event of a natural gas curtailment, Stone shall report, in addition to the normal report, the following:

1. Daily SO_2 emissions from recovery boilers and power boilers.

2. Dates and times of curtailment.

3. Quantity and sulfur content of fuel oil burned.

4. All fuel oil burned must comply with ARM 16.8.1411 - Sulfur In Fuel Oil rule, unless sulfur dioxide emissions are controlled on an equivalent basis.

U. NSPS Testing Requirements

8. Permit Duration - This permit is null and void if the equipment is torn down, removed, or not capable of being operated for two years.

9. Permit Fees - Pursuant to Section 75-2-211, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required by that Section and rules adopted thereunder by the Board of Health and Environmental Sciences.

SECTION III: Continuous Emission Monitoring Systems

A. No. 3 and No. 4 Recovery Boilers

A total reduced sulfur (TRS) CEM is required by state permit for each boiler. This CEM is not required to conform to federal specifications. Stone already has Barton titrators in place to fulfill this requirement. These monitors do not meet federal specifications because the response time is too slow; however, it is sufficient to monitor this pollutant at this time.

B. #5 Recovery Boiler (NSPS - BB)

1. An opacity continuous emission monitor (CEM) is required by state permit and federal regulations. This CEM shall conform to Performance Specification 1 found in 40 CFR Part 60, Appendix B.

2. A total reduced sulfur (TRS) CEM is required by state permit and federal regulation. This CEM shall conform to federal specifications as required by 40 CFR Part 60, Appendix B, Specification 5.

C. #1, #2, and #3 Lime Kilns

A total reduced sulfur (TRS) CEM is required by state permit for each kiln. This CEM is not required to conform to federal specifications. Stone already has Barton titrators in place to fulfill this requirement. These monitors do not meet federal specifications because the response time is too slow; however, it is sufficient to monitor this pollutant at this time.

D. #4 Lime Kiln (NSPS - BB)

A total reduced sulfur (TRS) CEM is required by state permit and federal regulations. This CEM shall conform to federal specifications as required by 40 CFR Part 60, Appendix B, Specification 5.

E. Waste Fuel Boiler (NSPS - D)

1. A sulfur dioxide CEM is required by federal regulation and state permit when this boiler is fired on oil. This CEM shall conform to federal specifications as required by Specification 2, 40 CFR Part 60, Appendix B.

2. A nitrogen oxides CEM is required by federal regulation and state permit. This CEM shall conform to federal specifications as required by Specification 2, 40 CFR Part 60, Appendix B.

3. Either an oxygen or carbon monoxide CEM is required as provided in 40 CFR Part 60.45.

SECTION IV: Ambient Air Monitoring Program

Stone shall conduct an ambient air monitoring program consisting of the following:

A. At least two analyzers to measure H_2S.

B. At least two PM-10 samplers.

C. At least one wind system.

D. Sampling sites, data reporting, and parameters to be monitored will be specified by the department.

SECTION V: Reporting Requirements

A. Operational Reporting Requirements

Stone shall submit the following production and operation information annually to the AQB by March 1st of each year. This information is required for use in calculation of the annual emission inventory.

1. Annual production information calculated on a calendar year basis for the previous calendar year.

SOURCE	UNITS OF MATERIAL PROCESSED
a. Hog Fuel Boiler	Hog Fuel - tns/yr Nat Gas - MCF/yr
b. Waste Fuel Boiler	Hog Fuel - Tns/yr Nat Gas - MCF/yr Fuel Oil - Mgal/yr
c. No 2 Pkg Boiler	Nat Gas - MCF/yr
d. Power Boiler	Nat Gas - MCF/yr
e. No. 3 Recovery Blr	Black liquor - tns/yr Nat Gas - MCF/yr

SOURCE	UNITS OF MATERIAL PROCESSED
f. No. 4 Recovery Blr	Black liquor - tns/yr Nat Gas - MCF/yr Fuel Oil - Mgal/yr
g. No. 5 Recovery Blr	Black liquor - Tns/yr Nat Gas - MCF/yr Fuel Oil - Mgal/yr
h. No. 1 lime kiln	Nat Gas - MCF/yr Fuel Oil - Mgal/yr Lime mud - tns/yr
i. No. 2 lime kiln	Nat Gas - MCF/yr Fuel Oil - Mgal/yr Lime mud - tns/yr
j. No. 3 lime kiln	Nat Gas - MCF/yr Fuel Oil - Mgal/yr Lime mud - tns/yr
k. No. 4 lime kiln	Nat Gas - MCF/yr Fuel Oil - Mgal/yr Lime mud - tns/yr Petrol Coke - Tns/yr
l. No. 3 Dissolver	Black liquor - tns/yr
m. No. 4 Dissolver	Black liquor - Tns/yr
n. No. 5 Dissolver	Black liquor - tns/yr
o. No. 1 Slaker	Lime - tns/yr
p. No. 2 Slaker	Lime - tns/yr
q. No. 3 Slaker	Lime - tns/yr
r. Pulp produced	Pulp - ADT/yr
s. Linerboard produced	Linerboard - ADT/yr

2. Hours of operation for the mill and each source if different from the mill operation time.

3. Fugitive dust information:

   a. Tons of chips received for the year.

   b. Tons of sawdust received for the year.

   c. Tons of hog fuel received for the year.

B. Monthly Reporting Requirements.

1. Lime Kilns

a. All lime kilns shall report daily average TRS concentrations with the number of hours exceeding 20 ppm. Lime kilns subject to NSPS Subpart BB shall report 12 hour averages with the number of hours exceeding 8 ppm.

b. All lime kilns shall test for particulate emissions at least once per year and include the result with the monthly report in which the test was completed.

2. Recovery Boilers

a. All recovery boilers shall report daily averages for TRS with the number of hours exceeding 5 ppm. Recovery boilers subject to NSPS Subpart BB shall report on a 12-hour basis with the number of hours exceeding 5 ppm.

b. All recovery boilers shall report a monthly average pounds of sulfur emitted per 1000 pounds of black liquor burned.

c. Recovery boilers subject to NSPS shall report opacity on a 24-hour average basis.

d. Recovery boilers are required to test for total particulate once per quarter. These tests shall conform to 40 CFR 60, Appendix A, with back-half included unless NSPS is applicable.

e. Recovery boilers subject to NSPS shall report all exceedances of the opacity standard of 35%, six-minute average.

3. Waste Fuel Boiler

a. All boilers subject to NSPS Subpart D shall report three-hour averages for SO_2 and NOx as specified by federal regulations.

4. Pulp Mill Production

Average daily pulp production shall be reported in air dried tons per day, and average daily black liquor burning rates for each recovery boiler in pounds per day.

C. Quarterly Excess Emission Reports

Stone shall submit quarterly excess emission reports for all continuous emission monitors required by NSPS as specified in 40 CFR Part 60.7(c). This report shall include:

1. The magnitude of excess emissions computed in accordance with 60.13(h), any conversion factors used, and the date and time of commencement and completion of each time period of excess emissions.

2. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility; the nature and cause of any malfunction (if known); the corrective action taken or preventative measures adopted.

3. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

4. When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

5. The excess emission reports shall be completed in a format supplied by the department.

ATTACHMENT B

Modified June 14, 1989
Conditions of Permit #2589

This Attachment B, Conditions of Permit #2589, hereby replaces the original Permit #2344 as issued May 22, 1987.

SECTION I: Permitted Facilities

A. A fuel change is requested for all four existing lime kilns. These kilns are currently fired on natural gas. The permit application requests permission to use an 80% petroleum coke, 20% natural gas fuel combination on a BTU basis. The kilns currently burn approximately 1,216 million cubic feet of natural gas per year. The fuel change will replace 80% of this with approximately 35,285 tons/year of petroleum coke supplied by Exxon Refinery.

B. The general associated facilities are:

1. Two coke storage bins with vents.

2. Coke unloading station with enclosed conveying systems to transport the coke to storage.

3. Pulverizer and burner system to feed the coke into the kilns.

SECTION II: Limitations and Conditions

A. The fuel change shall be limited to a maximum of 80% petroleum coke substitution for the natural gas currently used in each kiln.

B. Stone shall provide the department with a current analysis of the coke used in the kilns on a yearly basis. The report shall contain the heat content of the coke in BTU/lb, and the concentration of the following parameters: fixed carbon, volatiles, sulfur, ash, vanadium, beryllium, cadmium, mercury, nickel and lead. A change to any other type of fuel which increases any air pollution emissions is subject to the new source review requirements in accordance with ARM 16.8.1101 et seq. and/or ARM 16.8.921 et seq. This report is due by July 15 each year. No report is required for 1987.

C. The coke unloading, storage, and handling system shall use reasonably available control technology to control fugitive dust.

D. Nitrogen oxide emissions shall not exceed 408 tons/year from all four lime kilns. Compliance with this requirement shall be determined by conducting stack testing in accordance with the frequency specified in condition E. of this section. Compliance with this limitation shall be deemed achieved provided that the results of all stack sampling conducted within any calendar year do not exceed any of the values provided below:

Kiln #1: $(X + 7.63/N^{\frac{1}{2}})(0.69)$
Kiln #2: $(X + 7.63/N^{\frac{1}{2}})(0.68)$
Kiln #3: $(X + 7.63/N^{\frac{1}{2}})(1.25)$
Kiln #4: $(X + 7.63/N^{\frac{1}{2}})$

Units are pounds per hour.

Where: N = number of stack tests or hourly readings obtained in the subject calendar year as presented below.

X = (Coke %)(.26) + 4.9
Coke % is measured on a BTU basis.

The value of N shall be determined as follows:

1. For stack tests conducted in accordance with 40 CFR Part 60, Appendix A, Method 7, N shall equal 3 for each completed test (not the same as runs). A minimum of 2 tests is required.

2. For stack tests conducted using continuous emission sampling devices (such as that conducted in support of this application), N shall equal the number of valid hourly samples. The minimum number of samples required for each applicable kiln shall be 50.

– Average coke feed rate during the testing period shall not be less than five percentage points than the average coke feed rate in use by Stone over the preceding 3 months. Average coke feed rate shall be calculated on a percent BTU basis excluding all time periods in which coke was not a fuel to the lime kiln in question.

E. An annual stack test at Kiln #4 shall be required to verify compliance with condition D. of this section and to otherwise inventory the emissions from this source. Kilns #1, #2 and #3 only need be tested once following conversion to coke. The department, however, reserves the right to require further testing in accordance with the provisions of ARM 16.8.704 as it deems necessary to inventory air pollution emissions or to verify compliance with this permit or any other air quality rule. The requirements of this section, however, shall not be deemed a relaxation of testing requirements found in other permits issued to Stone. The test required by this section shall also include an analysis of sulfur dioxide and carbon monoxide and be performed according to the applicable EPA test methods as specified in 40 CFR Part 60, Appendix A. In the case of carbon monoxide, however, Stone may conduct this test using the ORSAT method. Alternative equivalent methods to 40 CFR Part 60, Appendix A, may be used only upon written approval by the department.

F. Each lime kiln shall be equipped with a stack which has safe access to the test ports and which meets the criteria of 40 CFR Part 60, Appendix A, Method 1.

G. For all stack tests, a pretest conference shall be held at least 30 days prior to the test between Stone, the tester and the department. The department may require a written testing protocol, including quality assurance procedures, prior to the pretest conference.

H. Stone shall discontinue the burning of coke within 12 hours of being notified by the Missoula City-County Health Department that a Stage II, III or IV Alert is in progress within the air stagnation zone. Stone may resume using coke as soon thereafter as the alert has been cancelled.

I. Stone shall discontinue the burning of coke as soon as reasonably possible, but not more than one hour, when a malfunction of the kiln or scrubber occurs provided that such a malfunction has the potential to increase emissions of sulfur dioxide into the outdoor atmosphere.

SECTION III: Ambient Air Monitoring and Reporting Requirements

A. Stone Container shall install, operate and maintain one ambient air monitoring site in the vicinity of its kraft pulp and linerboard facility. The monitoring site shall consist of all equipment, supplies and personnel resources necessary and sufficient to monitor nitrogen dioxide levels in the ambient air in accordance with the procedures provided below.

B. Stone shall commence air monitoring within 90 days after the start of burning of petroleum coke in each of the four lime kilns.

C. For purposes of choosing an applicable site location, the department, in conjunction with Stone, the Missoula City-County Health Department, and interested citizens, shall form an ad hoc ambient air quality monitoring committee. The committee shall consist of the following members:

Stone Container	-	1 member
Missoula City-County Health Dept.	-	1 member
Department	-	1 member
Interested Citizens	-	2 members and 2 alternates

Each organization shall choose their respective committee member except that the department shall choose the citizen members from a list of names of anyone expressing interest in this subject. The department shall serve as chair for the committee.

D. The purpose of the monitoring committee in C. above is to choose the ambient air quality monitoring site for the continuous measurement of nitrogen dioxide. The chosen monitoring site must meet the minimum quality assurance requirements found in the Montana Quality Assurance Manual, including siting criteria. The site must also have adequate access and power requirements within a reasonable distance of the proposed monitoring station. In the event a consensus on site selection can not be reached. the department shall determine the final site location. The monitoring site must remain in the same lcoation for at least four consecutive quarters. It may be moved following four consecutive quarters in accordance with paragraph E.

E. The ambient air quality monitoring of nitrogen dioxide will continue for at least four consecutive quarters after the applicable lime kiln has been converted to coke and a maximum burn rate has been established. Following the successful gathering of four consecutive quarters of valid ambient air quality data collected in accordance with the requirements of H. below, the committee shall review the data and make a determination of whether or not to continue monitoring the effects of the coke conversion project or otherwise increase or decrease the network size. The committee's decision of whether or not to increase, decrease, or alter the network configuration in order to measure the impact of the coke conversion project will be based upon the nitrogen dioxide ambient monitoring results as they relate to potential damage to human health, vegetation, animals, or otherwise threaten compliance with the ambient air quality standards. In the event a consensus can not be reached by the committee, the department shall determine any future ambient air quality monitoring for nitrogen dioxide.

F. Any changes in the ambient monitoring network not related to site location and duration of monitoring must be approved in writing by the department. The department shall notify the committee of any approved changes to the monitoring network.

G. The committee may choose to develop a more comprehensive monitoring plan of the effects of the coke conversion project relating to vegetation and animal monitoring. None of the members of the committee, however, are bound to supply financial or other resources for completing these plans. As funding allows, it is the intent of the department that such a plan be a cooperative effort between the department, Stone, City-County Health Department, the University of Montana, and any other citizen or professional resources in the Missoula Valley.

H. Stone shall utilize air monitoring and quality assurance procedures which equal or exceed the requirements described in the Montana Quality Assurance Manual including revisions, the EPA quality assurance manual including revisions, 40 CFR Parts 53 and 58, and any other requirements specified by the department. These requirements extend to all aspects of air monitoring including, but not limited to, siting criteria, shelter design, equipment selection, calibration, maintenance, repair, zero/span procedures, precision, accuracy, data handling, control limits, and data validation.

I. Stone shall submit monthly data reports to the department within 45 days after the end of each month and an annual data report within 90 days after the end of the calendar year. Stone may, at their discretion, submit required data from the existing monitoring network at the same intervals and reporting requirements specified in this section.

J. 1. The monthly report shall consist of a narrative data summary. The monthly report to the department must also consist of a data submittal of all data points on SAROAD format on floppy diskettes which are compatible with the department's computer system. The narrative data summary shall include:

a. The first and second highest 24-hour concentrations for nitrogen dioxide;

b. The first and second highest 1-hour concentrations for nitrogen dioxide;

c. The monthly wind roses (from Stone's site #1);

d. A summary of the data collection efficiency;

e. A summary of the reasons for missing data;

f. A precision and accuracy summary;

g. Calibration information.

2. The annual report shall consist of a narrative data summary containing:

a. A pollution trend analysis;

b. The annual means, first and second highest 24-hour concentrations, first and second highest 1-hour concentrations for nitrogen dioxide at each site;

c. The annual wind roses from each site;

d. An annual summary of data collection efficiency;

e. An annual summary of precision and accuracy data;

f. An annual summary of any ambient standard exceedances;

g. Recommendations for future monitoring.

ATTACHMENT C

Modified June 14, 1989
Conditions of Permit #2589

Air quality permit #2589 (originally #792-013075) is hereby altered to include the old cardboard container (OCC) facility to be installed during the summer of 1989. This alteration is conducted in accordance with ARM 16.8.1105. Since there is no significant increase in emissions, only ARM 16.8.1100, Montana Permit Rule, will apply. This rule requires BACT to be applied to the air pollution control equipment.

SECTION I: Permitted Facilities

A. The general facilities associated with this project are:

1. Unloading docks for 400 TPD of old cardboard
2. Shredder and repulping tank
3. Cleaning facilities to remove burnable and nonburnable waste from the old cardboard
4. Disposal systems for all waste removed from the old cardboard

B. Emission Inventory for the Hog Fuel Boiler

Current average fuel consumption is:

Waste wood - 7955 Tons/mo x 12 = 95,460 Tons/yr
Natural gas - 3648 MCF/mo x 12 = 43,776 MCF/yr

1. Current Emissions (from wood combustion):

	Emissions
Particulate from company stack test	18.0 TPY
SO_2 - .15 lb/T x .5 scrub eff x 95460 T wood/yr x 1/2000	3.5 TPY
NOx - 2.8 lb/T x 1 scrub eff x 95460 T wood/yr x 1/2000	133.6 TPY
CO - 4.0 lb/T x 1 scrub eff x 95460 T wood/yr x 1/2000	190.9 TPY
$VOC_{(NM)}$ - 1.4 lb/T x 1 scrub eff x 95460 T wood/yr x 1/2000	66.8 TPY

(from AP-42 1.6-1)

Natural gas emissions are negligible. The highest contribution from natural gas would be approximately 1 T/yr of NOx; all other pollutants are less than 1 T/yr.

2. Emissions from Waste Plastic Combustion:

Waste combustion rate: 15.1 T/day, 468 T/mo, 5616 T/yr
AP-42 2.1-3 Uncont. E.F. for Commercial and Ind. Refuse

Particulate = 7 lb/T x .04 scrub eff x 5616 x 1/2000 = 0.8 TPY
(Multichamber)

SO_2	2.5	x .5	x 5616 x 1/2000 =	3.5 TPY
NOx	3	x 1	x 5616 x 1/2000 =	8.4 TPY
VOC	3	x 1	x 5616 x 1/2000 =	8.4 TPY
CO	10	x 1	x 5616 x 1/2000 =	28.0 TPY

3. Toxics Review

These emissions are calculated from laboratory results of two samples of plastic waste which were collected from two paper recycling plants currently in operation. Analysis was done by Badger Laboratories for Stone Container (letter from Ms. Jenny Brown to W. Norton, dated 2-14-89)

Chloride analysis (as total halide)

Max. value - 0.43% x 15.1 T/day x 365 d/yr x .04 scrub eff x 2000 lb/T = 1896 lb/yr

(This assumes all chloride goes to scrubber; some may remain in bottom ash.)

Beryllium

Max. value - .05 ppm x 15.1 T/day x 2000 lb/T x 365 day/yr = 0.55 lb/yr

Cadmium

Max. value - <.05 ppm x 15.1 T/day x 2000 lb/T x 365 day/yr = <0.5 lb/yr

Lead

Max. value - 12.6 ppm x (11.02) = 138.9 lb/yr

Mercury

Max. value - <0.01 x 11.02 = <0.1 lb/yr

4. Emission Summary

Parameter	Existing	Plastic Emissions	Total Proposed
Particulate	18 TPY	1 TPY	19 TPY
SO_2	4	3	7
NOx	134	8	142
CO	191	28	219
$VOC_{(NM)}$	67	8	75

Parameter	Existing	Plastic Emissions	Total Proposed
Toxics:			
Cl	--	1896 lb/yr	1896 lb/yr
Be	--	0.5	0.5
Cd	--	<0.5	<0.5
Pb	--	138.9	138.9
Hg	--	<0.1	<0.1

C. Applicable Regulations

1. NSPS - Not applicable - OCC plants are not a listed component of Kraft pulp mills (see subpart BB, CFR 60.280a).

2. PSD - Not applicable - emissions are not significant. [See ARM 16.8.921(30).]

3. State Permit Rule - ARM 16.8.1113 is applicable and requires that BACT be applied to the permit alteration.

4. BACT Analysis

   The applicant has proposed the disposal of 15.1 tons per day of waste plastic in the hog fuel boilers. These boilers are currently controlled with wet scrubbers. The waste fuel boiler is subject to the NSPS limits and the Air Quality Bureau has accepted this scrubber as BACT for this case. The scrubber water maintains a pH between 7.0 and 9.0 which should provide good collection efficiencies for chloride gases. Therefore, the department accepts this control as BACT for this case.

5. Other Toxic Emissions

   Lead - Less than 0.6 TPY - exempt from permitting. Company analysis shows 138.9 lbs/yr emission or 0.07 TPY. This is less than 12% of the lead emissions which require permitting under ARM 16.8.1102.

   Beryllium - Less than 0.0004 TPY is not significant for PSD purposes. Company analysis shows 0.55 lbs/yr or 0.0003 TPY.

   Mercury - Less than 0.1 TPY is not significant for PSD purposes. Company analysis shows 0.11 lb/yr or 0.00 TPY.

Therefore, a permit alteration will be required at this time for disposal of this plastic waste in the hog fuel boilers. However, a stack test for chloride emissions will be required after the system is operational to prove that actual emissions do not exceed the worst case analysis referred to above.

SECTION II: Limitations and Conditions

A. All emission limitations for the hog fuel and waste fuel boilers shall remain as stated in Attachment A.

B. The boiler used for disposal of the burnable waste shall be tested for particulate and for chloride emissions to prove compliance with existing regulations. The chloride emissions shall be compared with the estimated emissions from the permit application. These tests shall conform to EPA stack testing methods 1-5, and the Montana Stack Testing Protocol.

C. A one-time check on the levels of heavy metals emitted from the combustion of waste plastic is required. This shall consist of an analysis of the stack gas for lead, cadmium, beryllium and mercury. These tests shall be done by methods which are acceptable to EPA and the department, and be performed at the same time that the particulate and chloride tests are done. These tests shall be completed within one year of the startup date for the used fiber recycle plant.

SECTION III: Ambient Air Monitoring and Reporting Requirements

No additional ambient monitoring requirements apply at this time.

Permit Analysis

Stone Container Corporation - Missoula
Permit Modification - Frenchtown Facility

A. Stone Container Corporation currently operates a pulp mill and liner board facility at the Frenchtown site located approximately 10 miles northwest of Missoula. The plant underwent a major expansion during the mid-1970s which added several NSPS units. The basic plant capacity was designed for about 1850 tons per day of air dried pulp. An air quality permit covered individual units at that time. Two changes to the permit were made since that time. In 1987, the permit was revised to allow Stone to burn petroleum coke in all four lime kilns. In 1989, the permit was revised again to allow Stone to install and operate a recycled cardboard facility at the plant. This revision increased the capacity of the plant by approximately 400 air dried tons per day.

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The annual standard is 50 micrograms per cubic meter and the 24-hour standard is 150 micrograms per cubic meter. These standards were adopted by the Montana Board of Health and Environmental Sciences on April 15, 1988. Due to violations of these standards, Missoula has been designated as a PM-10 nonattainment area. As a result of this designation the Montana Department of Health and Environmental Sciences and the Missoula County Air Pollution Control Agency are required to develop a plan to control these emissions and bring the area into compliance with the federal and state ambient air quality standards.

In order to identify the emission sources which were contributing to the violation of the PM-10 standard, Missoula County conducted a chemical mass balance study (CMB) of the area. The Stone Container mill recovery boilers were identified as significant contributors this area. Therefore, this permit modification is adding general fugitive dust control measures to this facility, and is correcting emission limitations for the No. 5 recovery boiler and the No. 4 lime kiln to agree with NSPS limits. These corrections decreased the allowable emissions enough to satisfy the SIP control plan for the area.

B. Process Description

This facility produces linerboard and other paper products by converting wood chips into pulp and then into paper. Stone uses a typical kraft recovery plant in which the cooking salts are recovered from the digestion process and reused. Stone uses several batch digesters and two continuous digesters to separate the wood fiber from the wood matrix. Digestion gases are controlled with a condenser and all noncondensable gases are incinerated in the lime kilns. The black liquor recovered from this process is used as a fuel in the recovery furnaces and the cooking salts are recovered to be used again. The recaust portion of the plant uses several lime kilns to convert calcium carbonate to calcium oxide, which is then used in converting green liquor from the recovery furnaces into the white cooking liquor. This is then reused to start the digestion process over again.

The plant has three recovery boilers, four lime kilns, and three paper machines with all of the peripheral equipment required by the kraft process.

C. Applicable Regulations

1. ARM 16.8.821 Ambient Standard for PM-10. Stone Container must demonstrate compliance with the applicable ambient air quality standards. The SIP demonstration of attainment indicates that the emission limitations contained in this permit, along with control measures applied to other sources, will bring the Missoula area into compliance with the PM-10 standards.

2. ARM 16.8.1113(a) Modification of Permit. The department is allowed to modify Stone Container Corporation's permit due to a change in an applicable standard (PM-10) adopted by the Board of Health and Environmental Sciences. Stone Container may appeal the department's modification to the Board.

3. ARM 16.8.1115 Inspection of Permit. Stone Container must maintain a copy of their air quality permit at the mill site and make that copy available for inspection by department personnel upon request.

4. ARM 16.8.1117 Compliance with Other Statutes and Rules. Stone Container must comply with all other applicable state, federal, and local laws and regulations.

5. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

6. ARM 16.8.1402 Particulate Matter, Fuel Burning Equipment. More stringent limits contained in this permit supersede this rule.

7. ARM 16.8.1403 Particulate Matter, Industrial Process. The requirements of this rule are superseded by the stricter emission limits established in the permit.

8. ARM 16.8.1404 Visible Air Contaminants. The requirements of this permit either supersede this rule because they are more stringent or they are equivalent.

9. Stone Container - Missoula RACT Analysis

   a. Since the recovery boilers were identified as a contributor to the PM-10 area in Missoula, reasonably available control technology (RACT), applies to these units. The RACT analysis for No. 3 and No. 4 recovery boilers determined that these units meet RACT. The analysis for the No. 5 recovery boiler using the NSPS limits also was determined to be RACT. The reduction in emissions from the NSPS correction on No. 5 was enough to account for Stone's contribution to the Missoula PM-10 area.

b. Since the rest of the plant was not identified as a contributor to the PM-10 nonattainment area, RACT was not applicable to other units.

D. Existing Air Quality

1. The Missoula area is currently a nonattainment area for PM-10 standards. The department has determined, based on its preliminary demonstration of attainment, that the emission limitations contained in this permit, along with control measures applied to other sources, will bring Missoula into compliance with the PM-10 standards.

2. Stone Container Allowable Emissions (Existing)

Source	Allowable Emissions (Existing)	
1) Hog Fuel Boiler	81.4 TPY	Based on
2) #2 Package Boiler	136.5	AQB Permit
3) Power Boiler	444.9	#2589, and
4) #3 Recovery Blr	178.7	Process
5) #4 Recovery Blr	228.7	Rate Rule
6) #1 Lime Kiln	52.6	
7) #2 Lime Kiln	48.5	
8) #3 Lime Kiln	65.5	
9) #3 Smelt Dissolver	25.6	
10) #4 Smelt Dissolver	110.8	
11) #1 Lime Slaker	20.1	
12) #2 Lime Slaker	26.6	
13) PC Washer		
14) M & D Washer	23.4	
15) Base Washer		
16) Top Washer		
17) #1 Paper Machine	121.0	
18) #2 Paper Machine	121.0	
19) Salt cake & Lime Unload	129.9	
20) Starch Unload	147.2	
21) Sawdust conveying		
22) Chip conveying	32.3	
23) Hog Fuel conveying		
24) Waste Fuel Boiler	227.9	
25) #5 Recovery Boiler	166.4	
26) #4 Lime Kiln	62.4	
27) #5 Smelt Dissolver	21.9	
28) #3 Lime Slaker	13.1	
29) #3 Paper Machine	178.4	
30) M & D Cyclone	11.0	

Source	Allowable Emissions (Existing)
31) Pins Cyclone	11.0
32) Batch Cyclone	11.0
Total Allowable Particulate	2697.8

3. Stone Container Emissions (Proposed)

Source	Emissions (Proposed)	
1) Hog Fuel Boiler	81.4 TPY	Based on
2) #2 Package Boiler	136.5	AQB Permit
3) Power Boiler	444.9	#2589, and
4) #3 Recovery Blr	178.7	Process
5) #4 Recovery Blr	228.7	Rate Rule
6) #1 Lime Kiln	52.6	
7) #2 Lime Kiln	48.5	
8) #3 Lime Kiln	65.5	
9) #3 Smelt Dissolver	25.6	
10) #4 Smelt Dissolver	110.8	
11) #1 Lime Slaker	20.1	
12) #2 Lime Slaker	26.6	
13) PC Washer		
14) M & D Washer	23.4	
15) Base Washer		
16) Top Washer		
17) #1 Paper Machine	121.0	
18) #2 Paper Machine	121.0	
19) Salt Cake & Lime Unload	129.9	
20) Starch Unload	147.2	
21) Sawdust conveying		
22) Chip conveying	32.3	
23) Hog Fuel conveying		
24) Waste Fuel Boiler	227.9	
25) #5 Recovery Boiler	115.6	
26) #4 Lime Kiln	37.2	
27) #5 Smelt Dissolver	21.9	
28) #3 Lime Slaker	13.1	
29) #3 Paper Machine	178.4	
30) M & D Cyclone	11.0	
31) Pins Cyclone	11.0	
32) Batch Cyclone	11.0	
Total Proposed Allowable Particulate	2621.8	

4. Impact Analysis

No modeling has been required for this permit because it is a modification of previous permits with a reduction in allowable emissions. This permit modification is necessary to cap the emissions from all sources at the Stone Container facility. The reduction in emissions from all sources in the Missoula area will ensure compliance with the PM-10 regulations in the area.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Stone Container Corporation

Description of Project: SIP Modification - PM-10

Benefits and Purpose of Proposal: This permit modification will add enforceable provisions to the Stone permit which will help attain PM-10 compliance in the Missoula area.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: This permit modification is required by the changes in federal air quality laws. This permit modification has been discussed with company officials and is the best alternative to bring the Missoula area into compliance.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: See permit limitations.

Recommendation: An EIS is not needed with this modification.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA: NA

If an EIS is not required, explain why the EA is an appropriate level of analysis: This is a modification of a permit for an existing facility, with a reduction in allowable emissions. Environmental impacts will decrease as a result, and it will help the area come into compliance with federal and state air quality regulations.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: AQB staff.

EA prepared by: Warren Norton

Date: January 7, 1992

POTENTIAL IMPACT ON PHYSICAL ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. TERRESTRIAL AND AQUATIC LIFE AND HABITATS	1.			x			
2. WATER QUALITY, QUANTITY AND DISTRIBUTION	2.			x			
3. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE	3.			x			
4. VEGETATION COVER, QUANTITY AND QUALITY	4.			x			
5. AESTHETICS	5.			x			
6. AIR QUALITY	6.			x			
7. UNIQUE ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCE	7.			x			
8. DEMANDS ON ENVIRONMENTAL RESOURCE OF WATER, AIR AND ENERGY	8.			x			
9 HISTORICAL AND ARCHAEOLOGICAL SITES	9.			x			
10. CUMULATIVE AND SECONDARY IMPACTS	10.			x			

- -

POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

		MAJOR	MODERATE	MINOR	NONE	UNKNOWN	COMMENTS ATTACHED
1. SOCIAL STRUCTURES AND MORES	1.			x			
2. CULTURAL UNIQUENESS AND DIVERSITY	2.			x			
3. LOCAL AND STATE TAX BASE AND TAX REVENUE	3.			x			
4. AGRICULTURAL OR INDUSTRIAL PRODUCTION	4.			x			
5. HUMAN HEALTH	5.			x			
6. ACCESS TO AND QUALITY OR RECREATIONAL & WILDERNESS ACTIVITIES	6.			x			
7. QUANTITY AND DISTRIBUTION OF EMPLOYMENT	7.			x			
8. DISTRIBUTION OF POPULATION	8.			x			
9. DEMANDS FOR GOVERNMENTAL SERVICES	9.			x			
10. INDUSTRIAL AND COMMERCIAL ACTIVITY	10.			x			
11. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS	11.			x			
12. CUMULATIVE AND SECONDARY IMPACTS	12.			x			

DEPARTMENT OF ENVIRONMENTAL QUALITY
PERMITTING AND COMPLIANCE DIVISION

MARC RACICOT, GOVERNOR

1520 East Sixth Avenue

STATE OF MONTANA

(406) 444-3454
(406) 444-3671
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PO BOX 200901
HELENA, MONTANA 59620-0901

August 22, 1996

Cam Balentine
Rhône-Poulenc Basic Chemicals Company
P.O. Box 3146
Butte, Montana 59702

Dear Mr. Balentine:

Air Quality Permit #1636-06 is deemed final as of August 22, 1996 by the Department of Environmental Quality. This permit is for an elemental phosphorus plant. All conditions of the department's decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department

Charles Homer
Air Quality Specialist

CH:tc

Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Air Quality Permit #1636-06

Rhône-Poulenc Basic Chemicals Company
P.O. Box 3146
Butte, Montana 59702

August 22, 1996

Air Quality Permit

Issued to: Rhône-Poulenc Basic Chemicals Company P.O. Box 3146 Butte, Montana 59702	Permit #1636-06 Permit #1636-05 Issued: 4/4/96 Permit #1636-04 Issued: 10/28/95 Permit #1636-03 Issued: 09/27/93 Permit #1636-02 Issued: 10/29/92 Permit #1636A Issued: 10/28/91 Permit Application Complete: 5/1/96 Preliminary Determination Issued: 7/19/96 Department Decision Issued: 8/6/96 Permit Final: 8/22/96

An air quality permit with conditions is hereby granted to the above-named permittee, hereinafter referred to as "Rhône-Poulenc," pursuant to Sections 75-2-204 and 211, MCA, as amended, and Administrative Rules of Montana (ARM), Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINATION SOURCES, ARM 16.8.1101, *et seq.*, as amended for the following:

SECTION I: Permitted Facilities

A. Rhône-Poulenc's elemental phosphorus plant located seven miles west of Butte, Montana near Ramsay, Montana in SW¼, Section 23, Township 3 North, Range 9 West, Silver Bow County.

B. Existing Process Equipment and Control Equipment

TABLE 1

Process Equipment	Control Equipment
1. No. 1 Nodule Cooler	1. a. Six (6) Buell Model 6 Bar #64 Series 43A cyclone collectors with 8' x 9' x 4' knockout box
	b. A Joy Turbulaire Model 560B wet impinger dust collector
2. No. 1 Coke Dryer/Nodule Sizing-Crushing	2. a. Four (4) Buell AC-130 cyclone collectors
	b. A Joy Turbulaire Model 560B wet impinger dust collector
3. No. 2 Nodule Cooler	3. a. Six (6) Buell Model 6 Bar #64 Series 43A cyclone collectors with 8' x 9' x 4' knockout box
	b. A Joy Turbulaire Model 560B wet impinger dust collector

TABLE 1 (cont)

Process Equipment		Control Equipment
4. No. 2 Coke Dryer/Nodule Sizing-Crushing	4. a.	Four (4) Buell AC-130 cyclone collectors
	b.	A Joy Turbulaire Model 560B wet impinger dust collector
5. No. 1 Kiln	5. a.	Six (6) Buell Model 2 Bar #40 Series 43A cyclone collectors
	b.	A Calvert stainless steel quench tower.
	c.	A Calvert stainless steel absorber tower.
	d.	A Calvert Collision scrubber, with 70,000 acfm, manufactured in 1993.
	e.	A stainless steel mist elimination system
	f.	A 600 HP stainless steel ID fan installed in 1993.
	g.	A 100 foot stainless steel stack installed in 1993.
6. No. 2 Kiln	6. a.	Six (6) Buell Model 2 Bar #40 Series 43A cyclone collectors
	b.	A 60 foot tall by 18 foot diameter stainless steel spray tower.
	c.	A Calvert Collision scrubber, with 70,000 acfm manufactured in 1993.
	d.	A stainless steel mist elimination system.
	e.	A 600 HP stainless steel ID fan installed in 1993.
	f.	A 90 foot stainless steel stack installed in 1993.

TABLE 1 (cont)

Process Equipment	Control Equipment
7. No. 1 Furnace (built in 1991)	7. Three (3) John Zink Co. Hydrosonic Model 5000 Tandem Nozzle Scrubbers (Tap hole fume scrubber controlling No. 1 & No. 2 Furnaces) (ARM 16.8.1103)
8. No. 2 Furnace	8. Three (3) John Zink Co. Hydrosonic Model 5000 Tandem Nozzle Scrubbers (Tap hole fume scrubber controlling No. 1 & No. 2 Furnaces) (ARM 16.8.1103)
9. P_4 Handling	9. A Clermont candle scrubber - Model SBR100 wet filter bed scrubber
10. Kiln Feed System 168S-10-20	10. A Mikro-Pulsaire TRH Baghouse
11. Silos	11. A Joy Turbulaire Model 48-T wet impinger dust collector
12. Coal Storage - Outdoor	12. None
13. Coke Storage - Outdoor	13. None
14. Ore Storage - Outdoor	14. None
15. Silica Storage - Outdoor	15. None
16. Coal Unloading	16. Partial enclosure (hopper)
17. Coke Unloading	17. None
18. Ore Unloading	18. Partial enclosure (bunker) and water as necessary
19. Silica Unloading	19. None
20. Coal Handling	20. None
21. Coke Handling	21. None
22. Ore Handling	22. None
23. Silica Handling	23. None

TABLE 1 (cont)

Process Equipment	Control Equipment
24. Boiler No. 3	24. None
25. Roaster	25. A Clermont candle scrubber - Model SBR 100 wet filter bed scrubber
26. Fugitive dust	26. Water and/or chemical dust suppressant (haul roads and access roads)
27. Slag Granulation System	27. None
28. Two Furnace Flares	28. The furnace flares are only used to incinerate CO during those periods when one or both kilns are down and are considered emergency sources only.
29. Roaster Residue Storage	29. None
30. Coke Dust Storage	30. None
31. Slag Storage	31. None
32. Kiln Feed Clean Up Storage	32. None
33. Kiln Nodules Storage	33. None
34. Pond Tailings Storage	34. Partially wetted
35. Diesel Generator	35. None
36. Ferrophos handling	36. None
37. Slag Handling	37. None
38. Roaster Residue Handling	38. None

39. Dry coke and silica handling facility. The facility consists of the following equipment:

a. T-100 Loadout Hopper
b. C-100 Loadout Conveyor (Covered)
c. B-120 Bucket Elevator (Enclosed design)
d. S-130 Coke Screen (Enclosed design)
e. T-140 Coke Fines Bin
f. D-200 Baghouse (20,000 SCFM) and associated hoods and ducting
g. H-200 Pugmill (Enclosed design)
h. C-150 Silo Transfer Conveyor (24" flat belt, 253' long - enclosed)

C. Current Permit Alteration

The current permit alteration will allow an increase in the particulate emission limits for the coke dryers and the silo scrubber at Rhône-Poulenc. The emission limits were established during development of the Butte PM-10 State Implementation Plan (SIP) based on actual emissions during the base year (winter of 1987-1988). Rhône-Poulenc has demonstrated, to the satisfaction of the department, that the estimation of actual emissions for the base year, and thus the emission limits established, were incorrect.

This action will also revise the facility-wide emission limit for Rhône-Poulenc. This facility-wide cap was also based on the actual SIP base year emissions. In addition to the revision of the emission limits for the coke dryers and the silo scrubber, two sources have been identified which were not included in the establishment of this cap. The first source is the fugitive emissions from the handling of kiln nodules and the second is the fugitive emissions from the tailings pond storage area. This permitting action will increase the allowable emissions from the facility by 147.8 tons/year of particulate and 113 tons/year of PM-10. Actual emissions from the facility are not expected to change because of this permitting action.

SECTION II: Limits and Conditions

A. Emission Control Requirements

Rhône-Poulenc shall install, operate and maintain all emission control equipment as specified in Section I of the permit and as proposed in their applications for changes to their Montana Air Quality Permit and subsequent revisions:

1. All particulate control equipment on sources with stack emissions shall maintain at least 90% total particulate control efficiency[1] as demonstrated by source tests. This will include, but not be limited to, the No. 1 and No. 2 Nodule Coolers, the No. 1 and No. 2 Coke Dryers, the No. 1 and No. 2 Kilns, the No. 1 and No. 2 Furnaces, the P_4 Handling System, the Kiln Feed System, the Silos, and the Roaster. Particulate control efficiency testing shall only be required when the department determines the testing is necessary (ARM 16.8.704).

2. Fall distance shall be minimized during unloading and handling of coal, coke, ore, and silica to maintain compliance with the 20% opacity standard (ARM 14.8.1401).

3. A flexible loading spout shall be used to minimize the free fall of the material being removed from the T-140 Coke Fines Bin (ARM 16.8.1103).

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[1] The control efficiency requirement shall be calculated from the point the gas stream enters the first piece of control equipment through the point after the last piece of control equipment for each piece of process equipment and before the gas stream exits the stack.

4. Closed top trucks shall be used for transporting coke fines from the coke handling facility (ARM 16.8.1103).

5. All conveyors in the coke and silica handling facility shall be covered and have hoods or ventilation venting to the D-200 Baghouse (ARM 16.8.1103).

6. The following equipment in the coke and silica handling facility shall have hoods or ventilation venting to the D-200 Baghouse: T-100 Loadout Hopper, C-110 Loadout Conveyor, B-120 Bucket Elevator, S-130 Coke Screen, T-140 Coke Fines Bin, and C-150 Silo Transfer Conveyor (ARM 16.8.1103).

7. Dust from the D-200 Baghouse sump shall be put through the pugmill prior to transportation and disposal of the dust (ARM 16.8.1103).

B. Emission Limits

1. Rhône-Poulenc shall not cause or authorize to be discharged into the atmosphere any stack or fugitive particulate emissions in excess of the following plant-wide limits (40 CFR Part 50.6, 40 CFR Part 51, and ARM 16.8.1109):

   a. Total particulate emissions from the entire facility shall be limited to 353.3 tons per year.

   b. PM-10 emissions from the entire facility shall be limited to 242.0 tons per year.

   c. Total particulate emissions from the entire facility shall be limited to 2260.2 lbs per day[2].

   d. PM-10 emissions from the entire facility shall be limited to 1593.9 lbs per day[2].

2. Particulate emissions from the sources in Table 2 shall be limited to the amount listed.

TABLE 2

SOURCE	TOTAL PARTICULATE (LBS/HR)	PM-10 (LBS/HR)
No. 1 Nodule Cooler	3.3	1.8
No. 1 Coke Dryer	14.8	12.6
No. 2 Nodule Cooler	3.8	1.9
No. 2 Coke Dryer	8.5	7.2
No. 1 Kiln	7.0	6.2
No. 2 Kiln	4.5	4.0
No. 1 and No. 2 Furnaces	4.1	3.7
Silos	3.7	3.2
D-200 Baghouse Stack	0.86	0.86

2 Day means the 24-hour period between 12:01 a.m. and 12:00 midnight.

3. Rhône-Poulenc shall not store more than 1,181,599 square feet of materials having silt contents of 4% or less, not including the slag pile.

4. Rhône-Poulenc shall not store more than 140,565 square feet of materials having silt contents of greater than 4% not including the pond tailings storage.

5. Rhône-Poulenc may chemically seal piles or reclaim piles with vegetation to reduce the amount of storage applied to the limits contained in Sections II.B.3 and 4.

6. Rhône-Poulenc shall not cause or authorize to be discharged into the atmosphere visible emissions that exhibit an opacity of 20% or greater, based on a six-minute average, from any sources, stack or fugitive, installed after November 30, 1968, unless otherwise specified (ARM 16.8.1401 and 1404). Opacity averages from CEMS shall be in a six-minute rolling average format. This opacity limit applies to, but is not limited to, the tap hole fume scrubbers on the No. 1 and No. 2 Furnaces, Kiln Feed System, Roaster, No. 3 Boiler, P_4 handling and all fuel and materials handling.

7. Rhône-Poulenc shall not cause or authorize to be discharged into the atmosphere visible stack emissions that exhibit an opacity of 20% or greater from the No. 1 and No. 2 Kilns (ARM 16.8.1109).

8. Rhône-Poulenc shall not cause or authorize to be discharged into the atmosphere any visible fugitive emissions, from materials handling, outdoor storage of raw materials or fuel, haul roads, access roads, parking lots and the general plant area, that exhibit opacity of 20% or greater averaged over six minutes. Haul roads, access roads and the general plant area shall be treated with water and/or chemical dust suppressant as necessary to maintain compliance with the 20% opacity limitation (ARM 16.8.1401).

9. Rhône-Poulenc shall not burn coal with a sulfur content greater than 1.0%, by weight. Rhône-Poulenc shall submit, as part of their quarterly excess emissions report, all coal analyses (including sulfur content) conducted on a schedule approved by the department and shall include a determination of compliance with the sulfur-in-fuel rule (ARM 16.8.1411).

10. Stack emissions from the Coke and Silica Handling System are limited to 0.005 gr/dscf of particulate matter (ARM 16.8.1103).

11. Visible emissions from the Coke and Silica Handling System are limited to 10% opacity (ARM 16.8.1103).

12. Rhône-Poulenc shall not operate the P_4 Clermont bypass unless the No.1 and No. 2 Furnaces and the condensers are shut down (ARM 16.8.1103).

13. The roaster fines transportation system shall be limited to 750 hours of operation per year (ARM 16.8.1109).

C. Compliance Determination

Emission factors to determine compliance with the particulate emission limits in Section II.B.1 and 2 for fugitive sources are as follows:

TABLE 3

EMISSION FACTORS FOR PARTICULATE

SOURCE		EMISSION FACTOR	UNITS	CONTROL EFFICIENCIES
1.	Storage Piles Greater than 4%	52.423[3]	lbs/day/acre	0%
2.	Storage Piles Less or Equal to 4%	5.924[3]	lbs/day/acre	0%
3.	Pond Tailings Storage	23.73	lbs/day/acre	Percentage of wetted area
4.	Coal Unloading	0.066	lbs/ton of coal	50%
5.	Coke Unloading	0.062	lbs/ton of coke	0%
6.	Ore Unloading	0.062	lbs/ton of ore	50%
7.	Silica Unloading	0.062	lbs/ton of silica	0%
8.	Coal Handling	0.01	lbs/ton of coal	0%
9.	Coke Handling	0.01	lbs/ton of coke	0%
10.	Ore Handling	0.01	lbs/ton of ore	0%
11.	Silica Handling	0.12	lbs/ton of silica	0%
12.	Roaster Residue Handling	0.01	lbs/ton of residue	0%
13.	Slag to stockpile	0.01	lbs/ton of slag	0%
14.	Ferrophos Handling	0.01	lbs/ton of ferrophos	0%
15.	Dozer (Unit #5)	1.39**	lbs/vmt	0%
16.	Dozer (Unit #15)	2.5**	lbs/vmt	0%
17.	Loader (Unit #16)	4.44**	lbs/vmt	0%
18.	Loader (Unit #18)	4.44**	lbs/vmt	0%
19.	Loader (Unit #20)	4.44**	lbs/vmt	0%
20.	TS-24B (Unit #21)	7.22**	lbs/vmt	0%
21.	Truck (Unit #28)	10.83**	lbs/vmt	0%
22.	Truck (Unit #32)	10.83**	lbs/vmt	0%
23.	Diesel Exhaust - Vehicles	30.1	lbs/1000 gals	0%
24.	Diesel Exhaust - Generator	33.5	lbs/1000 gals	0%
25.	Slag Storage	0.0014	lbs/tons of slag	0%
26.	Nodule Handling	0.01	lbs/ton of nodules	0%

** $E=k(5.9)(s/12)(S/30)(W/3)^{0.7}(w/4)^{0.5}((365-p)/365)$, k=1. AP-42 11.2.1, 9/88. Rhône-Poulenc may modify these emission factors, based on changes in annual precipitation rate, for calculating annual emissions. Unit numbers for vehicles reference those vehicles in service at the time of issuance of Permit #1636-04. Changes to these units may occur based on changes to Rhône Poulenc's vehicle fleet.

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[3] The emission factors for the storage piles were calculated using the following equation: $E=1.7(s/1.5)*((365-p)/235)*(f/15)$ from {AP-42 Chapter 11}. The variable values are contained in Section VI. of the analysis for permit #1636-04. One acre equals 43,560 square feet. These emission factors do not apply to the pond tailings storage.

TABLE 4

EMISSION FACTORS FOR PM-10

SOURCE		EMISSION FACTOR	UNITS	CONTROL EFFICIENCIES
1.	Storage Piles Greater than 4%	26.21[3]	lbs/day/acre	0%
2.	Storage Piles Less or Equal to 4%	2.96[3]	lbs/day/acre	0%
3.	Pond Tailings Storage	11.8	lbs/day/acre	Percentage of wetted area
4.	Coal Unloading	0.06	lbs/tons of coal	50%
5.	Coke Unloading	0.05	lbs/ton of coke	0%
6.	Ore Unloading	0.05	lbs/ton of ore	50%
7.	Silica Unloading	0.05	lbs/ton of silica	0%
8.	Coal Handling	0.009	lbs/ton of coal	0%
9.	Coke Handling	0.009	lbs/ton of coke	0%
10.	Ore Handling	0.009	lbs/ton of ore	0%
11.	Silica Handling	0.10	lbs/ton of silica	0%
12.	Roaster Residue Handling	0.009	lbs/ton of residue	0%
13.	Slag to stockpile	0.009	lbs/ton of slag	0%
14.	Ferrophos Handling	0.009	lbs/ton of ferrophos	0%
15.	Dozer (Unit #5)	0.5**	lbs/vmt	0%
16.	Dozer (Unit #15)	0.9**	lbs/vmt	0%
17.	Loader (Unit #16)	1.6**	lbs/vmt	0%
18.	Loader (Unit #18)	1.6**	lbs/vmt	0%
19.	Loader (Unit #20)	1.6**	lbs/vmt	0%
20.	TS-24B (Unit #21)	2.6**	lbs/vmt	0%
21.	Truck (Unit #28)	3.9**	lbs/vmt	0%
22.	Truck (Unit #32)	3.9**	lbs/vmt	0%
23.	Diesel Exhaust - Vehicles	30.1	lbs/1000 gals	0%
24.	Diesel Exhaust - Generator	33.5	lbs/1000 gals	0%
25.	Slag Storage	0.0007	lbs/ton of slag	0%
26.	Nodule Handling	0.005	lbs/ton of nodules	0%

** $E=k(5.9)(s/12)(S/30)(W/3)^{0.7}(w/4)^{0.5}((365-p)/365)$, $k=0.36$. AP-42 11.2.1, 9/88. Rhône-Poulenc may modify these emission factors, based on changes in annual precipitation rate, for calculating annual emissions. Unit numbers for vehicles reference those vehicles in service at the time of issuance of Permit #1636-04. Changes to these units may occur based on changes to Rhône Poulenc's vehicle fleet.

D. Emission Testing

1. The Coke and Silica Handling System shall be initially tested and the results submitted to the department in order to demonstrate compliance with the emission limitations contained in Section II.B.2., 10 and 11 within 180 days of start-up of the Coke and Silica Handling System. Testing on the system shall be performed on a continuing every-four-year basis after the initial test (ARM 16.8.709 and ARM 16.8.1109).

2. All source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 16.8.709).

3. Rhône-Poulenc shall conduct source tests for particulate and opacity on each kiln and each tap hole fume scrubber annually to demonstrate compliance with the applicable emission standards contained in Section II.B.2., 6 and 7 (ARM 16.8.1109).

4. Rhône-Poulenc shall conduct source tests for particulate and opacity on the No. 1 & No. 2 Coke Dryers, the No. 1 & No. 2 Nodule Coolers, and the silo control system annually and demonstrate compliance with the applicable emission standards in Section II.B.2. and 6 (ARM 16.8.1109).

5. All source tests shall include determination of total mass particulate and PM-10 (ARM 16.8.1109).

6. Rhône-Poulenc shall perform visible emissions (opacity) observations on all sources of visible emissions (fugitive, stack, or vent) during all situations, either claimed malfunctions, operator error, or maintenance, which result in visible emissions in excess of any allowable limit at the facility. These observations shall be conducted by certified visible emission evaluators in accordance with EPA Reference Method 9 for opacity as outlined in 40 CFR Part 60, Appendix A (ARM 16.8.704).

7. A letter explaining the cause of the excess visible emissions and a copy of the Method 9 observations shall be submitted to the department within seven days of the Method 9 observations (ARM 16.8.1109).

8. The department may require further testing (ARM 16.8.704).

E. <u>Emission Monitoring and Reporting</u>

1. Rhône-Poulenc shall install, calibrate, maintain, and operate continuous emission monitoring systems (CEMS) to monitor and record the opacity of a representative portion of the gases discharged into the atmosphere from each tap hole fume scrubber stack and the No. 2 Kiln (ARM 16.8.1109).

   a. The span of these systems shall be set between 35 and 45 percent opacity.

   b. The opacity CEMS shall conform to all requirements of 40 CFR Part 60, Appendix B, Performance Specification 1 - Specifications and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources (PS1).

   c. The opacity CEMS data will be used to demonstrate compliance with the applicable opacity limitations for each source (i.e., 20% for the furnaces and 20% for the kilns). Rhône-Poulenc shall maintain, as a minimum, compliance with the applicable opacity limitations, as demonstrated by the CEMS, 95% of the time the CEMS is operating.

   d. When either CEMS is not operating for a period of greater than 24 hours, Rhône-Poulenc shall notify the department in writing and monitor visible emissions from the tap hole fume scrubber stacks and the No. 2 Kiln at least once per day using a certified visible emissions observer who will perform visible emissions observations and record the results. These observations shall be conducted in accordance with 40 CFR Part 60, Appendix A, Method 9 and the Montana Visible Emissions Field Documentation Form. These observations on the furnaces shall occur during the taps or flushes and shall consist of continuous observation throughout one entire tap or flush cycle. The observations on the No. 2 Kiln shall be conducted during normal operation of the kiln.

2. Rhône-Poulenc shall submit a written report of all excess emissions quarterly. Periods of excess emissions shall be defined as those averaged over a six-minute period for which the average opacity is greater than the applicable opacity standard (i.e., 20% for the furnaces and 20% for the kilns). The report shall be in the format contained in Attachment 2 and including, as a minimum, the following (ARM 16.8.1109):

   a. The magnitude and duration of excess emissions and the date and time of commencement and completion of each time period of excess emissions.

   b. Specific identification of each period of excess emissions that occurs during start-ups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

   c. The date and time identifying each period during which the opacity CEMS was inoperative except for zero and span checks. The nature of the system repairs or adjustments must also be reported.

   d. When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

   e. The percentage of time the opacity CEMS was available. This shall be calculated as

   $$1 - \frac{\text{CEMS downtime (in hours) during point source operation}}{\text{hours of point source operation}} \times 100$$

   This shall be reported as percent CEMS availability during point source operation. Rhône-Poulenc shall maintain a minimum of 95% CEMS availability during point source operation.

   f. The percentage of time the opacity CEMS indicated compliance. This shall be calculated as:

   $$1 - \frac{\text{total hours of excess emissions during point source operation}}{\text{total hours of point source operation}} \times 100$$

   This shall be reported as percent compliance. Rhône-Poulenc shall maintain, as a minimum, compliance with the applicable opacity standard (i.e., 20% for the furnaces and 20% for the kilns) as demonstrated by the CEMS, 95% of the time the point source is operating.

g. The excess emission reports shall be submitted within 45 days following the end of the reporting period (January-March, April-June, July-September, and October-December).

3. Rhône-Poulenc shall inspect and audit the opacity CEMS quarterly using neutral density filters. Rhône-Poulenc shall conduct these audits using the appropriate procedures and forms in "EPA Technical Assistance Document: Performance Audit Procedures for Opacity Monitors," (EPA-450/4-92-010, April 1992). The results of these inspections and audits shall be included in the quarterly excess emission report (ARM 16.8.1109).

4. Rhône-Poulenc shall develop and implement a standard operating procedures manual and a quality assurance plan for the opacity CEMS. These documents shall be submitted to the department for approval within 180 days of completion of construction and commencement of operation (this information has been submitted) (ARM 16.8.1109).

5. Rhône-Poulenc shall maintain a file of all measurements from the opacity CEMS, and performance testing measurements; all opacity CEMS performance evaluations; all opacity CEMS or monitoring device calibration checks and audits; and adjustments and maintenance performed on these systems or devices recorded in a permanent form suitable for inspection. The file shall be retained on-site for at least three years following the date of such measurements and reports. Rhône-Poulenc shall supply these records to the department upon request (ARM 16.8.1109).

F. Annual Emission Inventory Reporting Requirements

1. Rhône-Poulenc shall supply the department with annual production information for all emission points as required by the department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis, sources identified in Section I of this permit, and information identified in Table 5 below.

Production information shall be gathered on a calendar-year basis and submitted to the department by the date required in the emission inventory request. Information shall be in the units as required by the department (ARM 16.8.1903).

TABLE 5

	SOURCE	UNITS OF MATERIAL PROCESSED
a.	No. 1 Kiln Nodule Cooler	Tons of nodules to No. 1 nodule cooler
b.	No. 1 Kiln Coke Dryer	Tons of coke to No. 1 kiln coke dryer
c.	No. 1 Kiln Coke Dryer Fuel	MCF of natural gas
d.	No. 2 Kiln Nodule Cooler	Tons of nodules to No. 2 nodule cooler
e.	No. 2 Kiln Coke Dryer	Tons of coke to No. 2 kiln coke dryer

f.	No. 2 Kiln Coke Dryer Fuel	MCF of natural gas
g.	No. 1 Kiln	Tons of ore
h.	No. 1 Kiln Fuel	MCF of natural gas
i.	No. 1 Kiln Fuel	Therms of CO
j.	No. 2 Kiln	Tons of ore
k.	No. 2 Kiln Fuel	MCF of natural gas
l.	No. 2 Kiln Fuel	Therms of CO
m.	No. 2 Kiln Fuel	Tons of coal
n.	No. 1 Phosphorus Furnace	Tons of feed to No. 1 furnace
o.	No. 1 Furnace Coke Fuel	Tons of coke
p.	No. 2 Phosphorus Furnace	Tons of feed to No. 2 furnace
q.	No. 2 Furnace Coke Fuel	Tons of coke
r.	P_4 Handling	Tons of P_4 produced
s.	Kiln Feed System	Tons of material through the kiln feed area
t.	Silos Scrubber	Tons of feed to the furnaces (includes coke, nodules, and silica)
u.	Coal Storage	Square feet of coal in outdoor storage
v.	Met Coke Storage	Square feet of outdoor storage
w.	Chemical Coke Storage	Square feet of outdoor storage
x.	Regular Ore Storage	Square feet of outdoor storage
y.	Washed Ore Storage	Square feet of outdoor storage
z.	Silica Storage	Square feet of outdoor storage
aa.	Coal Unloading	Tons of coal unloaded
bb.	Coke Unloading	Tons of coke unloaded
cc.	Ore Unloading	Tons of ore unloaded
dd.	Silica Unloading	Tons of silica unloaded
ee.	Coal Handling	Tons of coal handled
ff.	Coke Handling	Tons of coke handled
gg.	Ore Handling	Tons of ore handled
hh.	Silica Handling	Tons of silica handled
ii.	No. 3 Boiler Fuel	MCF of natural gas
jj.	Roaster	Tons of material through the roaster
kk.	Slag Granulation System	Tons of slag granulated
ll.	Coke and Silica Handling System	Tons of coke and silica handled
mm.	Roaster Residue Storage	Square feet of storage
nn.	Coke Dust Storage	Square feet of storage
oo.	Slag Storage	Tons of slag produced
pp.	Kiln Feed Clean Up Storage	Square feet of storage
qq.	Kiln Nodules Storage	Square feet of storage
rr.	Kiln Nodule Handling	Tons of nodules handled
ss.	Pond Tailings Storage	Acres of storage and percent wetted

tt. Hours of operation for the following sources:

i. No. 1 Kiln
ii. No. 2 Kiln
iii. No. 1 Furnace
iv. No. 2 Furnace
v. Furnace Emergency Flare
vi. #1 Nodule Cooler
vii. #2 Nodule Cooler
viii. #1 Coke Dryer

ix. #2 Coke Dryer
x. Silos
xi. Coke and Silica Handling System
xii. P_4 Clermont Bypass
xiii. Roaster Fines Transportation System

uu. Vehicle miles traveled on haul roads for each vehicle.
vv. Gallons of diesel used in vehicles.
ww. Fugitive dust information consisting of a listing of all plant vehicles including:

i. Vehicle type;
ii. Vehicle weight;
iii. Number of tires on vehicle;
iv. Average trip length;
v. Number of trips per day;
vi. Average vehicle speed;
vii. Area of activity; and

If the information on vehicle size has not changed over the past year, Rhône-Poulenc only needs to supply the vehicle type and the vehicle miles traveled (VMT) by each vehicle type as required in Sections II.F.46. and 47. If changes occur, Rhône-Poulenc shall supply the information in Section II.F.48. for the changed vehicles.

xx. Fugitive dust control for haul roads and general plant area:

i. Hours of operation of water trucks.
ii. Application schedule for chemical dust suppressant.

2. All records compiled in accordance with this permit must be maintained by Rhône-Poulenc as a permanent business record for at least five years following the date of the measurement, must be available at the plant site for inspection by the department and must be submitted to the department upon request (ARM 16.8.1109).

G. <u>Daily Operational Reporting Information</u>

Rhône-Poulenc shall keep data necessary to demonstrate compliance with the daily emission limits for every day. The data shall be kept a minimum of 5 years.

Rhône-Poulenc shall submit daily operation information for the period of November 1st through February 29th. The four month report shall be submitted to the department by April 15 of each year (ARM 16.8.1109).

1. The calculation of daily emissions shall be done using the following:

a. Emission rates determined from the most recent stack test for each point source multiplied by actual hours of operation, and

b. Fugitive emissions, with the exception of stockpile storage emissions, calculated using the emission factors in Section II.C. multiplied by the actual daily material usages except for diesel usage which is to be calculated as a daily average based on monthly consumption.

2. The report submitted shall contain, at a minimum, the following information:

   a. A listing of all emission factors used.

   b. A listing of all variables used in the calculation of the emission factors identified with ** in Section II.C.

   c. The daily production numbers used to calculate the daily emissions.

   d. The total lbs/day of TSP emissions for each day during the period.

   e. The total lbs/day of PM-10 emissions for each day during the period.

   f. Verification that the total square feet of storage of material less than or equal to 4% silt content is less than the limit contained in Section II.B.3.

   g. Verification that the total square feet of storage of material greater than 4% silt content is less than the limit contained in Section II.B.4.

   h. Total square feet of storage material reclaimed or chemically sealed. Rhône-Poulenc shall also provide information on the type of pile treated and the material used to treat the pile.

3. The reports and data shall be made available to the department upon request (paper copy and computer file).

4. Data shall be kept a minimum of 5 years.

H. <u>Annual Operational Reporting Information</u>

Rhône-Poulenc shall submit annual operation information for the period of each calendar year. The report shall be submitted to the department by March 1 of each year (ARM 16.8.1109).

1. The calculation of annual emissions shall be done using the following:

   a. Emission rates, as determined from the most recent stack tests for each point source, multiplied by actual hours of operation, and

   b. Fugitive emissions calculated using the emission factors in Section II.C. multiplied by the actual annual material usages.

   c. Total square feet of storage chemically sealed or reclaimed, including the date the storage was chemically sealed or considered to be reclaimed.

   d. For those piles identified as less than or equal to 4 percent, use either the default of 4 percent silt content or specific data for the year, for emission calculations. The specific data shall include the actual size of each pile and a new silt content annual value for each pile.

For those piles identified as greater than 4 percent, use either the default of 35.4 percent silt content or specific data for the year, for emission calculations. The specific data shall include the actual size of each pile and a new silt content annual value for each pile.

e. Square feet of storage piles shall be determined by Rhône-Poulenc by measurement at least once a year. The value to be used in the annual emission inventory will be a measurement which occurs between October 1 and November 1 of each year.

2. The report submitted shall contain at a minimum the following information:

   a. A listing of all emission factors used.

   b. A listing of all variables used in the calculation of the emission factors identified with ** in Section II.C.

   c. The annual production numbers used to calculate the annual emissions.

   d. The total tons/year of TSP emissions.

   e. The total tons/year of PM-10 emissions.

3. The reports and data shall be made available to the department upon request (paper copy and computer file).

4. Data shall be kept a minimum of 5 years.

5. This data may be used to meet the requirements of Section II.F. if all requested information is included.

I. Notification

Rhône-Poulenc shall provide the department with written notification of the following dates within the specified time periods (ARM 16.8.1109):

1. Commencement of construction of the Coke and Silica Handling System within 30 days after commencement of construction.

2. Anticipated start-up of the Coke and Silica Handling System between 30 and 60 days prior to anticipated start-up date.

3. Actual start-up date of the Coke and Silica Handling System within 15 days after the actual start-up date.

4. CEMS performance tests at least 30 days prior to the scheduled CEMS performance tests.

5. All compliance stack tests in accordance with the Montana Source Testing Protocol and Procedures Manual (ARM 16.8.709).

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Nothing in this permit shall be construed as relieving the permittee of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 16.8.1101, *et seq.* (ARM 16.8.1117).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq.*, MCA.

E. Appeals - Any person or persons who are jointly or severally adversely affected by the department's decision may request, within fifteen (15) days after the department renders its decision, upon affidavit, setting forth the grounds therefor, a hearing before the Board of Environmental Review. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Permit Inspection - As required by ARM 16.8.1115 Inspection of Permit, a copy of the air quality permit shall be made available for inspection by department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within three years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay by the permittee of an annual operation fee may be grounds for revocation of this permit, as required by that Section and rules adopted thereunder by the Board of Environmental Review.

ATTACHMENT 1
AMBIENT MONITORING PLAN
Rhône-Poulenc
Permit #1636-06

1. This ambient air monitoring plan is required by air quality permit #1636-06 which applies to the Rhône-Poulenc elemental phosphorus plant near Ramsay, Montana. This monitoring plan may be changed from time to time by the department, but all current requirements of this plan are also considered conditions of the permit.

2. Rhône-Poulenc shall collect vegetation samples for fluoride-in-forage analysis at nine monitoring sites in the vicinity of their plant. The exact locations of the monitoring sites must be approved by the department and meet all the requirements contained in the Montana Quality Assurance Manual including revisions, the EPA Quality Assurance Manual including revisions, Parts 53 and 58 of the Code of Federal Regulations, and ARM 16.8.813, or any other requirements specified by the department.

3. Rhône-Poulenc shall continue vegetation sampling through the construction phase and for a minimum of one year after completion of construction and commencement of operation. At that time the data will be reviewed by the department and the department will determine if continued monitoring or additional monitoring is warranted. The department may require continued vegetation sampling to track long-term impacts of emissions from the facility or require additional vegetation sampling or ambient air monitoring if any changes take place in regard to quality and/or quantity of emissions or the area of impact from the emissions.

4. Rhône-Poulenc shall collect vegetation samples for fluoride-in-forage analysis, following the requirements of ARM 16.8.813, at the following locations:

Site #	Landowner/ Lessee	Location	Description
1	Ueland	NW¼ Section 25 T3N R9W	Plot extending W and S from present Rhône-Poulenc monitoring station. Land is flat with native grasses and some sagebrush.
2	Ueland	NE¼ Section 36 T3N R9W	Plot extends just S of section line fence and E from gate, which is on an abandoned haul road. Grasses are as in #1 except those planted on the abandoned roadway.
3	Ueland	SE¼ Section 22 T3N R9W	Plot is approximately ½ mile from county road heading south from main German Gulch Road. Plot extends SW from Bonneville power lines toward facility. Land slopes SW and has native grasses with sagebrush.
6	Hilderman	SE¼ Section 15 T3N R9W	The plot, centered in pasture, is S of I-90 and SW of large blue shed. Plot extends SW from gate on property fence south of frontage road. Land is flat, sub-irrigated with native grasses.

Site #	Landowner/ Lessee	Location	Description
7	Tamietti	NE¼ Section 15 T3N R9W	The plot is centered in a hay meadow E of the Tamietti residence. Plot extends NW from SW corner of property fence line north of frontage road. In hay field, irrigated and native grasses, and the land is flat.
13	Ueland	NE¼ Section 36 T3N R9W	Plot is located E of Interstate 15 extending E from frontage road fence line. Sub-irrigated with native grasses and swamp grasses in semi-flat ground.
15	Peterson	SW¼ Section 35 T4N R10W	Plot is in alfalfa hay field across the road W from the Fairmont Hot Springs sewage lagoons. Plot extends SW from gate on property fence line. The land is flat with alfalfa.
16	Craddock	NW¼ Section 32 T4N R9W	Plot is in alfalfa hay field just E of Terry and Judy Archer's house. Plot extends NE from the SW corner of the hay field. It is irrigated flat land with alfalfa.
17	Erickson	SE¼ Section 21 T3N R9W	Plot is in alfalfa field approximately ½ mile N from county road leading to Erickson's house. Plot is in the middle of an alfalfa field extending E. It is irrigated flat land.

5. Any vegetation sampling or ambient air monitoring changes proposed by Rhône-Poulenc must be approved in writing by the department.

6. Rhône-Poulenc shall utilize air monitoring and quality assurance procedures which are equal to or exceed the requirements described in the Montana Quality Assurance Manual including revisions, the EPA Quality Assurance Manual including revisions, 40 CFR Parts 53 and 58 of the Code of Federal Regulations, and ARM 16.8.813, or any other requirements specified by the department.

7. Rhône-Poulenc shall submit an annual data report by February 1 of each year. The annual report shall consist of a narrative data summary and a data submittal of all data points in AIRS format. This data may be submitted in ASCII files on 3½" or 5¼" high or low density floppy disks, in IBM-compatible format, or on AIRS data entry forms. The narrative data summary shall include:

   a. A topographic map of appropriate scale, with UTM coordinates and a true north arrow, showing the vegetation sampling site locations in relation to the plant, and the general area;

   b. A hard copy of the individual data points;

   c. The monthly means for fluoride-in-forage, per site;

   d. The grazing season average for fluoride-in-forage, per site;

   e. A pollution trend analysis;

f. A summary of the data collection efficiency;

g. A summary of the reasons for missing data;

h. A precision and accuracy (audit) summary;

i. A summary of any ambient air standard exceedances; and

j. Calibration information.

8. The department may audit, or may require Rhône-Poulenc to contract with an independent firm to audit, the vegetation sampling network, the laboratory performing associated analyses, and any data handling procedures at unspecified times. On the basis of the audits and subsequent reports, the department may recommend or require changes in the vegetation sampling network and associated activities in order to improve precision, accuracy and data completeness.

ATTACHMENT 2

INSTRUCTIONS FOR COMPLETING EXCESS EMISSIONS AND MONITORING SYSTEMS REPORTS (EER)

PART 1 — Complete as shown.

PART 2 — Complete as shown. Report total time the point source operated during the reporting period in hours. The determination of point source operating time includes time during unit start-up, shutdown, malfunctions, or whenever pollutants (of any magnitude) are generated, regardless of unit condition or operating load.

Normal calibrations and maintenance as prescribed by the CEMS manufacturer need not be listed in subpart i or counted as CEMS downtime.

Percent of time CEMS was available during point source operation is to be determined as:

$$1 - \frac{\text{(CEMS downtime in hours during point source operation)}}{\text{(total hours of point source operation during reporting period)}} \times 100$$

Excess emissions include all time periods when emissions as measured by the CEMS exceed any applicable emission standard for any applicable time period.

Percent of time in compliance is to be determined as:

$$1 - \frac{\text{(total hours of excess emissions during point source operation)}}{\text{(total hours of point source operation during reporting period)}} \times 100$$

PART 3 — Complete a separate sheet for each pollutant control device associated with a CEMS. Be specific when identifying control equipment operating parameters. For example: primary and secondary amps and spark rate for ESPs; pressure drop and effluent temperature for baghouses; and liquid flow rate and pH levels for scrubbers. For the initial EER, include a diagram or schematic for each piece of control equipment.

TABLE I — Use Table I as a guideline to report <u>all</u> excess emissions. Complete a separate sheet for each CEMS. Sequential numbering of each excess emission is recommended. For each excess emission, indicate: 1) time, duration and magnitude, 2) nature and cause, and 3) the action taken to correct the condition of excess emissions. Do not use computer reason codes for corrective actions or nature and cause, rather be specific in the explanation. If no excess emissions occur during the reporting period, it must be stated so.

TABLE II	Use Table II as a guideline to report <u>all</u> CEMS upsets or malfunctions. Complete a separate sheet for each CEMS. List the time, duration, nature and extent of problems, as well as the action taken to return the CEMS to proper operation. Do not use reason codes for nature, extent or corrective actions. Include normal calibrations and maintenance as prescribed by the CEMS manufacturer. Do not include zero and span checks.
TABLE III	Complete a separate sheet for each pollutant control device associated with a CEMS. Use Table III as a guideline to report operating status of control equipment during the excess emission. Follow the number sequence as recommended for excess emissions reporting. Report operating parameters consistent with Part 3, subpart f.

EXCESS EMISSIONS AND MONITORING SYSTEMS REPORT

PART 1

a. Emission Reporting Period ______________________________

b. Report Date ______________________________

c. Person Completing Report ______________________________

d. Plant Name ______________________________

e. Plant Location ______________________________

f. Person Responsible for Review
and Integrity of Report ______________________________

g. Mailing Address for 1.f. ______________________________
Street Address or P.O. Box

____
City State Zip Code

h. Phone Number of 1.f. ______________________________

i. Certification for Report Integrity, by person in 1.f.

THIS IS TO CERTIFY THAT THE INFORMATION PROVIDED IN THIS REPORT IS COMPLETE AND ACCURATE.

SIGNATURE ______________________________

NAME ______________________________

TITLE ______________________________

DATE ______________________________

j. Comments ______________________________

____

____

____

PART 2 - CEMS Information: Complete for each CEMS.

a. Point Source ____

b. CEMS Type (circle one)

Opacity SO$_2$ NOx O$_2$ CO CO$_2$ TRS

c. Manufacturer ____

d. Model No. ____________________ e. Serial No. ____________________

f. Automatic Calibration Value: Zero ______________ Span ______________

g. Date of Last CEMS Performance Test ______________________________

h. Total Time Point Source Operated During Reporting Period ______________

i. Percent of Time CEMS Was Available During Point Source Operation: _____

Show calculations ____

____

j. Allowable Emission Rate ____

k. Percent of Time in Compliance ____

Show calculations ____

____

l. CEMS Repairs or Replaced Components Which Affected or Altered Calibration Values

____

____

____

____

____

____

____

____

PART 3 - Pollution Control Equipment Operating Parameter Monitor. (Complete one sheet for each pollutant control device associated with a CEMS.)

a. Point source ____

b. Pollutant (circle one):

Opacity Particulate SO_2 NOx TRS

c. Type of Control Equipment ____

d. Control Equipment Description and Identification (Model # and Serial #)

____

____

____

e. Control Equipment Operating Parameters (i.e., pressure drop [delta P], effluent temperature, scrubber water flow rate and pH levels, primary and secondary amps, spark rate) ____

____

____

____

____

f. Date of Control Equipment Performance Test ______________________________

g. Control Equipment Operating Parameter During Performance Test __________

____

____

____

____

h. Type and Amount of Material Produced or Processed During the Reporting Period

____

i. Type and Amount of Fuel Used During the Reporting Period ______________________

____

TABLE I

EXCESS EMISSIONS

Date	Time From	Time To	Time Duration	Magnitude	Explanation/ Corrective Action

TABLE II

CONTINUOUS MONITORING SYSTEM OPERATION FAILURES

Date	Time From	Time To	Time Duration	Problem/ Corrective Action

TABLE III

CONTROL EQUIPMENT OPERATION DURING EXCESS EMISSIONS

Date	Time			Operating Parameters	Corrective Action
	From	To	Duration		

ANALYSIS
Rhône-Poulenc Basic Chemicals Co.
Permit #1636-06

I. Introduction

A. Site location

Rhône-Poulenc's elemental phosphorus plant was originally constructed prior to 1968 and is located 7 miles west of Butte, near Ramsay, Montana in the SW¼, Section 23, Township 3 North, Range 9 West, Silver Bow County. The nearest PSD Class I area is the Anaconda Pintler Wilderness Area 23 miles west of Rhône-Poulenc's existing plant. Other nearby PSD Class II areas which may be of concern are the Deer Lodge National Forest, 3 miles to the southwest, and the Humbug Spires primitive area, 16 miles to the southwest. The Butte PM-10 non-attainment area is located 7 miles east of Rhône-Poulenc.

B. Source Description

Rhône-Poulenc currently operates an existing elemental phosphorus plant. Phosphate rock ore is delivered by rail car. The ore is then charged to one of two large 12-story nodulizing kilns. Kiln No. 1 is fired on natural gas and CO. Kiln No. 2 is fired on coal, natural gas, and CO. The nodules are cooled, crushed and sized, and stored in silos. From the silos, the nodules, along with coke and silica are fed into one of two electric furnaces. In the furnaces, phosphorus is vaporized then passed through Adams filters to remove dust. The phosphorus is then condensed and filtered. Used filter coke is run through a roaster and vaporized phosphorus is sent back through the condenser. After filtering, the phosphorus is stored under water and shipped out in tank cars.

C. Permit History

The elemental phosphorus plant was constructed prior to 1968 and has been operated as an existing source since that time. The first permit issued to the facility was **permit #1312**, issued to Stauffer Chemical Company for a slag granulation system on December 28, 1978.

The next permit was **permit #1329** issued on February 21, 1979 for a secondary scrubber for the slag granulation system and replaced permit #1312.

Permit #1636 was issued on February 5, 1982 to Stauffer Chemical Company for a coal unloading and handling system for the No. 2 Kiln. Permit #1636 was considered a major modification and was required to go through a Prevention of Significant Deterioration (PSD) review.

The first alteration to permit #1636 was given **permit #1636A** and was issued to Rhône-Poulenc on November 4, 1991. This permit expanded permit #1636 to cover all existing permitted sources and non-permitted sources and replaced the previously existing permits. This permit, also, covered the installation of controls on the No. 1 and No. 2 kilns and the replacement of control equipment on the kiln feed/fugitive dust system.

All sources were required to be covered by a permit since a source apportionment study, conducted for the Butte PM-10 State Implementation Plan, identified Rhône-Poulenc's having an 11% contribution to the PM-10 levels in the Butte PM-10 nonattainment area based on the existing allowable emission limitations at the time. The department, as part of its control strategy development, determined it was necessary to establish reduced allowable emission limitations for all existing sources at Rhône-Poulenc. This permit established new allowable emission limitations for the plant.

The second modification to the permit was given **permit #1636-02** and was issued on October 29, 1992. The permit was modified for the following two reasons:

1. The rebuild of the No. 1 Furnace. Normal operations of the furnaces require Rhône-Poulenc to rebuild the furnaces from the ground up after a number of years. The last time the No. 1 Furnace was rebuilt was 26 years ago. The rebuild of the furnace involved removing the carbon block liner, digging out the contents of the furnace, and the complete demolition and rebuild of the furnace.

2. The addition of an experimental program to allow Rhône-Poulenc to conduct a series of experiments on the #2 Kiln Scrubbing System to try to determine a way of meeting the 20% opacity limitation by December 10, 1993. The experiments involved changing the fuel ratio to the #2 Kiln and the use of the emergency flare to burn the extra CO gas generated by the process. During normal operations, the kilns are fired with CO gas and natural gas. During the experiments, the amount of CO gas allowed to enter the #2 Kiln will be monitored and controlled.

The third alteration was given **permit #1636-03** and was issued on September 27, 1993. The permit alteration allowed Rhône-Poulenc to construct, install, and operate new Calvert Collision Scrubbers on the No. 1 and No. 2 Kilns. These scrubbers replaced the existing Fluid Ionics Hydroprecipitals and increased the scrubbing efficiency of the kiln off gases. The new scrubbers have a control efficiency of greater than 99.5% for particulate, approximately 99.88% for hydrogen fluoride, and approximately 79% for SO_2. The purpose of the change was to comply with the December 10, 1993 change in opacity standard from 30% to 20%.

Permit #1636-04 was issued October 31, 1995 and incorporated two changes. It included the proposed construction of a new Coke and Silica Handling System and also contained the compliance plan as required by Section II.C. of permit #1636-03.

The proposed Coke and Silica Handling System includes the addition of the following equipment:

1. T-100 Loadout Hopper
2. C-100 Loadout Conveyor (Covered)

3. B-120 Bucket Elevator (Enclosed design)
4. S-130 Coke Screen (Enclosed design)
5. T-140 Coke Fines Bin
6. D-200 Baghouse (22,200 SCFM) and associated hoods and ducting
7. H-200 Pugmill (Enclosed design)
8. C-150 Silo Transfer Conveyor (24" flat belt, 253' long - enclosed)

The new system will allow Rhône-Poulenc to receive dry coke. Currently the facility receives coke with a higher moisture content which is dried in the coke dryers prior to being used in the facility. Rhône-Poulenc plans to demonstrate the reliability of the proposed new system and then work on removing the existing silica and wet coke handling systems and the coke dryers. It is estimated that the removal of the coke dryers could occur within the next 6 to 12 months. This permit only considers the increase in emissions from the new system and does not consider any possible decreases in fugitive emissions from outdoor handling of coke and silica or coke dryer emissions once the new system is fully operational. Rhône-Poulenc is allowed by this permit to receive and handle both dry and wet coke.

This alteration changed the method of estimating actual base-year emissions from various sources. This resulted in a decrease in the plant-wide allowable particulate emissions from the facility.

This alteration also incorporated a required compliance plan for fugitive emissions. The compliance plan included emission factors to identify how emissions shall be calculated and daily reporting requirements. Rhône-Poulenc shall provide a spreadsheet using the emission factors (exactly as identified) and production values to calculate the emissions from the fugitive sources for demonstrating compliance with the daily and yearly limitations.

Additional details of this alteration are discussed in the analysis of permit **#1636-04.**

Permit alteration **#1636-05** was issued on April 4, 1996 to allow the installation of the P_4 Clermont Safety Ventilation System and the Roaster Fines Transportation system.

The P_4 Clermont Safety Ventilation system consists of a fan and discharge stack connected to the existing duct upstream of the P_4 Clermont scrubber. This allows Rhône-Poulenc to isolate the scrubber and existing fan for maintenance, while the furnace is shut down, and still provide ventilation to the furnace building and condenser area. There is not expected to be an increase in emissions from the use of this system.

The Roaster Fines Transportation system will transfer nodule fines from the existing silos to the roaster. This system will be needed while the kilns are shut down. The system will consist of a new conveyor belt to transfer material from the existing #5 belt to the existing #1 belt which will then transfer the material to the kiln feed building.

Potential emissions from this additional belt is estimated to be 11.2 tons/year of total particulate and 5.6 tons/year of PM-10. However, this system is needed only when the kilns are shut down and there will be no increase in the allowable daily or yearly particulate emissions from the facility.

D. Current Permit Alteration

The current permit alteration will change the emission limits for the coke dryers and the silo scrubber. Limits for these sources were originally established as a result of the Butte PM-10 SIP. The department has determined that the limits for the scrubbers controlling the #1 and #2 coke dryers, which also control emissions from nodule sizing, crushing and handling activities, were established incorrectly. The Butte SIP outlines a control strategy which sets Rhône-Poulenc's allowable emissions at 120% of the actual levels during the SIP base year of 1987-88. The previous calculation of the actual base year emissions for the scrubbers controlling the coke dryers/nodule crushing and the scrubber controlling the silos was based on a source test performed by Rhône-Poulenc personnel in 1979. The department has determined that the use of data from these stack tests for establishing base-year emissions was not appropriate for the following reasons:

- The stack testing in 1979 was done for Rhône-Poulenc's internal use in plant operations. There is no record of source production levels or control equipment inlet loading levels at the time of the tests. Because outlet particulate loading is dependant on inlet loading, a low production rate at the time of the test would result in an abnormally low mass emission rate. Also, because the tests were not compliance tests, QA/QC procedures and documentation from the 1979 tests were essentially non-existent;

- Emission rate calculations for the scrubbers during the 1979 testing was based on scrubber outlet particulate concentration and inlet air flow rate rather than outlet air flow rate. The inlet flow rate has been shown to be different than the outlet flow rate which affects the calculation of the mass flow rate from the scrubber;

- The stack test for the #2 coke dryer was used to set emissions limits for the #1 coke dryer. The #1 coke dryer/nodule crushing control system controls emissions from different sources than the #2 coke dryer/nodule crushing control system. Emission limits for these two systems should have been set separately;

- The PM-10 emission limits were set assuming that 50% of the particulate was PM-10. This information was based on emission factor data from the AIRS Facility Subsystem Source Classification Codes and Emission Factor Listing for Criteria Pollutants, EPA/450/4-90-003, March 1990. This information is based on uncontrolled emissions. Emissions from the scrubber outlet would have a much higher concentration of PM-10. The department now assumes that the PM-10 fraction is approximately 85% of the total particulate loading out of the scrubbers;

Because the calculations of base year emissions used inappropriate data, the limits established for the #1 and #2 coke dryer scrubbers and the silo scrubber were set at abnormally low levels. Rhône-Poulenc has demonstrated that these emission limits are not achievable even after completely rebuilding the scrubber internals.

This permit alteration will set limits for these sources based on source testing performed in 1992. The department feels that, because of more stringent QA/QC procedures and documentation of production levels as well as inlet particulate loadings to the control device, the testing performed in 1992 is a better source of data to use in estimating base year actual emissions. The calculations in Section IV.B of this analysis outline the method used in calculating the new emission limits for the coke dryers and the silo scrubber.

Rhône-Poulenc has also requested that the facility-wide particulate emission limit be revised. The facility-wide limits were also established during the development of the Butte SIP and were to be set at 120% of the actual emissions during the base year. Rhône-Poulenc has demonstrated to the department's satisfaction that two sources of emissions which were present during the base year were not accounted for by the SIP. The first source is the handling of kiln nodules which are sometimes stockpiled because of process fluctuations. The particulate emissions from this source have been estimated at 1.0 ton during the base year. The second source is the pond tailings storage. This source was not thought to be present during the base year; however, Rhône-Poulenc has shown through facility drawings and aerial photographs that the source was indeed in operation during the base year. Base year emissions from this source have been estimated at 50.7 tons.

The overall increase in the facility-wide allowable emissions authorized by this permitting action are: 789.7 lbs/day of particulate ; 607.9 lbs/day of PM-10 ; 147.8 tons/year of particulate and 113.0 tons/year of PM-10. Rhône-Poulenc has not been able to meet the artificially low emission limits during normal plant operation. Actual emissions from the facility are not expected to increase because of this permitting action. Permit #1636-06 will replace permit #1636-05.

E. Additional Information

Additional information, such as applicable rules and regulation, BACT determinations, air quality impacts, and environmental assessments are included in the analysis associated with each change to the permit identified above.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations which apply to the facility. The complete rules are stated in the Administrative Rules of Montana and are available upon request from the department. Upon request, the department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 16.8, Subchapter 7, General Provisions, including but not limited to:

1. <u>ARM 16.8.704, Testing Requirements</u>. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct

tests, emission or ambient, for such periods of time as may be necessary using methods approved by the department.

2. ARM 16.8.705, Malfunctions. (2) The Permitting and Compliance Division of the department must be notified promptly by phone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

3. ARM 16.8.707, Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

4. ARM 16.8.709, Source Testing Protocol. Rhône-Poulenc shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual.

B. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

1. ARM 16.8.807 Ambient Air Monitoring and ARM 16.8.809 Methods and Data. These sections require Rhône-Poulenc to perform all monitoring required as a condition of the permit in accordance with the Montana Quality Assurance Manual and the U.S. Environmental Protection Agency (EPA) Quality Assurance Manual and any other monitoring guidelines issued by the department. Specific ambient monitoring requirements are contained in Attachment 1 of the permit.

2. 16.8.821 Ambient Standards for PM-10. Rhône-Poulenc must maintain compliance with the applicable ambient air quality standards. The projects authorized by this permit will not increase allowable emissions from the plant. Therefore, the department believes that it will not cause or contribute to a violation of the ambient standards.

C. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration of Air Quality (PSD), including but not limited to:

ARM 16.8.945 Definitions. Rhône-Poulenc's elemental phosphorus plant is defined as a "major stationary source" because it has the potential to emit more than 250 tons of SO_2.

The emission limits on the coke dryers and the silo scrubber, as well as the facility-wide emission limits, were incorrectly established at artificially low levels. The limits should have been established at the levels proposed by this permitting action during the development of the Butte PM-10 SIP. Because the limits were incorrectly established, the source is not required to undergo the additional burden of PSD review to rectify the problem.

D. ARM 16.8, Subchapter 11 Permit, Construction and Operation of Air Contaminant Sources, including but not limited to:

1. ARM 16.8.1102 When Permit Required, Exclusions. This section requires a source to obtain an air quality permit if they construct, alter, or use an air contaminant source.

2. ARM 16.8.1105 New of Altered Sources and Stacks - Permit Application Requirements. This section requires that a permit application be submitted prior to installation, alteration or use of a source. Rhône-Poulenc has submitted the required permit application.

3. ARM 16.8.1107 Public Review of Permit Applications. This section requires that the applicant notify the public of its application for permit. Rhône-Poulenc has submitted proof of compliance with the public notice requirements.

4. ARM 16.8.1109 Conditions for Issuance of Permit. This section requires that Rhône-Poulenc demonstrate compliance with applicable rules and standards before a permit can be issued. Rhône-Poulenc has demonstrated compliance with applicable rules and standards as required for permit issuance.

5. ARM 16.8.1115 Inspection of Permit. This requires that air quality permits shall be made available for inspection by the department at the location of the source.

6. ARM 16.8.1117 Compliance with Other Statutes and Rules. This requires the permit holder to comply with all other applicable federal and Montana statutes, rules and standards.

7. ARM 16.8.1118, Waivers. ARM 16.8.1105 requires the permit application be submitted 180 days before construction begins. This section allows the department to waive this time limit. The department hereby waives this limit.

8. ARM 16.8.1119 General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use of the permitted equipment.

E. ARM 16.8, Subchapter 14 Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emission sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area.

2. ARM 16.8.1402 Particulate Matter, Fuel Burning Equipment. This section requires that no person shall cause, allow, or permit to be discharged into the

atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

3. ARM 16.8.1403 Particulate Matter, Industrial Process. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

4. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all sources installed since November 23, 1968.

5. ARM 16.8.1423 Standard of Performance for New Stationary Sources. This section incorporates by reference 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The modifications authorized by this permitting action are not considered modifications warranting the imposition of NSPS requirements.

F. ARM 16.8.1801, *et seq.* (Subchapter 18), Preconstruction Permit Requirements for Major Stationary Sources or Major Modifications Located Within Attainment or Unclassified Areas, including but not limited to:

ARM 16.8.1803 When Air Quality Preconstruction Permit Required. This section requires that any major stationary source or major modification must meet the preconstruction permitting requirements of this subchapter. This permitting action is not considered a major modification because the purpose is to rectify emission limits which were established artificially low during the development of the Butte PM-10 SIP. Therefore, the requirements of this subchapter do not apply.

G. ARM 16.8.1901, *et seq.* (Subchapter 19), Air Quality Permit Application, Operation and Open Burning Fees, including but not limited to:

1. ARM 16.8.1903 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   The annual assessment and collection of the air quality operation fee, as described above, shall take place on a calendar year basis. The department may insert into any final permit issued after the effective date of these rules such conditions as may be necessary to require the payment of an air quality operation fee on a calendar year basis, including provisions which prorate the required fee amount.

2. ARM 16.8.1905 Air Quality Permit Application Fees. This section requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is

incomplete until the proper application fee is paid to the department. Rhône-Poulenc has submitted the appropriate permit application fee.

III. Best Available Control Technology (BACT) Analysis

A BACT analysis is not required for this permitting action because the sole purpose is to rectify emission limits which were established artificially low during the development of the Butte SIP.

IV. Emission Inventory

A. Facility-wide emissions

A more complete description of the calculations of the facility-wide emissions is included in the analysis for Permit #1636-04. Detailed calculations for the estimation of emissions from individual permit alterations are included in the analysis for that alteration.

1. Total Particulate[4]

	SOURCE	EXISTING ALLOWABLE EMISSIONS (TONS/YR)	PROPOSED ALLOWABLE EMISSIONS (TONS/YR)
A.	No. 1 Nodule Cooler	10.3	10.3
B.	**No. 1 Coke Dryer**	**9.1**	**65.0**
C.	No. 2 Nodule Cooler	11.4	11.4
D.	**No. 2 Coke Dryer**	**9.1**	**37.1**
E.	No. 1 Kiln	18.7	18.7
F.	No. 2 Kiln	11.5	11.5
G.	No. 1 and No. 2 Furnaces	17.6	17.6
H.	P_4 Handling	1.3	1.3
I.	Kiln Feed System	2.0	2.0
J.	**Silos**	**4.5**	**16.3**
K.	Coal Storage - Outdoor	7.5	7.5
L.	Coke Storage - Outdoor	6.1	6.1
M.	Ore Storage - Outdoor	10.7	10.7
N.	Silica Storage - Outdoor	0.2	0.2
O.	Coal Unloading	0.3	0.3
P.	Coke Unloading	1.2	1.2
Q.	Ore Unloading	7.7	7.7
R.	Silica Unloading	0.9	0.9
S.	Coal Handling	0.1	0.1
T.	Coke Handling	0.4	0.4
U.	Ore Handling	2.5	2.5
V.	Silica Handling	3.6	3.6
W.	Roaster Residue Hand(stockpile)	0.1	0.1
X.	Slag Handling(to stockpile)	2.0	2.0
Y.	Ferrophos Handling(to stockpile)	0.1	0.1
W.	Diesel for backup generator	0.2	0.2
X.	No. 3 Boiler	0.9	0.9

[4] Differences between totaling columns and totals identified below are due to rounding errors.

Y.	Roaster	0.1	0.1
Z.	CO Flare	0.0	0.0
AA.	Roaster Residue Storage	0.16	0.2
BB.	Coke Dust Storage	0.9	0.9
CC.	Slag Storage	0.3	0.3
DD.	Kiln Feed Clean Up Storage	10.9	10.9
EE.	Ferrophos Storage	0.01	0.01
FF.	Kiln Nodules Storage	0.1	0.1
GG.	**Pond Tailing Storage**	**0.0**	**50.7**
HH.	Fugitive Dust (roads)	52.1	52.1
II.	**kiln nodule handling**	**N/A**	**1.0**
Total Plant-wide (tons/year)		**205.4**	**352.0**

The following are sources which were not in existence at the time of the Butte SIP and do not increase the plant-wide emission limits

		(tons/.year)
JJ.	Coke and Silica Handling System	3.8
kk.	Roaster Fines Transportation System	11.2

2. Non-particulate (tons/year)

SOURCE		FLUORIDE	SO_2	VOC	NOx	CO
A.	No. 1 Coke Dryer	14	40	0	0	0
B.	No. 2 Coke Dryer	1	0	0	0	0
C.	No. 1 Kiln	1	398	0	0	0
D.	No. 2 Kiln	0	489	0	0	0
E.	No. 1 and No. 2 Furnaces	0	442	0	0	0
F.	No. 3 Boiler	0	0	1	33	8
Plant-wide		**16**	**1389**	**1**	**33**	**8**

B. Current Permit Alteration

This section outlines the method used to develop emission limits for the coke dryers and the silo scrubber. The following steps were used:

1. Calculate total particulate and PM-10 emission factor from 1992 source testing and production rates during the tests.

2. Determine estimated actual emissions from each source during the days on which the chemical mass balance (CMB) was performed for the Butte SIP. The CMB studies identified Rhône-Poulenc as a contributor to the nonattainment area.

3. Calculate allowable emissions from the individual sources. As detailed in the Butte SIP, emission limits were to be set at 120% of base year actuals. The 1.1 multiplier is used to compensate for additional control equipment installed on the furnaces prior to estimating base year actuals.

4. Calculate the net change in daily and annual limits and the new plant-wide allowable emissions based on changes to individual source allowables and inclusion of the sources previously neglected (nodule handling and pond tailings storage).

#1 Coke Dryer

Emission Factor Calculation

Test Date	Emission Rates		Production Rates During Test[5] (tons/day)			PM Emission Factor	PM-10[6] Emission Factor
	(lbs/hr)	(lbs/day)	Coke	Nodules	Total	(lbs/ton)	(lbs/ton)
8/13/92	15.4	369.6	65.5	680.5	746	0.4954	0.4211
8/13/92	24.1	578.4	65.5	680.5	746	0.7753	0.659
8/13/92	22.3	535.2	65.5	680.5	746	0.7174	0.6098
Average	20.6	494.4	65.5	680.5	746	**0.6627**	**0.5633**

Actual Emissions during "CMB" days

Date[7]	Production Rates[1] (tons/day)			PM Emission Factor	Actual PM Emissions	PM-10 Emission Factor	Actual PM-10 Emissions
	Coke	Nodules	Total	(lbs/ton)	(lbs/day)	(lbs/ton)	(lbs/day)
11/27/87	33.6	377.0	410.6	0.6627	272.1	0.5633	231.3
12/28/87	35.5	407.5	443.0	0.6627	293.6	0.5633	249.5
1/4/88	47.1	348.0	395.1	0.6627	261.8	0.5633	222.6
1/7/88	34.3	348.0	382.3	0.6627	253.4	0.5633	215.3
1/19/88	49.4	348.0	397.4	0.6627	263.4	0.5633	223.9
1/28/88	66.7	348.0	414.7	0.6627	274.8	0.5633	233.6
Average					**269.8**		**229.4**

[5]From Rhône-Poulenc monthly production records. Daily throughput assumed to be equally divided between #1 and #2 dryer.

[6]Assumed to be 85% of PM

[7]From Butte CMB study.

Calculation of Allowable Emissions

	Actual "CMB" Day Emissions (lbs/day)	Increase by 1.1[8]	Increase by 1.2[9]	Allowable Emissions (lbs/day)	(lbs/hour)	(tons/yr)
PM	269.8	296.8	356.1	**356.1**	**14.8**	**65.0**
PM_{10}	229.4	252.3	302.8	**302.8**	**12.6**	**55.3**

#2 Coke Dryer

Calculate Emission Factor From 1992 Stack Test

Test Date	Emission Rates (lbs/hr)	(lbs/day)	Production Rates[1] (tons/day) Coke	Nodules	Total	PM Emission Factor (lbs/ton)	PM-10[2] Emission Factor (lbs/ton)
8/3/92	7.8	187.2	65.5	626	691.5	0.2707	0.2301
8/4/92	11.6	278.4	65.5	402	467.5	0.5955	0.5062
8/5/92	9.5	228	65.5	778.5	844	0.2701	0.2296
Average	9.6333	231.2	65.5	602.17	667.67	**0.3788**	**0.322**

Calculate Estimated Actual Emissions during "CMB" days

Date[3]	Production Rates (tons/day) Coke	Nodules	Total	PM Emission Factor (lbs/ton)	Actual PM Emissions (lbs/day)	PM-10 Emission Factor (lbs/ton)	Actual PM-10 Emissions (lbs/day)
11/27/87	33.6	377.0	410.6	0.3788	155.5	0.3220	132.2
12/28/87	35.5	407.5	443.0	0.3788	167.8	0.3220	142.6
1/4/88	47.1	348.0	395.1	0.3788	149.7	0.3220	127.2
1/7/88	34.3	348.0	382.3	0.3788	144.8	0.3220	123.1
1/19/88	49.4	348.0	397.4	0.3788	150.5	0.3220	128.0
1/28/88	66.7	348.0	414.7	0.3788	157.1	0.3220	133.5
Average					**154.2**		**131.1**

Calculate Allowable Emissions In Accordance With Butte SIP

	Actual "CMB" Emissions (lbs/day)	Increase by 1.1[4]	Increase by 1.2[5]	Allowable Emissions (lbs/day)	(lbs/hour)	(tons/yr)
PM	154.2	169.6	203.5	**203.5**	**8.5**	**37.1**
PM_{10}	131.1	144.2	173.1	**173.1**	**7.2**	**31.6**

[8]Accounts for additional controls installed on kilns.

[9]In accordance with Butte PM-10 SIP, allowable emissions from Rhône-Poulenc shall be limited to 120% of the actual emissions during the base year.

Silo Scrubber

Emission Factor Calculation

Test Date	Emission Rates (lbs/hr)	Emission Rates (lbs/day)	Production Rates[1] (tons/day) Coke	Silica	Nodules	Total	PM Emission Factor (lbs/ton)	PM-10[2] Emission Factor (lbs/ton)
8/26/92	1.83	43.92	131	209	296	636	0.0691	0.0587
8/26/92	2.21	53.04	131	209	296	636	0.0834	0.0709
8/27/92	3.37	80.88	131	209	843	1183	0.0684	0.0581
Average	2.47	59.28	131	209	478.33	818	**0.0736**	**0.0626**

Actual Emissions during "CMB" days

Date[3]	Production Rates (tons/day) Coke	Silica	Nodules	Total	PM Emission Factor (lbs/ton)	Actual PM Emissions (lbs/day)	PM-10 Emission Factor (lbs/ton)	Actual PM-10 Emissions (lbs/day)
11/27/87	67.3	133.0	754.0	954.3	0.0736	70.2	0.0626	59.7
12/28/87	71.1	77.0	815.0	963.1	0.0736	70.9	0.0626	60.3
1/4/88	94.2	99.3	696.0	889.5	0.0736	65.5	0.0626	55.7
1/7/88	68.7	73.2	696.0	837.9	0.0736	61.7	0.0626	52.5
1/19/88	98.9	99.7	696.0	894.6	0.0736	65.8	0.0626	56.0
1/28/88	133.5	139.0	696.0	968.5	0.0736	71.3	0.0626	60.6
Average						**67.6**		**57.5**

Calculation of Allowable Emissions

	Actual "CMB" Emissions (lbs/day)	Increase by 1.1[4]	Increase by 1.2[5]	Allowable Emissions (lbs/day)	Allowable Emissions (lbs/hour)	Allowable Emissions (tons/yr)
PM	67.6	74.4	89.2	**89.2**	**3.7**	**16.3**
PM_{10}	57.5	63.3	75.9	**75.9**	**3.2**	**13.9**

Nodule Handling

Nodules Produced in Baseline Year 285,685 tons
Nodules transferred to/from stockpile 202,836 tons
{assumed from production records to be 71% of total production}

Particulate Matter
Emission Factor 0.01 lbs/ton {Fire SCC# 30302408}
Base Year PM = 0.01 lbs/ton * 202836 tons * 0.0005 tons/lb = 1.0 tons/year

In accordance with the Butte PM-10 SIP, allowable emissions are determined by multiplying baseline year emissions by 1.1 and then by 1.2
Allowable PM = 1.0 tons/year * 1.1 * 1.2 = 1.3 tons/year

PM-10
Emission Factor 0.005 lbs/ton {Assumed to be 50% of PM}
Base Year PM-10 = 0.01 lbs/ton * 202836 tons * 0.0005 tons/lb = 0.5 tons/year

In accordance with the Butte PM-10 SIP, allowable emissions are determined by multiplying baseline year emissions by 1.1 and then by 1.2

Allowable PM-10 = 0.5 tons/year * 1.1 * 1.2 = 0.7 tons/year

Pond Tailings Storage

Baseline year area = 17.77 acres

Particulate Matter
E (emission factor) = 1.7(s/1.5)*((365-p)/235)*f/15 {EPA-450/3-88-008, Sept. 1988}
where
s (silt content) = 16 %
p (# of days with > 0.01" precip.) = 120 days
f (% of time wind speed > 12 mph) = 18.8 %

Emission Factor = 23.7 lbs/day/acre
Control Efficiency= 50% {Assume 50 % of area was wetted during base year}
Base Year PM = 17.77 acres * 23.7 lbs/day/acre * (1-0.5 eff) * 365 days/yr * 0.0005 tons/lb =
= 38.4 tons/year

Allowable PM = 38.4 tons/year * 1.1 * 1.2 = 50.7 tons/year

PM-10
Emission Factor = 11.8 lbs/day/acre {Assumed to be 50% of PM}
Control Efficiency= 50% {Assume 50 % of area was wetted during base year}
Base Year PM-10 = 17.77 acres * 11.8 lbs/day/acre * (1-.5 eff) * 365 days/yr * 0.0005 ton/lb
= 19.2 tons/year
Allowable PM-10 = 19.2 tons/year * 1.1 * 1.2 = 25.4 tons/year

Net Change in Daily and Annual Facility-Wide Emission Limits

Source	Pollutant	Existing Allowable		Proposed Allowable		Net Increase	
		lbs/day	tons/yr	lbs/day	tons/yr	lbs/day	tons/yr
#1 Coke Dryer	PM	57.6	9.1	356.1	65.0	298.5	55.9
	PM-10	28.8	4.7	302.8	55.3	274.0	50.6
#2 Coke Dryer	PM	57.6	9.1	203.5	37.2	145.9	28.1
	PM-10	28.8	4.7	173.1	31.6	144.3	26.9
Silo Scrubber	PM	28.8	4.5	89.2	16.3	60.4	11.8
	PM-10	28.8	4.5	75.9	13.9	47.1	9.4
Nodule Handling	PM	NA	NA	7.1	1.3	7.1	1.3
	PM-10	NA	NA	3.6	0.7	3.6	0.7

Pond Tailings Storage	PM	NA	NA	11.6	50.7	277.8	50.7
	PM-10	NA	NA	5.8	25.4	138.9	25.4
Facility-Wide	PM					789.7	147.8
	PM-10					607.9	113.0

New Facility-Wide Emission limits

	Existing Facility-Wide Allowable		Proposed Increase		**New Facility-Wide Allowable**	
Pollutant	(lbs/day)	(tons/yr)	(lbs/day)	(tons/yr)	**(lbs/day)**	**(tons/yr)**
PM	1471.93	205.47	789.7	147.8	**2260.2**	**353.3**
PM-10	983.97	129.11	607.9	113.0	**1593.9**	**242.0**

V. Air Quality Impacts

This permitting action will increase the allowable particulate emissions from various sources as well as from the entire facility. The change however, was facilitated because the department has determined that the emissions limits for the #1 and #2 coke dryers and the silo scrubber were incorrectly established during the establishment of the Butte PM-10 SIP. Rhône-Poulenc has not been able to meet these abnormally low emission limits during normal operation. This permitting action will not increase actual emissions from the facility.

The control strategy for the Butte SIP has determined that the local air quality can be maintained within the ambient standards by limiting the emissions from Rhône-Poulenc to 120 percent of the actual base year emissions. The department feels that this permitting action more correctly estimates the base year emissions from the facility. Therefore, the department does not feel that the proposed changes will cause or contribute to any additional violations of the ambient air quality standards.

VI. Existing Air Quality

The department has previously monitored TSP in the Ramsay area and not found violations. Rhône-Poulenc is currently monitoring fluoride-in-forage through vegetation sampling. This sampling will continue.

Rhône-Poulenc is located outside of the Butte PM-10 nonattainment area and has been identified as contributing to the PM-10 problem. The department has used EPA-approved CMB models and analysis to demonstrate that control strategies at Rhône-Poulenc and other sources will bring the area into compliance with the ambient PM-10 standards. Complete results are contained in the Butte PM-10 SIP.

VII. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications. The analysis was completed October 11, 1995.

VIII. Environmental Assessment

The Montana Environmental Policy Act (MEPA) requires completion of an Environmental Assessment (EA) on any permitting action by the State of Montana. The EA completed by the department is attached.

Department of Environmental Quality
Permitting and Compliance Division
1520 E. Sixth Ave, P.O. Box 200901
Helena, Montana 59620
(406) 444-3454 FAX (406) 444-5275

FINAL ENVIRONMENTAL ASSESSMENT

ISSUED TO: Rhône-Poulenc
P.O. Box 3146
Butte, MT 59702

PERMIT NUMBER: 1636-06

PRELIMINARY DETERMINATION ON PERMIT ISSUED: 7/19/96
DEPARTMENT'S DECISION ON PERMIT ISSUED: 8/6/96

MONTANA ENVIRONMENTAL POLICY ACT (MEPA) COMPLIANCE: An environmental assessment required by the Montana Environmental Policy Act, was completed for this project as follows:

LEGAL DESCRIPTION OF SITE: SW¼, Section 23, Township 3 North, Range 9 West, Silver Bow County

DESCRIPTION OF PROJECT: Rhône-Poulenc proposes to alter their permit to increase the emission limits for the #1 and #2 coke dryers and the silo scrubber. The department feels that these limits were incorrectly established during the development of the Butte PM-10 SIP. The recalculation of these limits will increase the facility-wide emission limits. The permit also includes the base year emissions from the kiln nodule handling and the pond tailings storage, two sources which were unintentionally omitted during the development of the Butte SIP. This permitting action increases the allowable emissions from the facility because Rhône-Poulenc has not been able to comply with the abnormally low limits during normal operations and actual emissions are not expected to change.

BENEFITS AND PURPOSE OF PROPOSAL: This proposal will allow Rhône-Poulenc to operate the Silver Bow facility in compliance with their air quality permit without the installation of additional control equipment.

DESCRIPTION AND ANALYSIS OF REASONABLE ALTERNATIVES WHENEVER ALTERNATIVES ARE REASONABLY AVAILABLE AND PRUDENT TO CONSIDER: No reasonable alternatives are available.

A LISTING AND APPROPRIATE EVALUATION OF MITIGATION, STIPULATIONS AND OTHER CONTROLS ENFORCEABLE BY THE AGENCY OR ANOTHER GOVERNMENT AGENCY: A list of enforceable permit conditions and a complete permit analysis are contained in Air Quality Permit #1636-06.

DESCRIPTION AND ANALYSIS OF REGULATORY IMPACTS ON PRIVATE PROPERTY RIGHTS: The department has considered alternatives to the conditions imposed in this permit as part of the permit development. The department has determined that the permit conditions are reasonably necessary to ensure compliance with applicable requirements and to demonstrate compliance with those requirements and do not unduly restrict private property rights.

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats			X			
2	Water Quality, Quantity and Distribution			X			
3	Geology and Soil Quality, Stability and Moisture			X			
4	Vegetation Cover, Quantity and Quality			X			
5	Aesthetics			X			
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy			X			
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts						

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue			X			
4	Agricultural or Industrial Production			X			
5	Human Health			X			
6	Access to and Quality of Recreational and Wilderness Activities			X			
7	Quantity and Distribution of Employment			X			
8	Distribution of Population			X			
9	Demands for Government Services			X			
10	Industrial and Commercial Activity			X			
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts			X			

Comments on Potential Impacts: None.

RECOMMENDATION: An EIS is not required.

IF AN EIS IS NEEDED, AND IF APPROPRIATE, EXPLAIN THE REASONS FOR PREPARING THE EA:

IF AN EIS IS NOT REQUIRED, EXPLAIN WHY THE EA IS AN APPROPRIATE LEVEL OF ANALYSIS: The emission limits being modified by this permitting action were established abnormally low because of the incorrect calculation of base-year actual emissions from the facility. The analysis performed during the development of the Butte SIP indicated that these new emission limits (based on the best estimation of base-year actual emissions) will be sufficient to bring the Butte area into compliance with the ambient air quality standards.

OTHER GROUPS OR AGENCIES CONTACTED OR WHICH MAY HAVE OVERLAPPING JURISDICTION: None.

INDIVIDUALS OR GROUPS CONTRIBUTING TO THIS EA: Department of Environmental Quality, Permitting and Compliance Division.

EA PREPARED BY: Jeff Briggs

DATE: June 28, 1996

Montana Department of Health and Environmental Sciences
Air Quality Bureau

Air Quality Permit #1749-05

Montana Resources
600 Shields Avenue
Butte, Montana 59701

January 5, 1994

Air Quality Permit

Issued to:	Montana Resources 600 Shields Avenue Butte, MT 59701	Permit #1749-05 Permit Issued: 4-1-83 Modified: 6-26-91 2nd Modification: 8-1-91 3rd Modification: 10-11-91 4th Modification: 3-20-92 5th Alteration Preliminary Determination Issued: 12-3-93 Department Determination Issued: 12-21-93 Final Permit Issued: 1-3-94

An air quality permit alteration is hereby issued to the above-named permittee, hereinafter referred to as Montana Resources, pursuant to Sections 75-2-204 and 211, MCA, as amended, and Administrative Rules of Montana (ARM) Subchapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1101 through 16.8.1118 as amended, for the following:

SECTION I: Permitted Facilities

A. General Description

An open pit copper and molybdenum mine, crushing facilities, milling operation and concentrator known as Montana Resources located in Butte, Montana, Township 3 North, Range 7 West, Silver Bow County.

B. Existing Equipment, Facilities and Control Equipment/Procedures:

		Control Equipment/ Procedure	% Control Efficiency
1.	Ore and Waste Removal and Handling		
a.	Drills	Water Sprays and Mechanical Deflectors	50%
b.	Blasting	Reduce Overshoot	0%
c.	Ore & Waste Removal Fugitive Dust		
	1) Loaders, Dozers, Shovels	Minimize Drop Height	0%
	2) Haul Roads	Watering & Chemical Stabilization	85%
	3) Support Vehicles	Watering & Chemical Stabilization	85%
d.	Diesel Truck Tailpipe Emissions	Installation of Smaller Injectors, Intercoolers on the Turbochargers, Minimum Throttle Delay Devices,	17%
		Installation of DDEC on 11 of 15 haul trucks	31.5%
e.	Waste Dumping	Minimize Drop Height	0%
f.	Wind Erosion Exposed Mill Tailings	None	0%
g.	Wind Erosion Disturbed Area	None	0%

		Control Equipment/ Procedure	% Control Efficiency
2.	Crushing		
a.	Pri. Crusher Ore Dump	Negative Air Pressure	10%
b.	Primary Crusher	Baghouse	99%
c.	Lime Unloading	Fabric Filter	99%
d.	Coarse Ore Conveying	Hoods, Baghouse, Vac Truck	99%
e.	Coarse Ore Stockpiles	None	0%
f.	3 Secondary Crushers	6 Ducon Wet Scrubbers	99%
g.	Fine Ore Storage Bins	4 Ducon Wet Scrubbers	99%
3.	Molybdenum Dryer	Wet Scrubber	99%

SECTION II: Limitations and Conditions

A. Emission Control Requirements

Montana Resources shall install, operate and maintain the following emission control equipment and practices, and all emission control equipment and practices as specified in their Montana Air Quality Permit, subsequent revisions, and in Section I.B., Existing Equipment, Facilities and Control Equipment/Procedures.

1. Fall distance shall be minimized during transfer of topsoil, overburden, and ore and waste removal.

2. All tailings ponds shall be maintained wet to the greatest extent possible. If a violation of the 20% opacity standard is documented, installation of particulate control measures approved by the department will be required. If the conditions at the tailings pond change due to closure of the mine or an elimination of the addition of wet tailings to the tailings pond, Montana Resources must develop a long-term fugitive dust control plan for the tailings pond.

3. Drilling shall utilize water sprays and mechanical deflectors and shall be conducted in such a way as to minimize fugitive emissions.

4. Blasting shall be conducted so as to prevent overshooting.

5. All haul roads and access roads shall be treated with water, as needed, and chemical dust suppressant at least one (1) time per year, during October or November. If a violation of the 5% opacity standard is documented, more frequent applications of water and chemical dust suppressant will be required.

6. The primary crusher and primary crusher ore dump shall be equipped with a negative air pressure/baghouse system.

7. The lime storage bins shall be controlled by a fabric filter collecting system.

8. The coarse ore 3-7 transfer area shall be controlled by a baghouse.

9. The secondary crushers and fine ore storage bins shall be controlled by Ducon wet scrubbers.

10. All ore conveyors must be covered.

11. The molybdenum dryer shall be controlled by a high efficiency (99% control) wet scrubber.

12. Montana Resources shall not burn diesel fuel containing more than 0.05% sulfur by weight after December 31, 1993.

13. Montana Resources shall operate and maintain the DDEC packages on the eleven (11) haul trucks that have been converted and shall equip the remaining haul trucks with the DDEC package as soon as possible.

B. Emission Limitations

1. Montana Resources shall not cause or authorize to be discharged into the atmosphere from any facility, unless otherwise specified, any visible emissions, point or fugitive, which exhibit opacity[1] of 20% or greater. This opacity limitation applies, but is not limited to, visible emissions from drilling, blasting, and all ore and waste handling (removal, dumping, etc.).

2. Montana Resources shall not cause or authorize to be discharged into the atmosphere any visible fugitive emissions from haul roads or access roads that exhibit opacity[1] of 5% or greater.

3. Montana Resources shall not cause or authorize to be discharged into the atmosphere any visible fugitive emissions from parking lots, disturbed areas, tailings ponds, or storage piles that exhibit opacity[1] of 20% or greater.

4. Montana Resources shall not cause or authorize to be discharged into the outdoor atmosphere from the primary crusher, lime bin, or coarse ore conveying system visible emissions that exhibit an opacity[1] of 10% or greater.

5. Montana Resources shall not cause or authorize to be discharged into the outdoor atmosphere from the secondary crushers, fine ore storage bins or the molybdenum dryer, visible emissions that exhibit an opacity[1] of 15% or greater.

6. Montana Resources shall not cause or authorize to be discharged into the outdoor atmosphere from the primary crusher, coarse ore conveying system, secondary crushers, or the fine ore bins, total particulate emissions in excess of 0.05 gm/dscm.

7. Montana Resources shall implement the contingency measure for emission and production limitations within 60 days of notification by the Air Quality Bureau that the National Ambient Air Quality Standards for PM-10 have been exceeded in the Butte Silver Bow PM-10 nonattainment area.

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[1] Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9, Visual Determination of the Opacity of Emissions from Stationary Sources. Opacity shall be determined using a six-minute average.

8. Montana Resources shall not cause or authorize to be discharged into the atmosphere particulate emissions from the following sources in excess of the following limits. These limits are based on the DDEC packages being installed on 11 of the 15 haul trucks and without the implementation of the contingency measure for Montana Resources.

a. Winter (Nov.-Feb.) seasonal emission limitations:

Emission Point	Total Particulate Tons/season	PM-10 Tons/season
Haul Trucks	932.5	335.7
Diesel Exhaust	4.6	4.6
Lime Unloading	0.2	0.1
Support Vehicles	103.2	37.1
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	36.7	18.3
TOTALS (includes all sources)	2181.9	838.1

b. Summer (Mar.-Oct.) seasonal emission limitations:

Emission Point	Total Particulate Tons/season	PM-10 Tons/season
Haul Trucks	2631.6	947.4
Diesel Exhaust	26.0	26.0
Lime Unloading	0.8	0.3
Support Vehicles	428.0	154.0
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	156.4	78.2
TOTALS (includes all sources)	11302.9	4336.1

c. Winter (Nov.-Feb.) daily emission limitations:

Emission Point	Total Particulate lbs/day	PM-10 lbs/day
Haul Trucks	15362.0	5530.3
Diesel Exhaust	76.3	76.3
Lime Unloading	3.2	1.3
Support Vehicles	1712.3	615.9
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	615.5[2]	307.8[3]
TOTALS (includes all sources)	36018.1	3193.9

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[2]Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average during the winter months will remain at 615.5 lbs/day of total particulate, but the maximum that may occur on any day is 753.9 lbs/day of total particulate.

[3]Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average during the winter months will remain at 307.8 lbs/day of PM-10, but the maximum that may occur on any day is 376.9 lbs/day of PM-10.

9. In the event that the contingency measure must be implemented, Montana Resources shall not cause or authorize to be discharged into the atmosphere particulate emissions from the following sources in excess of the following limits. These limits are based on the DDEC packages being installed on 11 of the 15 haul trucks.

a. Winter (Nov.-Feb.) seasonal emission limitations:

Emission Point	Total Particulate Tons/season	PM-10 Tons/season
Haul Trucks	591.3	212.9
Diesel Exhaust	4.0[4]	4.0[4]
Lime Unloading	0.2	0.1
Support Vehicles	103.2	37.1
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	26.0	14.0
TOTALS (includes all sources)	1831.4	710.4

b. Summer (Mar.-Oct.) seasonal emission limitations:

Emission Point	Total Particulate Tons/season	PM-10 Tons/season
Haul Trucks	2447.7	881.3
Diesel Exhaust	22.5[4]	22.5[4]
Lime Unloading	0.8	0.3
Support Vehicles	428.0	154.0
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	151.1	75.6
TOTALS (includes all sources)	11110.2	4263.9

[4] These emissions have been reduced from the emission limitations in permit #1749-04 by 31.5% for the installation of the DDEC packages on 11 of the 15 haul trucks in addition to the 17% reduction in emissions due to the installation of the injectors, intercoolers, etc. on the haul trucks.

c. Winter (Nov.-Feb.) daily emission limitations:

Emission Point	Total Particulate lbs/dav	PM-10 lbs/dav
Haul Trucks	9817.0	3532.9
Diesel Exhaust	66.2[4]	66.2[4]
Lime Unloading	3.2	1.3
Support Vehicles	1712.3	615.9
Molybdenum Dryer	0.1	0.1
Primary Crusher Ore Dump	463.5[5]	232.4[6]
TOTALS (includes all sources)	30311.0	1111.0

d. Compliance Determination

i) Compliance with annual, seasonal, and daily emissions limits shall be determined through calculations, using annual, seasonal, and daily production information submitted by Montana Resources and representative emission rates (lbs/hr, gr/dscf, etc.) determined during the required source tests (for point sources) or emission factors (for fugitive sources).

ii) Exceedances of the production limitations or implementation of process changes or changes in air pollution control equipment or procedures which increase the emission rates, determined through the applicable emission factor, will constitute violations of the annual emission limits.

iii) Changes in the applicable emission factors or PM-10 fractions due to testing or analysis, reassessment of applicable emission factors or use of revised or updated emission factors by the department or the EPA will be reflected in changes in the allowable emission rates and compliance determinations but will not result in changes in the production limitations.

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[5] Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average during the winter months will remain at 463.5 lbs/day of total particulate, but the maximum that may occur on any day is 571.1 lbs/day of total particulate.

[6] Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average during the winter months will remain at 232.4 lbs/day of PM-10, but the maximum that may occur on any day is 285.6 lbs/day of PM-10.

iv) Changes in the applicable emission factors, PM-10 fractions, or emission rates due to substantive process changes or changes in air pollution control equipment or procedures will be reflected in the compliance determination.

v) Implementation of substantive process changes or changes in air pollution control equipment or procedures may require an air quality permit alteration prior to implementation or construction pursuant to ARM 16.8 Subchapter 11 Permit, Construction and Operation of Air Contaminant Sources.

vi) Emission decreases for specific emission points which stem from substantive process changes or changes in air pollution control equipment or procedures may be distributed among other emission points within the source in order to increase the overall production if the process changes or the changes in air pollution control equipment or procedures are made enforceable through inclusion as permit conditions. The production rates and emission limitations for the named emission points may not be increased unless any emission increases are offset by emission decreases from other named sources. The amount of offset required in each case shall be based on the relative ambient impact of each named source based on the Butte CMB/source apportionment study.

1) MR has installed DDEC packages on 11 of the 15 haul trucks at the mine. The installation of DDEC packages on the haul trucks resulted in a 43% decrease in diesel exhaust emissions per truck. However, since only 11 of the 15 trucks have been retrofitted at this time, the department can only credit 11/15 of 43% or a 31.5% decrease. The corresponding increase in emission and production levels are contained in Section II.B.8.a-c and Section II.C.1-3 of permit #1749-05. In addition to the production increases in permit #1749-05, a contingency measure was also added to this permit. In the event that the contingency measure has to be implemented by MR, emission and production levels will revert to the pre-DDEC levels contained in Section II.B.9.a-c and Section II.C.4-6 of permit #1749-05. Also, MR plans to retrofit the remaining four (4) haul trucks with the DDEC packages in the next 18 months to 2 years. This will result in an additional 11.5% (43%-31.5%) emission decrease which could be used for production increases elsewhere in the facility. MR will need to apply for a permit alteration requesting production increases when the remaining four (4) trucks have been retrofitted to include the DDEC package. These production increases will not be included in the contingency measure emission and production levels.

e. Emission Factors/PM-10 Fractions

The allowable emission rates for each listed fugitive emission source were calculated using the following emission factors and PM-10 fractions.

Emission Point	Emission Factor	PM-10 Fraction
Blasting	50 lb/blast	50%
Waste Removal	.01 lb/ton	50%
Ore Removal	.01 lb/ton	50%
Haul Trucks	24.7 lb/vmt	36%
Waste Dumping	.01 lb/ton	50%
Diesel Exhaust	17.7 lb/1000 gal	100%
Drilling	1.5 lb/hole	50%
Wind Erosion Disturbed Areas	33.2 g/m^2/yr	50%
Wind Erosion Tailings Pond	1.3 ton/acre/yr	50%
Support Vehicles	1.4 lb/VMT	50%
Coarse Ore Stockpile	.01 lb/ton	50%

C. Production Limitations

Montana Resources shall not exceed the following production limitations. These limits are based on the DDEC packages being installed on 11 of the 15 haul trucks and before the contingency measure for Montana Resources is implemented.

1. Winter (Nov.-Feb.) Seasonal Production Limitations

Emission Point (Production Units)	Maximum Seasonal Production Rate
Haul Trucks (vmt)	503,386.3
Diesel Exhaust (gallons of diesel)	1,004,587.8
Lime Unloading (tons of lime)	27,738.5
Support Vehicles (vmt)	353,331.4
Molybdenum Dryer (tons of molybdenum)	9,795.9
Primary Crusher Ore Dump (tons of ore)	8,142,458.3

2. Summer (Mar.-Oct.) Seasonal Production Limitations

Emission Point (Production Units)	Maximum Seasonal Production Rate
Haul Trucks (vmt)	1,420,560.0
Diesel Exhaust (gallons of diesel)	5,702,838.5
Lime Unloading (tons of lime)	123,898.5
Support Vehicles (vmt)	1,466,666.0
Molybdenum Dryer (tons of molybdenum)	61,875.6
Primary Crusher Ore Dump (tons of ore)	34,759,820.9

3. Winter (Nov.-Feb.) Daily Production Limitations

Emission Point (Production Units)	Maximum Daily Production Rate
Haul Trucks (vmt)	4146.3
Diesel Exhaust (gallons of diesel)	8374.7
Lime Unloading (tons of lime)	231.2
Support Vehicles (vmt)	2944.4
Molybdenum Dryer (tons of molybdenum)	81.6
Primary Crusher Ore Dump (tons of ore)	68391.6[7]

In the event that a contingency measure must be implemented, Montana Resources shall not exceed the following production limitations. These limits are based on the DDEC packages being installed on 11 of the 15 haul trucks.

4. Winter (Nov.-Feb.) Seasonal Production Limitations

Emission Point (Production Units)	Maximum Seasonal Production Rate
Haul Trucks (vmt)	318,950.0
Diesel Exhaust (gallons of diesel)	871,281.7
Lime Unloading (tons of lime)	27,738.5
Support Vehicles (vmt)	353,331.4
Molybdenum Dryer (tons of molybdenum)	9,795.9
Primary Crusher Ore Dump (tons of ore)	6,218,929.1

5. Summer (Mar.-Oct.) Seasonal Production Limitations

Emission Point (Production Units)	Maximum Seasonal Production Rate
Haul Trucks (vmt)	1,320,299.7
Diesel Exhaust (gallons of diesel)	4,941,801.1
Lime Unloading (tons of lime)	123,898.5
Support Vehicles (vmt)	1,466,666.0
Molybdenum Dryer (tons of molybdenum)	61,875.6
Primary Crusher Ore Dump (tons of ore)	33,576,892.4

6. Winter (Nov.-Feb.) Daily Production Limitations

Emission Point (Production Units)	Maximum Daily Production Rate
Haul Trucks (vmt)	2657.9
Diesel Exhaust (gallons of diesel)	7260.7
Lime Unloading (tons of lime)	231.2
Support Vehicles (vmt)	2944.4
Molybdenum Dryer (tons of molybdenum)	81.6
Primary Crusher Ore Dump (tons of ore)	51824.4[8]

[7] Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average production during the winter months will remain at 68,391.6 tons of ore, but the maximum that may occur on any day is 83,767.2 tons of ore.

[8] Fluctuation occurred at the Primary Crusher Ore Dump during the CMB study year and the range has been reported by MR. The average production during the winter months will remain at 51,824.4

D. Operational Reporting Requirement

Montana Resources shall supply the Department of Health and Environmental Sciences' Air Quality Bureau (AQB) with an annual, seasonal, and daily particulate emission inventory for all the listed emission points. The emission inventories shall include the following production data (on annual, seasonal, and daily bases), a listing of all emission factors used, all calculations and other related information which may be requested. The annual information must be submitted to the AQB by March 1 of the following calendar year.

The daily emission inventory need only be supplied for the months of November through February. This information, along with the seasonal inventory, must be submitted to the AQB by April 15 of the following year.

1. Tons of ore removed;
2. Tons of waste, including all non-ore material removed;
3. Haul truck vehicle miles traveled (this must include all supporting information such as length of haul, number of trucks, weight of trucks, etc.);
4. Support vehicle miles traveled (this must include all supporting information such as length of haul, number of trucks, weight of trucks, etc.);
5. Number of holes drilled;
6. Number of blasts;
7. Tons of ore through the primary crusher;
8. Tons of ore through each of the secondary crushers;
9. Tons of ore through the fine ore bins;
10. Tons of feed to concentrator;
11. Current acreage of disturbed area;
12. Current exposed area of tailings pond;
13. Gallons of diesel consumed;
14. Tons of lime unloaded;
15. Tons through molybdenum dryer;
16. Map of all haul roads and access roads;
17. Type of chemical dust suppressant used;
18. Description of chemical dust suppressant application procedure including application rate, application frequency, dilution rate, and scarification;

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tons of ore, but the maximum that may occur on any day is 63,460 tons of ore.

19. Chemical dust suppressant application log (dates, areas, and amounts of chemical dust suppressant application);

20. A list of equipment dedicated, either full-time or part-time, to fugitive dust control of haul roads, access roads, or work areas (number of water trucks, water capacity, number of graders); and

21. Water truck operation log (water truck operating hours, dates, areas, and amounts of water applied).

E. Ambient Monitoring

Montana Resources shall conduct ambient air monitoring as described in Attachment 1.

F. Visible Emissions Monitoring

1. Montana Resources shall conduct monthly visible emissions observations from November through February at each of the following listed sources to determine compliance with the applicable visible emission standards for at least one year after the issuance of this permit.

   a. Drilling
   b. Blasting
   c. Waste Removal
   d. Ore Removal
   e. Haul Roads
   f. Waste Dumping
   g. Lime Unloading
   h. Primary Crusher Ore Dump
   i. Primary Crusher
   j. Coarse Ore Conveying
   k. Coarse Ore Stockpile
   l. #1 Sec. Crusher
   m. #2 Sec. Crusher
   n. #3 Sec. Crusher
   o. Fine Ore Storage Trans.
   p. Fine Ore Bin Feeders
   q. Molybdenum Dryer
   r. Wind Erosion Disturbed Areas
   s. Wind Erosion Tailings Pond

2. Opacity shall be determined according to EPA's Method 9 (40 CFR Part 60, Appendix A).

3. Visible emissions shall be read for ten minutes at each listed source, once a month during the months of November through February, while the source is operating.

4. The visible emissions observations shall be made by certified visible emissions observers.

5. The opacity reported shall be the highest six-minute average occurring during the ten-minute visible emissions observation.

6. The visible emissions observations shall be recorded on visible emissions field documentation forms approved by the department.

7. A summary of the visible emissions observations shall be submitted to the department by April 15 of the following calendar year.

8. Annually the visible emissions observations data will be reviewed by the department and the department will determine if continued or additional visible emissions monitoring is warranted. The department may require continued or additional visible emissions monitoring.

G. Emission Testing

1. Montana Resources shall perform compliance source tests on the primary crusher, the secondary crushers, the coarse ore conveying system, the fine ore bins, and the molybdenum dryer within four years after issuance of permit #1749-04 and at least once every four years thereafter.

2. All source tests shall be performed at over 90% of the maximum rated capacity of the affected facility or source.

3. All source tests shall include determination of total mass particulate and PM-10. The source tests shall be conducted in accordance with the applicable test methods listed in 40 CFR Part 60, Appendix A (Total Particulate) and 40 CFR Part 51, Appendix M, Methods 201 and 201A (PM-10) and the Montana Compliance Source Test Protocol.

4. The department may require additional emissions testing per ARM 16.8.704.

H. Montana Resources shall comply with all other applicable state, federal and local laws and regulations.

SECTION III: General

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 <u>et seq</u>., MCA.

E. Appeals - Any person or persons who are jointly or severally adversely affected by the department's decision may request, within fifteen (15) days after the department renders its decision, upon affidavit, setting forth the grounds therefore, a hearing before the Board. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

F. Application Data - Information submitted on behalf of an air quality permit application is hereby incorporated as a condition of that permit including commencement and completion dates of construction.

G. Permit Inspection - As required by ARM 16.8.1115 Inspection of Permit, a copy of the air quality permit shall be made available for inspection by department personnel at the location of the permitted source.

H. Permit Fees - Pursuant to Section 75-2-211, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required by the Section and rules adopted thereunder by the Board of Health and Environmental Sciences.

Attachment 1

AMBIENT AIR MONITORING PLAN
MONTANA RESOURCES
Permit #1749-04

1. This ambient air monitoring plan was required by air quality permit #1749-04 which applies to Montana Resources' mining operation in Butte, Montana. This monitoring plan may be modified by the department. All requirements of this plan are considered conditions of the permit.

2. Montana Resources shall install, operate and maintain four air monitoring sites in the vicinity of the mine and facilities. The exact locations of the monitoring sites must be approved by the department and meet all the siting requirements contained in the Montana Quality Assurance Manual including revisions, the EPA Quality Assurance Manual including revisions, and Parts 53 and 58 of the Code of Federal Regulations, or any other requirements specified by the department.

3. Montana Resources shall continue existing air monitoring after the issuance of this permit for at least one year. At that time the air monitoring data will be reviewed by the department and the department will determine if continued monitoring or additional monitoring is warranted. The department may require continued air monitoring to track long-term impacts of emissions from the facility or require additional ambient air monitoring or analyses if any changes take place in regard to type and/or quantity of emissions or the area of impact from the emissions.

4. Montana Resources shall monitor the following parameters at the sites and frequencies described below:

Location	Site	Parameter	Frequency
UTM Zone #12 E383220, N5095415, Elev. 5575 ft., 1699 m	Site #41 Alpine	PM-10[1], Cu, Pb PM-10 Collocated[2]	Every third day November through February Every sixth day March through October
UTM Zone #12 E385333, N5094121, Elev. 5659 ft., 1725 m	Site #42 Hillcrest	PM-10, Cu, Pb	Every third day November through February Every sixth day March through October

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[1] PM-10 = particulate matter less than 10 microns.

[2] The requirement for a collocated PM-10 sampler may be waived if the monitor operator operates a collocated PM-10 sampler at another site.

Location	Site	Parameter	Frequency
UTM Zone #12 E381640, N5098380, Elev. 5674 ft., 1729 m	Site #43 Belmont	PM-10, Cu, Pb	Every third day November through February Every sixth day March through October
	Guard Shack	Wind Speed, Wind Direction, Sigma Theta, Temperature	Continuous

Data recovery for all parameters shall be at least 80 percent computed on a quarterly and annual basis. The department may require continued monitoring if this condition is not met.

5. Any ambient air monitoring changes proposed by Montana Resources must be approved in writing by the department.

6. Montana Resources shall utilize air monitoring and quality assurance procedures which are equal to or exceed the requirements described in the Montana Quality Assurance Manual including revisions, the EPA Quality Assurance Manual including revisions, 40 CFR Parts 53 and 58 of the Code of Federal Regulations, and any other requirements specified by the department.

7. Montana Resources shall submit quarterly data reports within 45 days after the end of the calendar quarter and an annual data report within 90 days after the end of the calendar year. The annual report may be substituted for the fourth quarterly report if all information in 8. below is included in the report.

8. The quarterly report shall consist of a narrative data summary and a data submittal of all data points in AIRS format. This data may be submitted in ASCII files on 3½" or 5¼" high or low density floppy disks, in IBM-compatible format, or on AIRS data entry forms. The narrative data summary shall include:

   a. A topographic map of appropriate scale with UTM coordinates and a true north arrow showing the air monitoring site locations in relation to the mine, crushers and concentrator, and the general area;

   b. A hard copy of the individual data points;

   c. The quarterly and monthly means for PM-10 and wind speed;

   d. The first and second highest 24-hour concentrations for PM-10 and metals;

   e. The quarterly and monthly wind roses;

   f. A summary of the data collection efficiency;

   g. A summary of the reasons for missing data;

   h. A precision and accuracy (audit) summary;

   i. A summary of any ambient air standard exceedances; and

   j. Calibration information.

9. The annual data report shall consist of a narrative data summary containing:

   a. A topographic map of appropriate scale with UTM coordinates and a true north arrow showing the air monitoring site locations in relation to the mine, crusher and concentrator, and the general area;

   b. A pollution trend analysis;

   c. The annual means for PM-10 and wind speed;

   d. The first and second highest 24-hour concentrations for PM-10 and metals;

   e. The annual wind rose;

   f. An annual summary of data collection efficiency;

   g. An annual summary of precision and accuracy (audit) data;

   h. An annual summary of any ambient standard exceedances; and

   i. Recommendations for future monitoring.

10. The department may audit, or may require Montana Resources to contract with an independent firm to audit, the air monitoring network, the laboratory performing associated analyses, and any data handling procedures, at unspecified times. On the basis of the audits and subsequent reports, the department may recommend or require changes in the air monitoring network and associated activities in order to improve precision, accuracy and data completeness.

Permit Alteration Analysis
Montana Resources
Application #1749-05

I. Introduction

Montana Resources currently operates an open pit copper and molybdenum mine, crushing and milling operation in Butte, Montana, under air quality permit #1749-04. The original permit, #1749 was issued to ARCO on April 1, 1983 as a result of the Butte Total Suspended Particulate (TSP) State Implementation Plan (SIP).

On July 1, 1987, the Environmental Protection Agency promulgated new ambient air quality standards for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). The annual PM-10 standard is 50 $\mu g/m^3$ and the 24-hour PM-10 standard is 150 $\mu g/m^3$. These standards were in turn adopted by the Montana Board of Health and Environmental Sciences on April 29, 1988. On August 7, 1987, EPA designated Butte as a PM-10 Group I area due to numerous violations of the PM-10 24-hour ambient standards. The 1990 amendments to the Federal Clean Air Act designated the Butte Group I area as a PM-10 nonattainment area in November 1990. As a result of these designations, the department was required to develop a PM-10 emission control program as part of the State Implementation Plan to bring the Butte area into compliance with the PM-10 standard and demonstrate maintenance of that standard.

In order to identify the major PM-10 emission sources in the area, the department conducted a chemical mass balance study (CMB). Since the exceedance days were experienced during the winter when Butte has the worst air quality, the CMB results for the days that exceeded the National Ambient Air Quality Standards (NAAQS) were used for the demonstration of emission contributions for the winter period. Montana Resources' emissions comprised 19.5% of the total contribution seen on the days that exceeded the NAAQS. The CMB study period was from September 25, 1987 through March 25, 1988. Therefore, September and October data were used to determine non-wintertime contributions. Montana Resources' emissions were 18% of the total for that period. Over the entire study period, Montana Resources' emissions comprised 21.3% of the total. Complete results of the CMB study and the compliance and maintenance demonstration are contained in the Butte PM-10 SIP.

Since the sources have been identified, control plans are being developed for each source (wood stove control programs, sanding material specifications and street sweeping programs, etc.), including the industrial sources (Montana Resources and Rhône-Poulenc).

The EPA has determined that the demonstration of compliance must be made using allowable emissions and any allowable emission limits must be federally enforceable. Since Montana Resources' actual emissions during the PM-10/CMB study period (3-87 through 2-88) were substantially lower than their allowable emissions, based on permit #1749A, Montana Resources' permit had to be modified to reduce their allowable emissions. This modification, permit #1749-04, reduced Montana Resources' allowable daily winter (November through February) emissions to 90% of their actual daily emissions during the 1987-1988 CMB study period. The emissions identified during the CMB study were from the haul trucks, diesel exhaust, lime unloading, support vehicles, molybdenum dryer, and primary crusher ore dump. An average daily wintertime limit for production has been set for each of these sources. Due to the production schedule at Montana Resources during the study period, the primary ore crusher has been given an average daily wintertime limit for production and a ceiling production limit. This was done since the crushing of ore runs on the same schedule currently as was present during the study period. This schedule includes scheduled downtime each week for the primary crusher and scheduled downtime each week for the secondary crushers. The variation during the study period ranged from 29,225 tons of ore crushed to 63,460. This range is reflected in the study period and is, therefore, allowed for future production. Montana Resources' annual allowable total particulate emissions are reduced to approximately 37% of Montana Resources' current annual allowable total particulate emissions. Permit #1749-04 also established PM-10 emission limitations for the first time as well as a Reasonably Available Control Measure (RACM)/Reasonably Available Control Technology (RACT) analysis. This permit required the use of chemical dust suppression on the haul roads and contains annual point-specific production and emission limits, and seasonal and daily source-wide production and emission limits. The initial analysis, completed by department staff as part of the SIP development process, indicates that the modification (permit #1749-04), in conjunction with the control plans being developed for the other identified sources, demonstrates compliance with the daily and annual PM-10 standards in the Butte PM-10 nonattainment area by the year 1993. Complete details are contained in the Butte PM-10 SIP.

Montana's air quality rules ARM 16.8.1113(a) MODIFICATION OF PERMIT allows the department to modify a source's permit due to changes in applicable rules or standards adopted by the Board of Health and Environmental Sciences. Permit #1749A was issued to ARCO during the Butte TSP SIP development process and later transferred to Montana Resources. Permit #1749-04 reflects the adoption of the new ambient PM-10 standard by the Montana Board of Health and Environmental Sciences. This permit may be further modified if the currently proposed control plan for all point and area sources fails to achieve compliance with the ambient PM-10 standards.

On October 13, 1991, and as part of the Butte PM-10 SIP, the department issued a Notification of Permit Modification for the air quality permit held by MR. On October 28, 1991, a Petition for Hearing on this permit modification was filed by MR with the Board of Health and Environmental Sciences. After the filing of the petition, the parties met on several occasions and engaged in extensive settlement discussions concerning the terms of a modified permit. The department and MR subsequently agreed to the terms of a modified air quality permit for MR's operations. The department and MR filed a Stipulation for Issuance of Final Permit with the Board, which included a proposed modified permit. Paragraphs 7, 8 and 9 of the stipulation described the parties' understanding of the interpretation and application of Part B, Section 6, e, vi of the modified permit. On March 20, 1992, the Board accepted the stipulation and issued a final Order directing the department to issue the proposed modified permit to MR. Therefore, permit #1749-04 was issued on this date.

On November 15, 1993, MR applied for permit alteration #1749-05 to allow for production increases in their diesel consumption, vehicle miles travelled by the haul trucks, and ore hauled to the primary crusher dump. This increase is allowed because MR installed DDEC packages on 11 of the 15 haul trucks at the mine. The installation of DDEC packages on the haul trucks results in a 43% decrease in diesel exhaust emissions per truck. However, since only 11 of the 15 trucks have been retrofitted at his time, the department can only credit 11/15 of 43% or a 31.5% emission decrease.

In addition to allowing the production increases in permit #1749-05, a contingency measure was also added to this permit. The Federal Clean Air Act Amendments of 1990 require the implementation of a contingency measure within 60 days of notification from the Environmental Protection Agency that the area has exceeded the National Ambient Air Quality Standards after the date of December 31, 1994. The contingency measure must reduce ambient PM-10 emissions in sufficient amounts to demonstrate compliance as determined in the Butte Silver Bow PM-10 State Implementation Plan from sources that are not currently controlled and accounted for in the Butte Silver Bow PM-10 State Implementation Plan.

Since it has been determined through source apportionment studies that the MR facility is one of the largest contributing sources of uncontrolled ambient PM-10 emissions in the Butte Silver Bow PM-10 nonattainment area, a contingency measure for MR is necessary to bring the area back into attainment with the National Ambient Air Quality Standards in the event that these standards are exceeded. The contingency measure to be implemented by MR in case of an exceedance would be to decrease emission and production levels to the pre-DDEC limitations contained in Section II.B.9.a-c and Section II.C.4-6 of permit #1749-05.

Also, MR plans to retrofit the remaining four (4) haul trucks with the DDEC packages in the next 18 months to 2 years. This will result in an additional 11.5% (43%-31.5%) emission decrease which could be used for production increases elsewhere in the facility. MR will need to apply for a permit alteration requesting production increases when the remaining four (4) trucks have been retrofitted to include the DDEC package. These production increases will not be included in the contingency measure production levels. Permit #1749-05 will replace permit #1749-04.

II. Process Description

Mining at Montana Resources is done via conventional open pit methods utilizing blast hole drills, loaders, shovels, trucks, dozers and typical haul road maintenance equipment. All ore is hauled to the primary crusher and then conveyed to the coarse ore stockpile.

Drilling is accomplished using rotary blast hole drills. The drills are crawler or rubber tire mounted and self-contained. Blasting utilizes bulk ANFO and non-electric primers and delays. Wet holes are loaded with a package ANFO or waterproof slurry.

Blast holes are filled with sufficient ANFO to ensure adequate fragmentation. The mining contractor is instructed not to overfill holes and to clean up spillage prior to blasting. Spillage is placed in holes prior to stemming to ensure detonation. Cuttings from each blast hole are collected and assayed for delineation of ore and waste.

Loading of ore and waste is performed by front-end loaders or shovels. Hauling ore and waste will be by 170-ton trucks. Ore is transported to the crushing plant with waste taken to the dump sites.

III. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

1. ARM 16.8.807 Ambient Air Monitoring and ARM 16.8.809 Methods and Data. These sections require Montana Resources to perform all monitoring required as a condition of the permit

in accordance with the Montana Quality Assurance Manual and the U.S. Environmental Protection Agency (EPA) Quality Assurance Manual. Specific ambient monitoring requirements are contained in Attachment 1 of the permit.

2. ARM 16.8.821 Ambient Standards for PM-10. Montana Resources must demonstrate compliance with the applicable ambient air quality standards. The Butte PM-10 SIP modeling and analysis indicates that restriction of Montana Resources to the emission limitations contained in this permit, along with control measures applied to other sources, will bring Butte into compliance with the PM-10 standards (see Butte PM-10 SIP for details).

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration of Air Quality (PSD), including but not limited to:

ARM 16.8.921 Definitions. Montana Resources is not defined as a "major stationary source" because it is not a listed source, and does not have the potential to emit more than 250 tons of any pollutant (discounting fugitive dust).

C. ARM 16.8, Subchapter 11 Permit, Construction and Operation of Air Contaminant Sources, including but not limited to:

1. ARM 16.8.1102 When Permit Required. This section requires a source to obtain an air quality permit if they construct, alter, or use an air contaminant source.

2. ARM 16.8.1104 Existing Sources and Stacks, Permit Application Requirements. This section requires that an application for an air quality permit be submitted for an existing source or stack. MR has submitted their application for an air quality permit as required.

3. ARM 16.8.1107 Public Review of Permit Applications. This section requires that MR notify the public of its application for permit. MR has submitted proof of compliance with the public notice requirements.

4. ARM 16.8.1109 Conditions for Issuance of Permit. This section requires that MR demonstrate compliance with applicable rules and standards before a permit can be issued. MR has demonstrated compliance with applicable rules and standards as required for permit issuance.

5. ARM 16.8.1115 Inspection of Permit. This requires that air quality permits shall be made available for inspection by the department at the location of the source.

6. ARM 16.8.1117 Compliance with Other Statutes and Rules. This requires the permit holder to comply with all other applicable Federal and Montana statutes, rules and standards.

7. ARM 16.8.1118 Waivers. ARM 16.8.1105 requires the permit application be submitted 180 days before construction begins. This section allows the department to waive this time limit. The department hereby waives this limit.

D. ARM 16.8, Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department has determined that a 20% opacity limitation for fugitive sources (5% for haul roads and access roads) and a requirement for use of chemical stabilization on haul roads and access roads will satisfy these requirements. (See Section VI. RACM/RACT Analysis.)

2. ARM 16.8.1403 Particulate Matter, Industrial Processes. The requirements of this section are superseded by the stricter emission limits established in the permit.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents.

E. 1990 Clean Air Act Amendments

The 1990 Clean Air Act Amendments require the application of Reasonably Available Control Measures (RACM) in moderate PM-10 nonattainment areas. RACM has been defined as RACT for existing PM-10 stack or point sources, process fugitive, and fugitive dust sources such as haul roads, open stockpiles, disturbed areas, tailings disposal areas, or unpaved staging areas (see "Guidance on Reasonably Available Control Requirements in Moderate PM-10 Nonattainment Areas"). The department has determined that a 20% opacity limitation for fugitive sources (5% for haul roads and access roads), application of NSPS emission limits to point sources, and a requirement for use of chemical stabilization on haul roads and access roads will satisfy these requirements (see Section VI. RACM/RACT Analysis).

IV. Air Quality Impacts/Compliance With Ambient Standards

The department used EPA-approved CMB models and analyses to demonstrate compliance with the ambient PM-10 standards by the year 1993 if Montana Resources' allowable emissions were limited and if control plans were applied to other sources. Complete results will be contained in the Butte PM-10 SIP.

V. Existing Air Quality/Ambient Monitoring Requirements

Butte is a secondary non-attainment area for TSP and a PM-10 Group I nonattainment area. Montana Resources currently operates four PM-10 particulate monitors in Butte. The 1989/90 TSP levels for those sites are contained in the table below.

Summary of the Montana Resources Total Suspended Particulate Data
January 1989 - March 1990 ($\mu g/m^3$)

Site	Maximum	Second High
#41 Alpine	218	210
#42 Hillcrest	63	54
#43 Belmont	144	107
#49 Columbia Gardens	102	56
#50 Barge	41	40

The department operates a PM-10 site in Butte at Greeley School. The maximum PM-10 reading during 1989 was 158 $\mu g/m^3$.

The Butte area is a PM-10 Group I area and, since Montana Resources has been identified as a major PM-10 contributor in the Butte area, and since TSP is no longer a regulated pollutant, Montana Resources has replaced the TSP monitors with PM-10 monitors and increased the sampling schedule. Complete ambient monitoring requirements are contained in Attachment 1.

VI. RACM/RACT Analysis

The following point-by-point RACT analyses are based on engineering judgement of the department staff, EPA RACT guidance, and comparison with the particulate control measures identified as Best Available Work Practices (BAWP) for Air Pollution at Surface Coal Mines by the Wyoming Air Quality Bureau. Any control measure identified as BAWP would, at the very least, be as stringent as RACT and therefore qualify as RACT. This RACM/RACT analysis was initially completed for permit #1749-04.

A. Blasting

The only practical method to reduce fugitive dust emissions from blasting is to use those work practices that will minimize overshoot. This particulate control method has been included in Montana Resources' permit as an emission control requirement and has been identified as BAWP by the Wyoming AQB.

B. Drilling

There are two particulate control methods that could be applicable to drilling at a hard rock mine such as Montana Resources: dust suppression shrouds or negative pressure filter dust collectors. The department has determined that a combination of water sprays and mechanical deflectors (dust shrouds) would be the most cost-effective and efficient particulate control measures in this case. This particulate control method has been included in Montana Resources' permit as an emission control requirement and has been identified as BAWP by the Wyoming AQB.

C. Ore and Waste Removal and Waste Dumping

The only practical method to reduce fugitive dust emissions from ore and waste removal is to minimize the drop height during loading and unloading. This particulate control method has been included in Montana Resources' permit as an emission control requirement and has been identified as BAWP by the Wyoming AQB.

D. Fugitive Dust from Support Vehicles and Haul Trucks

There are several particulate control methods that would be applicable to the fugitive dust from support vehicles and haul trucks at Montana Resources. These methods would include paving or chip sealing of haul and access roads or the use of overland conveyors instead of haul trucks. Other methods may include the use of chemical dust suppression or surfactant and/or the application of water to haul roads with water trucks, or sprinkler systems. Schedules for the application of chemical dust suppressant may be mandated. In addition, records of the application of chemical dust suppressant and the application of water may have to be maintained and submitted. Fugitive dust control measures may also include speed limits for haul trucks, haul truck size limitations, and requirements for minimization of haul distances. The department has determined that, in the case of Montana Resources, requirements for paving or chip sealing of haul and access roads or the use of overland conveyors instead of haul trucks would not be cost-effective and would be more stringent than is required by RACT. In Doug Skie's letter of May 23, 1991, the EPA indicated that the use of chemical dust suppressant, along with the application of water, would constitute RACT in Montana Resources' case as long as there was a schedule for application of the chemical dust suppressant and recordkeeping requirements included in the permit. These requirements are included in Montana Resources' permit. The use of other control methods such as speed limits for haul trucks, haul truck size limitations, and requirements for minimization of haul distances would not provide significant increases in control efficiency and will not be necessary. This particulate control method has been included in Montana Resources' permit as an emission control requirement, has been deemed RACT by the EPA, and is equivalent to BAWP as identified by the Wyoming AQB.

E. Diesel Exhaust from Haul Trucks

The particulate controls required for Montana Resources' diesel haul trucks (installation of smaller injectors, installation of intercoolers on the turbochargers, and the addition of minimum throttle delay devices) are consistent with those controls discussed in Colorado's Final Report and Recommendations of the Governor's Blue Ribbon Diesel Task Force and Radian's Feasibility and Cost-Effectiveness of Controlling Emissions from Diesel Engines in Rail, Marine, Construction, Farm, and Other Mobile Off-Highway Equipment. The department has determined that these conditions constitute RACT in this case. In addition, Montana Resources has installed DDEC packages on 11 of the 15 haul trucks at the mine which further reduce the diesel exhaust emissions by 43% per truck.

F. Wind Erosion Disturbed Areas

There are several particulate control methods that would be applicable to control fugitive dust from wind erosion of disturbed areas at Montana Resources. These methods would include revegetation or the use of dust suppressants or surfactants with water sprays. The department has determined that, in the case of Montana Resources, a requirement for revegetation or the use of dust suppressants or surfactants with water sprays would not be cost-effective and would be more stringent than is required by RACT. The Wyoming guidance deals only with surface coal mines, and does not address fugitive dust from wind erosion of disturbed areas. The department has determined that RACT for the control of fugitive dust from wind erosion of disturbed areas at Montana Resources consists of compliance with the 20% opacity limitation. No specific particulate control method has been included in Montana Resources' permit as an emission control requirement for fugitive dust from wind erosion of disturbed areas.

G. Wind Erosion of Tailings Pond

The vast majority of the surface of the tailings pond at Montana Resources is covered by water. The only additional practical methods of control of particulate from wind erosion of exposed areas of the tailings pond would include the use of chemical dust suppressants or surfactants with water sprays. The department has determined that, in the case of Montana Resources, the use of dust suppressants or surfactants with water sprays would not be cost-effective due to the fact that the vast majority of the surface of the tailings pond at Montana Resources is covered by water. The use of chemical dust suppressants that close to surface water might also create a possible water quality threat. The department has determined that RACT for the control of particulate from wind erosion of exposed areas of the tailings pond at Montana Resources consists of compliance with the 20% opacity limitation. If a violation of the 20% opacity limitation occurs, water sprays will be required to be installed as an emission control requirement for Montana Resources' permit.

H. #1, #2, and #3 Secondary Crushers, Fine Ore Storage and Handling, and Molybdenum Dryer

There are several particulate control methods that would be applicable to the #1, #2, and #3 secondary crushers, fine ore storage and handling, and molybdenum dryer at Montana Resources. The proposed control method is high efficiency (99%) wet scrubbers. High efficiency wet scrubbers are generally recognized as the one of the better types of particulate control for sources of this type and are sometimes considered to constitute Best Available Control Technology (BACT). This is a more stringent standard than RACT. In addition, emission standards equal to the emission standards contained in 40 CFR Part 60 (NSPS), Subpart LL, Standards of Performance for Metallic Mineral Processing Plants, are applied to all particulate point sources located at Montana Resources. Informal EPA guidance has indicated that, in general, RACT does not require the imposition of NSPS requirements. Emission limits equal to NSPS emission limits would, therefore, be at least as stringent as is required by RACT. This particulate control method has been included in Montana Resources' permit as an emission control requirement and is equivalent to BAWP as identified by the Wyoming AQB.

I. Primary Crusher Ore Dump

There are several particulate control methods that would be applicable to the ore dump at Montana Resources. These methods would include complete enclosure, partial enclosure, the use of dust suppression shrouds with water sprays or the use of a negative air pressure system connected to a baghouse. The department has determined that, in the case of Montana Resources, a requirement for enclosure, complete or partial, would not be cost-effective and would be more stringent than is required by RACT. The use of a negative air pressure system connected to a baghouse would provide similar control efficiency to use of dust suppression shrouds and water sprays. This particulate control method has been included in Montana Resources' permit as an emission control requirement and is equivalent to BAWP as identified by the Wyoming AQB.

J. Primary Crusher, Lime Unloading, and Coarse Ore Conveying

There are several particulate control methods that would be applicable to the primary crusher, lime unloading, and coarse ore conveying systems at Montana Resources. The proposed control method is baghouse control. Baghouse control is generally recognized as the one of the best types of particulate control for sources of this type and is usually considered to constitute Best Available Control Technology (BACT). This is a more stringent standard than RACT. In addition, emission standards equal to the emission standards contained in 40 CFR Part 60 (NSPS), Subpart LL, Standards of Performance for Metallic Mineral Processing Plants, are applied to all particulate point sources located at Montana Resources. Informal EPA guidance has indicated that, in general, RACT does not require the imposition of NSPS requirements. Emission limits equal to NSPS emission limits would, therefore, be at least as stringent as is required by RACT. This particulate control method has been included in Montana Resources' permit as an emission control requirement and is equivalent to BAWP as identified by the Wyoming AQB.

K. Coarse Ore Stockpile

There are several particulate control methods that would be applicable to the coarse ore stockpile at Montana Resources. These methods would include complete enclosure, partial enclosure, or the use of dust suppressants or surfactants with water sprays. The department has determined that, in the case of Montana Resources, a requirement for enclosure, complete or partial, would not be cost-effective and would be more stringent than is required by RACT. The Wyoming guidance deals only with coal stockpiles at surface coal mines and is not appropriate for the coarse ore stockpile at Montana Resources. The use of dust suppressants or surfactants with water sprays would also not be cost-effective due to the high moisture content (6%) of Montana Resources' ore and the low amount of fines. The department has determined that RACT for the coarse ore stockpile at Montana Resources consists of compliance with the 20% opacity limitation. No specific particulate control method has been included in Montana Resources' permit as an emission control requirement for the coarse ore stockpile.

VII. Environmental Assessment

The Montana Environmental Policy Act (MEPA) requires completion of an Environmental Assessment (EA) on any permitting action by the State of Montana to determine if an Environmental Impact Statement (EIS) is required. The EA completed by the department is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Montana Resources, Permit #1749-05

Description of Project: This permit is for Montana Resources open pit copper/molybdenum mine that is located in Butte, Montana.

Benefits and Purpose of Proposal: This permit is to allow Montana Resources to increase some of their production limitations since DDEC packages (which lower emissions from diesel exhaust by 43% per truck) have been installed on 11 of the 15 haul trucks at the mine.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: None available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable permit conditions and a permit analysis are contained in Permit #1749-05.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The permitting of the existing equipment with the emission limitations contained in Permit #1749-05 will limit the emissions from the facility.

Other groups or agencies contacted or which may have overlapping jurisdiction: Department of State Lands.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: David Klemp

Date: December 21, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats			X			
2	Water Quality, Quantity and Distribution			X			
3	Geology and Soil Quality, Stability and Moisture			X			
4	Vegetation Cover, Quantity and Quality			X			
5	Aesthetics			X			
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy			X			
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue			X			
4	Agricultural or Industrial Production			X			
5	Human Health			X			
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment			X			
8	Distribution of Population			X			
9	Demands for Government Services			X			
10	Industrial and Commercial Activity			X			
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts			X			

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

TED SCHWINDEN, GOVERNOR — STATE OF MONTANA — COGSWELL BUILDING

HELENA, MONTANA 59620

October 20, 1985

Montana Refining Company
1900 Tenth Street
Black Eagle, MT 59414

Attention: Mike Tramelli

Your air quality permit application dated August 14, 1985, and received in this office on September 6, 1985, for Refinery Equipment (Major) to be located in Sec. 1 T20N R3E, Cascade County is approved. The application was given permit number 2161.

Conditions:

1. Refinery sulfur dioxide emissions shall not exceed seven (7) tons per day.
2. The Fluid Catalytic Cracking (FCC) unit shall be source tested for both carbon monoxide and sulfur dioxide. Carbon monoxide emissions shall not exceed 12.9 tons per day or 4700 tons per year.
3. In addition, recipient shall also submit a plan for quantifying sulfur dioxide emissions from the following pieces of equipment:

   (a) boilers; (b) crude heater; (c) vacuum heater; (d) reformer heater; (e) NHDS heater.
4. The above test results, including a final report, shall be submitted to the Air Quality Bureau no later than May 15, 1986.
5. Applicable test methods and procedures outlined in 40 CFR, part 60 shall be followed unless recipient can demonstrate that other test methods are more appropriate or equivalent.
6. Recipient shall comply with all general conditions noted on attached page.

We appreciate your interest in this matter.

For the Department,

Harold Robbins, Chief
Air Quality Bureau

BEFORE THE DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the matter of the MONTANA REFINING COMPANY, Cascade County; compliance with ARM 16.8.811, ambient air quality standard for carbon monoxide	)	STIPULATION

The Montana Department of Health and Environmental Sciences ("DHES") and the Montana Refining Company ("MRC"), in accordance with the provisions and requirements of the Montana Clean Air Act, Title 75, Chapter 2, MCA ("Act"), hereby agree to and undertake the stipulations set forth below concerning MRC's compliance with the Montana Ambient Air Quality Standard for Carbon Monoxide adopted by the Montana Board of Health and Environmental Sciences ("BHES") at ARM 16.8.811.

1. MRC is a major stationary source of carbon monoxide as defined by ARM 16.8.921(22) and is located approximately one mile north of downtown Great Falls.
2. As a source in existence as of November 23, 1968, MRC is not subject to the permitting requirements applicable to major stationary sources pursuant to ARM 16.8.1104.
3. In accordance with the federal Clean Air Act, 42 USC 7401 et seq. part of the Great Falls AQCR was designated nonattainment for carbon monoxide by the U.S. Environmental Protection Agency ("EPA"). Such designation resulted in a 1977 emission inventory prepared by DHES' Air Quality Bureau which estimated MRC's carbon monoxide ("CO") emissions to be 11,000 tons annually, or 18% of area wide CO emissions.
4. Based upon a 1977 DHES emission inventory of CO and upon current (1985) monitored emissions of CO in the Great Falls area, the DHES has determined that compliance with both federal and state standards for CO may be achieved and maintained in the Great Falls area if MRC continues to

operate its refinery without exceeding current maximum CO emissions of approximately 4,700 tons annually.

5. With the intention of maintaining compliance with federal and state ambient air quality standards for CO in the Great Falls area, DHES and MRC, pursuant to Section 75-2-401(4), MCA, have determined that compliance by MRC with ARM 16.2.811 will be maintained and assured most appropriately by the following:

   (a) MRC expressly relinquishes and waives any right or entitlement it may have under the Montana Clean Air Act to operate its Great Falls refinery without an air quality permit for carbon monoxide issued by DHES under ARM Title 16, Chapter 8, Sub-chapter 11.

   (b) MRC agrees to subject itself to the provisions and requirements for carbon monoxide applicable to air quality permittees set forth in ARM Title 16, Chapter 8, Sub-chapter 11, and specifically has completed and submitted an application for an air quality permit and has followed the procedure for obtaining an air quality permit set forth in ARM Title 16, Chapter 8, Sub-chapter 11 as the same relates to control of carbon monoxide.

   (c) DHES reviewed MRC's permit application in accordance with the provisions of ARM Title 16, Chapter 8, Sub-chapter 11, and, with respect to the level of CO emissions from MRC's refinery to be allowed under such permit, DHES represents and agrees to establish such level in accordance with MRC's existing level of emissions, which are approximately 4,700 tons per year.

6. MRC agrees that the stipulations agreed to herein shall be

binding upon its transferees and assignees and any other persons who may become responsible for the operation of the refinery and that MRC will apprise in writing any such transferees, assignees, or persons of the stipulations agreed to herein.

7. This Stipulation shall be made an Appendix of Air Quality Permit #2161 which was issued by DHES on October 20, 1985 to MRC under ARM Title 16, Chapter 8, Sub-chapter 11.

8. MRC, by obtaining an air quality permit under ARM Title 16, Chapter 8, Sub-chapter 11 and by complying with the terms of such air quality permit concerning carbon monoxide emissions, will be deemed by DHES to be in compliance with ARM 16.8.811 as such rule exists on August 1, 1985.

MONTANA REFINING COMPANY

By M. C. Tramelli

Manager
Title

DATED this 5 day of DECEMBER, 1985

MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

By Harold W Robbins

Chief, Air Quality Bureau
Title

DATED this 2 day of December, 1985

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of A-1 Paving, Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and A-1 Paving ("A-1 Paving"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to A-1 Paving were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

results of this modeling, the PM-10 emissions from A-1 Paving were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for A-1 Paving are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for A-1 Paving and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon A-1 Paving.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on A-1 Paving must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to A-1 Paving. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, A-1 Paving") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to A-1 Paving.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to A-1 Paving.

A-1 PAVING

BY ______________________

BY ______________________
Attorney

DATE 8-25-93

MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

BY ______________________
Robert J. Robinson
Director

BY ______________________
Timothy R. Baker
Attorney

DATE 9/15/93

(STIPULATION)
7

EXHIBIT A

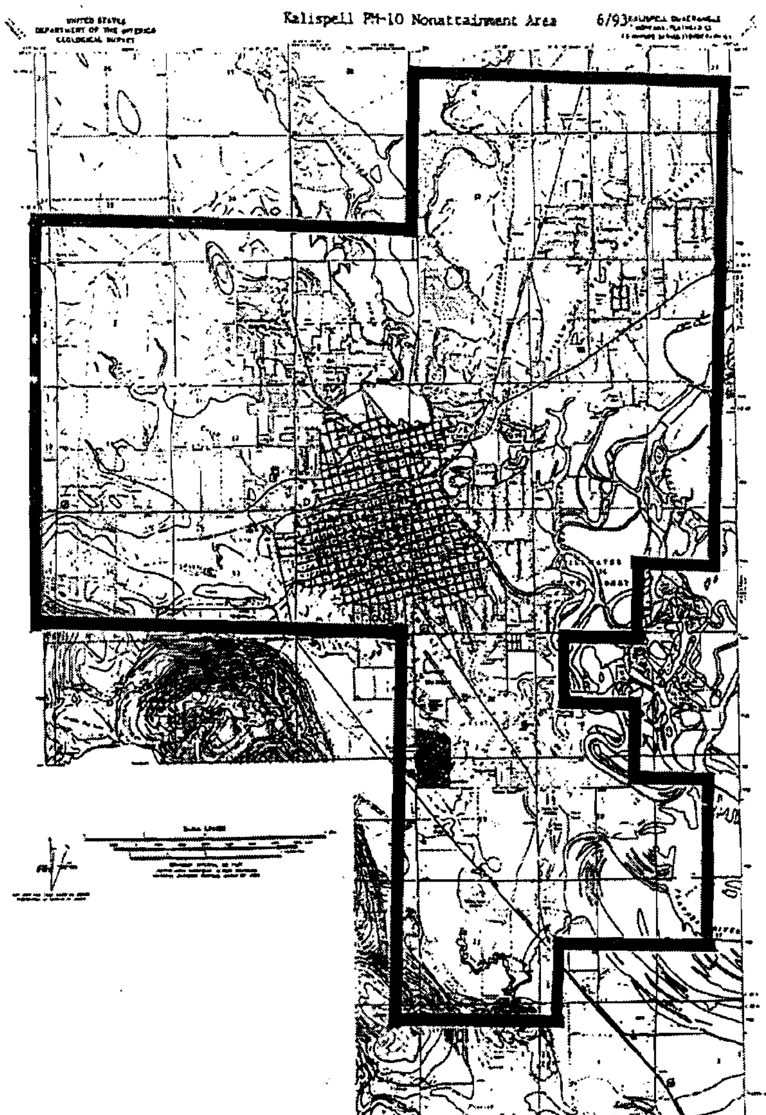

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

A-1 Paving, Inc.
3131 Highway 2 East
Kalispell, MT 59901

The above-named company is hereinafter referred to as "A-1."

Section I: Affected Facilities

A. Equipment: A portable 1980 CedarRapids Model 8828 Drum Mix asphalt plant (350 TPH) Serial #37455 with a wet scrubber.

B. Original Location: 3131 Highway 2 East (NW¼, Sec 22, T29N, R21W, Flathead County)

Section II: Limitations and Conditions

A. Emission Limitations

1. A-1 shall abide by all permit conditions as described in permit #2699, issued October 25, 1991.

2. A-1 shall not cause or authorize to be discharged into the atmosphere from haul roads, access roads, or the general plant area any visible fugitive emissions that exhibit opacity[1] of 5% or greater. (RACT)

3. A-1 shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity limitation. (RACT)

B. Reporting Requirements

1. Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

a. Number of vehicles;
b. Vehicle type;
c. Vehicle weight, loaded
d. Vehicle weight, unloaded;
e. Number of tires on vehicle;
f. Average trip length;
g. Number of trips per day;
h. Average vehicle speed;
i. Area of activity; and
j. Vehicle fuel usage (gasoline or diesel) annual total.

2. Fugitive dust control for haul roads and general plant area:

   a. Hours of operation of water trucks.
   b Application schedule for chemical dust suppressant if applicable.

C. A-1 shall comply with all other applicable state, federal, and local laws and regulations.

D. A-1 must maintain a copy of the air quality stipulation at the Kalispell asphalt plant site and make that copy available for inspection by department personnel upon request.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
A-1 Paving, Inc.

I. Introduction

A. Equipment

A portable 1980 CedarRapids Model 8828 Drum Mix asphalt plant (350 TPH) Serial #37455 with a wet scrubber.

B. Process Description

This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

C. Facility Location

A-1 operates a portable asphalt plant and a ready mix concrete batch plant in a gravel pit at 3131 Highway 2 East (NW¼, Sec 22, T29N, R21W, Flathead County) near the Kalispell nonattainment area.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

ARM 16.8.821 Ambient Air Quality Standard for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. 16.8 Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires an opacity limitation of 20% for all fugitive emission sources.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = $55\ (350\ \text{tons/hr})^{.11} - 40 = 64.76$ lbs/hr.

The enforceable total particulate matter emission limit is 14.00 lbs/hr, therefore the source is in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all stacks constructed or altered since November 23, 1968.

4. 16.8.1423 Standards of Performance for New Stationary Sources (NSPS). This plant was constructed in 1980 so NSPS (40 CFR Part 60, general provisions, and Subpart I Hot Mix Asphalt Facilities) applies to this facility.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Asphalt Plant Stack Emissions

A-1's asphalt plant was constructed in 1980, and therefore, NSPS does apply. The department has determined that BACT for NSPS asphalt plants is an emission limitation of 0.04 gr/dscf and 20% opacity. The plant was tested in 1992 and the results showed emissions at 0.0381 gr/dscf. Since BACT is more stringent than RACT and this asphalt plant meets BACT, the RACT requirement is met.

B. Material Transfer Fugitive Emissions

RACT for material transfer points for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 20% opacity limitation.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emission Inventory

1980 Cedar Rapids Model E525
Drum Mix Portable Asphalt Plant #27-55

Annual Emission Rates (Allowable) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			Tons/Year			
Asphalt Plant Drum Dryer	14.70	14.70	13.23	10.29	[illegible]	25.83
Elevator, Screens, Bins, and Mixer	73.50	11.03				
Cold Aggregate Handling	36.75	14.70				
Haul Roads	0.15	0.06				
Total Emissions	125.10	40.48	13.23	10.29	[illegible]	25.83

* Based on operating 2100 hours/year.

Daily Emission Rates (Allowable) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
Asphalt Plant Drum Dryer	336.00	336.00	302.40	235.20	[illegible]	613.20
Elevator, Screens, Bins, and Mixer	1680.00	252.00				
Cold Aggregate Handling	840.00	336.00				
Haul Roads (Daily)	1.31	0.47				
Total Emissions	2857.31	924.47	302.40	235.20	[illegible]	613.20

** Based on operating 24 hours/day.

Asphalt Plant Drum Dryer with Wet Scrubber

Process Rate: 350 tons/hr (Maximum production rate)
Hours of operation: 2100 hr/yr (Maximum Allowable) 24 hrs/day

TSP Emissions:

Emission Factor: 0.04 lbs/ton (AP-42, 8.1-1)
Calculations: 0.04 lbs/ton * 350.0 tons/hr = 14.00 lbs/hr
14.00 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 14.7 tons/yr
14.00 lbs/hr * 24 hrs/day = 336 lbs/day

PM-10 Emissions:

Emission Factor: 0.04 lbs/ton (AP-42, 8.1-1)
Calculations: 0.04 lbs/ton * 350.0 tons/hr = 14.00 lbs/hr *
14.00 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 14.7 tons/yr
14.00 lbs/hr * 24 hrs/day = 336 lbs/day

NOx Emissions:

Emission Factor: 0.036 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.036 lbs/ton * 350.0 tons/hr = 12.60 lbs/hr
12.60 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 13.23 tons/yr
12.60 lbs/hr * 24 hrs/day = 302.4 lbs/day

VOC Emissions:

Emission Factor: 0.028 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.028 lbs/ton * 350.0 tons/hr = 9.80 lbs/hr
9.80 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = [illegible] tons/yr
9.80 lbs/hr * 24 hrs/day = 235.2 lbs/day

3 Final Stipulation: 9/17/97

CO Emissions:

Emission Factor: 0.038 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.038 lbs/ton * 350.0 tons/hr = 13.30 lbs/hr
13.30 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 13.97 tons/yr
13.30 lbs/hr * 24 hrs/day = 319.2 lbs/day

SOx Emissions:

Emission Factor: 0.073 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.073 lbs/ton * 350.0 tons/hr = 25.55 lbs/hr
25.55 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 26.83 tons/yr
25.55 lbs/hr * 24 hrs/day = 613.2 lbs/day

Elevator, Screens, Bins, and Mixer

Process Rate: 350 tons/hr (Maximum production rate)
Hours of operation: 2100 hr/yr (Maximum Allowable) 24 hrs/day

TSP Emissions:

Emission Factor: 0.2 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.20 lbs/ton * 350.0 tons/hr = 70.00 lbs/hr
70.00 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 73.50 tons/yr
70.00 lbs/hr * 24 hrs/day = 1680 lbs/day

PM-10 Emissions:

Emission Factor: 0.03 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.03 lbs/ton * 350.0 tons/hr = 10.50 lbs/hr
10.50 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 11.03 tons/yr
10.50 lbs/hr * 24 hrs/day = 252 lbs/day

Cold Aggregate Handling

Process Rate: 350 tons/hr (Maximum production rate)
Hours of operation: 2100 hr/yr (Maximum Allowable) 24 hrs/day

TSP Emissions:

Emission Factor: 0.10 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.10 lbs/ton * 350.0 tons/hr = 35.00 lbs/hr
35.00 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 36.75 tons/yr
35.00 lbs/hr * 24 hrs/day = 840 lbs/day

PM-10 Emissions:

Emission Factor: 0.04 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.04 lbs/ton * 350.0 tons/hr = 14.00 lbs/hr
14.00 lbs/hr * 2100 hr/yr * 0.0005 tons/lb = 14.70 tons/yr
14.00 lbs/hr * 24 hrs/day = 336 lbs/day

Haul Roads

Operating Hours: 2100 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicles 4 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 1.78 Lbs/VMT

E(TSP)= (346 VMT/Yr)(1.78 Lbs/VMT)(0.5)
E(TSP)= 308 Lbs/Yr or 0.15 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	20.8 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Precipitation Ratio based on the following:	
130 Days with more than .01" of Precipitation	
PR= (365 days - 130 days)/365 Days =	0.6438

PM10 Emissions:

PM10 Emission Factor: 0.64 Lbs/VMT

E(PM10)= (346 VMT/Yr)(0.64 Lbs/VMT)(0.5)
E(PM10)= 111 Lbs/Yr or 0.06 Tons/Yr

Haul Roads (Daily)

Operating Hours: 2100 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	20.8 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Assumes no precipitation	1.0000

TSP Emissions:

TSP Emission factor: 2.77 Lbs/VMT

E(TSP)= (346 VMT/Yr)(2.77 Lbs/VMT)(0.5)
E(TSP)= 478 Lbs/Yr or 0.24 Tons/Yr or 1.31 Lbs/Day

PM10 Emission factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR

Where:

E= PM10 Emission factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	20.8 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Assumes no precipitation	1.0000

PM10 Emissions:

PM10 Emission Factor 1.00 Lbs/VMT

E(PM10)= (346 VMT/Yr)(1.00 Lbs/VMT)(0.5)
E(PM10)= 172 Lbs/Yr or 0.09 Tons/Yr or 0.47 Lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA required the department to use a dispersion model (a model which incorporates alloweble emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the A-1 facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the A-1 facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the A-1 facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment, and application of reasonable control techniques (watering or application of dust suppressant) for haul road dust the department has determined that the A-1 facility can operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: A-1 Paving, Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: This stipulation is for the operation of a portable 1980 CedarRapids Model 8023 Drum Mix asphalt plant (350 TPH) Serial #37455 with a wet scrubber. This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in permit #2699 and in a signed stipulation.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin

Date: August 10, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats			X			
2	Water Quality, Quantity and Distribution			X			
3	Geology and Soil Quality, Stability and Moisture			X			
4	Vegetation Cover, Quantity and Quality			X			
5	Aesthetics			X			
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy			X			
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production			X			
5	Human Health			X			
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment			X			
8	Distribution of Population			X			
9	Demands for Government Services			X			
10	Industrial and Commercial Activity			X			
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts			X			

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Equity Supply Company, Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Equity Supply Company ("Equity Supply"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

(STIPULATION)
2

tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to Equity Supply were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

results of this modeling, the PM-10 emissions from Equity Supply were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for Equity Supply are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Equity Supply and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon Equity Supply.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Equity Supply must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Equity Supply. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Equity Supply Company") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, *et seq.*, the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Equity Supply.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to Equity Supply.

EQUITY SUPPLY COMPANY	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY [signature]	BY [signature] Robert J. Robinson Director
BY ____________ Attorney	BY [signature] Timothy R. Baker Attorney
DATE 9-15-93	DATE 9/15/93

(STIPULATION)
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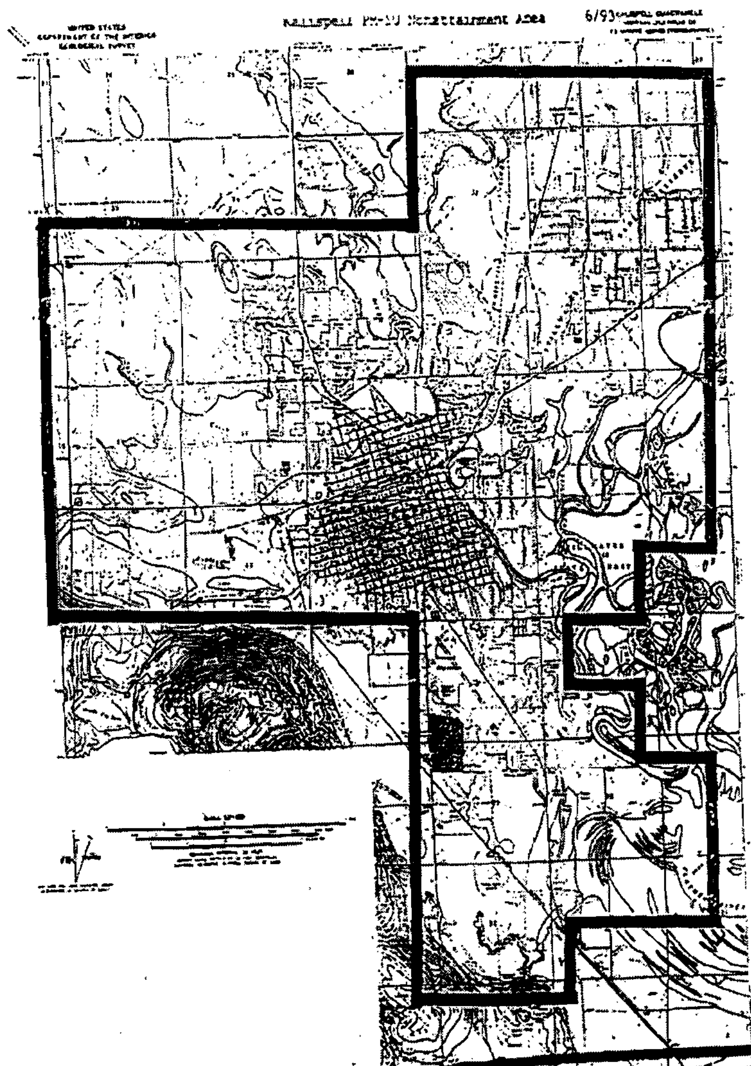
6/93

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Equity Supply Company
P.O. Box 579
Kalispell, MT 59901

The above-named company is hereinafter referred to as "Equity Supply."

SECTION I: Affected Facilities

A. Plant Location:

1. A feed mill and seed cleaning plant known as Equity #1, located on West Montana and 3rd Avenue North in the city limits of Kalispell, Montana. (Section 22, Township 29 North, Range 21 West, Flathead County)

2. A grain and fertilizer elevator known as Equity #2, located on Center Street and 5th Avenue West in the city limits of Kalispell, Montana. (Section 22, Township 29 North, Range 21 West, Flathead County)

B. Affected Equipment and Facilities:

Equity #1 - Feed Mill and Seed Cleaning Plant

	Process/Equipment	Maximum Process Rate	Control Equipment
1.	Bulk Unloading (Grain Receiving)	60 tons/hr	Stationary chute
2.	Bulk Unloading (Seed Grain)	10 tons/hr	Cyclone (2494 cfm) w/telescoping chute
3.	Natural Gas Boiler/York Shipley	7.7 MMBTU/hr	None
4.	Grain Drying/Shanzer Model M20	11 tons/hr	Stationary chute/closed
5.	Grain Cleaning	9 tons/hr	Cyclone (3690 cfm)
6.	Grain Milling		
	- Roller mill Memco 18" x 30"	5 tons/hr	Cyclone (1500 cfm)
	- Hammer mill Prater Blue Streak 6AL	6 tons/hr	Cyclone (1000 cfm)
7.	Pellet Cooler/California Pellet Mill	4 tons/hr	Cyclone (1000 cfm)
8.	Bulk Loading (Grain Shipping)	50 tons/hr	Telescoping chute
9.	Bulk Loading (Feed Shipping)	5 tons/hr	Telescoping chute

Equity #2 - Grain and Fertilizer Elevator

	Process/Equipment	Maximum Process Rate	Control Equipment
1.	Bulk Unloading (Grain Receiving)	90 tons/hr	Stationary chute
2.	Grain Drying/Hume Model 2110	20 tons/hr	Stationary chute
3.	Bulk Loading (Grain Shipping)	90 tons/hr	Telescoping chute
4.	Bulk Unloading (Fertilizer)	30 tons/hr	Stationary chute/closed system
5.	Bulk Loading (Fertilizer)	15 tons/hr	Stationary chute with dust sock

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SECTION II: Limitations and Conditions

A. Emission Limitations and Conditions:

1. Equity Supply shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968 that exhibit an opacity of twenty percent[1] (20%) or greater averaged over six (6) consecutive minutes. This applies to the cyclone stack emissions from the seed grain unloading, seed cleaning, roller mill, hammer mill, and pellet cooler. (ARM 16.8.1404)

2. Equity Supply shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed prior to November 23, 1968 that exhibit an opacity of forty percent[1] (40%) or greater averaged over six (6) consecutive minutes. This applies to, but is not limited to, the building vents, loading and unloading chutes. (ARM 16.8.1404)

3. Equity Supply shall operate the Equity #1 and Equity #2 facilities so as not to cause or authorize emissions to be discharged into the atmosphere from access roads, parking lots, or the general plant property any visible fugitive emissions that exhibit opacity of five percent[1] (5%) or greater averaged over six (6) consecutive minutes. This applies to fugitive emissions from any hauling, handling, loading, and unloading operation. (RACT)

4. Equity Supply shall treat all unpaved portions of the haul roads, access roads, parking lots, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity[1] limitation.

5. Equity Supply shall operate and maintain all emission control equipment, identified in Section I.B as designed to provide the maximum control of air pollutants.

6. The hours of operation of the feed mill and seed cleaning plant (Equity #1) shall be limited to 20 hours per day and 1200 tons per day of grain throughput for all processes except for the grain drying process. The grain drying process shall be limited to 24 hours per day and 4000 hours per year.

7. The hours of operation of the feed mill, seed cleaning plant and grain dryer (Equity #1) shall be limited to 4000 hours per year.

8. The hours of operation of the grain and fertilizer elevator (Equity #2) shall be limited to 16 hours per day and 1440 tons per day of grain throughput and 480 tons per day of fertilizer throughput. The grain drying process shall be limited to 24 hours per day and 3200 hours per year.

[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

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9. The hours of operation of the grain and fertilizer elevator and grain drying process (Equity #2) shall be limited to 3200 hours per year.

B. Operational Reporting Requirement:

a. Annual

Equity Supply shall supply the Department of Health and Environmental Sciences Air Quality Bureau with an annual emission inventory for the following listed emission points. The annual emission inventory report must be submitted in writing to the department by March 1 of the following calendar year. The emission inventories shall include the following production and emission inventory information:

Equity #1

1.	Bulk Unloading (Grain)	- Tons of grain received. - Total hours of unloading operation.
2.	Bulk Unloading (Seed)	- Tons of seed grain received. - Total hours of unloading operation.
3.	Grain Drying	- Total hours of drying operation.
4.	Grain Cleaning	- Total hours of cleaning operation.
5.	Grain Milling (Roller mill)	- Total hours of milling operation.
6.	Grain Milling (Hammer mill)	- Total hours of milling operation.
7.	Pellet Cooler	- Total hours of pellet cooler operation.
8.	Bulk Loading (Grain)	- Tons of grain shipped. - Total hours of loading operation.
9.	Bulk Loading (Feed)	- Tons of feed shipped. - Total hours of loading operation.

Equity #2

1.	Bulk Unloading (Grain)	- Tons of grain received. - Total hours of unloading operation.
2.	Grain Drying	- Total hours of drying operation.
3.	Truck Bulk Loading (Grain)	- Tons of grain shipped. - Total hours of loading operation.
4.	Rail Bulk Loading (Grain)	- Tons of grain shipped. - Total hours of loading operation.
5.	Bulk Unloading (Fertilizer)	- Tons of fertilizer received. - Total hours of unloading operation.
6.	Bulk Loading (Fertilizer)	- Tons of grain shipped. - Total hours of loading operation.

b. <u>Daily</u>

1. Equity Supply shall maintain records of daily production rates and daily hours of operation for the following items listed in Section II.E.a:

   Equity #1: Items 1, 2, 8, and 9.
   Equity #2: Items 1, 3, 4, 5, and 6.

   These records shall be available for inspection by the department and will be submitted to the department upon request.

2. Equity Supply shall maintain records of daily hours of operation for the following items listed in Section II.B.a.:

   Equity #1: Items 3, 4, 5, 6, and 7.
   Equity #2: Item 2.

   These records shall be available for inspection by the department and will be submitted to the department upon request.

3. Equity Supply shall keep these records as permanent business records for a minimum of five (5) years.

4. Equity Supply shall provide an annual report identifying any days in which the limitations in Section I.A.6, 7 and 8 are exceeded. The report shall be submitted by March 1 of each year.

C. The department may require additional emissions testing on sources in the plant per ARM 16.8.704 Testing Requirements.

D. Equity Supply must maintain a copy of the air quality stipulation at the Kalispell Equity Supply main office and make that copy available for inspection by department personnel upon request.

E. Equity Supply shall comply with all other applicable state, federal and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS/CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions

Equity Supply Company

I. Introduction/Process Description

Equity Supply operates an existing feed mill and seed cleaning plant known as Equity #1, located on West Montana and 3rd Avenue North and a grain and fertilizer elevator known as Equity #2, located on Center Street and 5th Avenue West, both located in the city limits of Kalispell, Montana.

The Equity #1 facility receives and ships grain and also manufactures feed. At this facility, grain is received from the grower in trucks. The grain is either back dumped or bottom dumped into a hopper and the grain then gravity flows into the boot of the bucket elevator. Once the grain has been dumped it is handled within a closed system. The grain is then elevated by a bucket type elevator and directed into a storage bin. If the grain has a high moisture content it is dried to prevent mold. If the grain is shipped, it is re-elevated and then gravity feed into rail cars. A telescoping chute is used to reduce particulate emissions and damage to the grain as it flows into the rail car.

Grain used for the manufacturing of feed is gravity fed directly from the overhead bins to processing equipment, mixer then bagging or bulk loaded. The equipment used in the manufacturing of the feed are the Memco 18" x 30" Roller Mill, Prater Blue Streak 6AL Hammer Mill, and a California Pellet Mill Model 2GA. The emissions from these processes are controlled by three separate cyclones.

Equity #1 also receives seed grain from the grower for cleaning. The seed grain is vacuumed out of the truck using a telescoping chute and cyclone. The seed is then cleaned using a separate cyclone and stored in a bin until the entire load has been unloaded and cleaned. The storage bin of clean seed is then loaded back into the truck through a telescoping chute.

The Equity #2 facility receives and ships grain and fertilizer. At this facility, grain is received from the grower in trucks. The grain is either back dumped or bottom dumped into a hopper and the grain then gravity flows into the boot of the bucket elevator. Once the grain has been dumped it is handled within a closed system. The grain is then elevated by a bucket type elevator and directed into a storage bin. If the grain has a high moisture content it is dried to prevent mold. When the grain is shipped, it is re-elevated and then gravity feed into rail cars. A telescoping chute is used to reduce particulate emissions and damage to the grain as it flow into the rail car.

At the fertilizer plant, bulk granular fertilizer is off-loaded from rail cars, elevated and stored in flat bins. When needed it is removed from the bins by a Bobcat, put in a scale, transferred by conveyor to the blender, re-elevated and gravity fed into the truck or trailer. The fertilizer is loaded through a stationary chute with a sock to reduce particulate emissions.

II. Applicable Rules and Regulations

A. ARM 16.8.821, Ambient Air Quality Standards for PM-10: This section requires that the 24-hour and annual average concentrations of PM-10 in the ambient air not exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents installed after November 23, 1968 and 40% for all stacks or vents installed prior to November 23, 1968.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Process Particulate Stack Emissions

A cyclone would provide the reasonable level of particulate control (90%). Equity Supply currently uses a cyclone for particulate control from the seed grain unloading, seed cleaning, roller mill, hammer mill, and pellet cooler. The department has determined that the cyclones will constitute RACT for these sources.

B. Process Fugitive Emissions

The only process emission points not controlled by the cyclone control system will be the grain and fertilizer unloading and loading. The fugitive particulate emissions from these point sources will be controlled through the use of telescoping loading chutes, stationary chutes with a dust sock, or by minimizing the product drop height during product loadout. The department has determined that these control measures constitute RACT for these sources in this case.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization.

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IV. Emissions Inventory

Total Facility Emissions

Annual Emission Rates (Allowable)

Source	TSP	PM-10	NOx	VOC	CO	SOx
			tons/year			
Equity #1(4000 hrs/yr)	294.14	77.18	3.38	0.27	0.68	0.02
Equity #2(3200 hrs/yr)	336.68	85.06	0.00	0.00	0.00	0.00
Total Emissions	630.82	162.24	3.38	0.27	0.68	0.02

Daily Emission Rates (Allowable)

Source	TSP	PM-10	NOX	VOC	CO	SOx
			lbs/day			
Equity #1	2970.07	774.51	18.49	1.48	3.70	0.11
Equity #2	3478.80	868.20	0.00	0.00	0.00	0.00
Total Emissions	6448.87	1642.71	18.49	1.48	3.70	0.11

Equity #1
Feed Mill and Seed Cleaning Plant

Annual Emission Rates (Allowable) *

Source	TSP	PM-10	NOx	VOC	CO	SOx
			tons/year			
Bulk Unloading (Grain Receiving)	72.00	36.00				
Bulk Unloading (Seed Grain)	12.00	6.00				
Natural Gas Boiler	0.47	0.47	3.38	0.27	0.68	0.02
Grain Drying	15.40	2.42				
Grain Cleaning	5.40	0.81				
Grain Milling	0.46	0.23				
Pellet Coolers	0.16	0.08				
Elevator Legs (Headhouse)	180.00	27.60				
Bulk Loading (Grain Shipping)	7.50	3.25				
Bulk Loading (Feed Shipping)	0.75	0.33				
Total Emissions	294.14	77.18	3.38	0.27	0.68	0.02

* Based on operating 4000 hours/year.

Daily Emission Rates (Allowable) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
Bulk Unloading (Grain Receiving)	720.00	360.00				
Bulk Unloading (Seed Grain)	120.00	60.00				
Natural Gas Boiler	2.55	2.55	18.49	1.48	3.70	0.11
Grain Drying	184.80	29.00				
Grain Cleaning	54.00	8.10				
Grain Milling	4.62	2.31				
Pellet Coolers	1.60	0.80				
Elevator Legs (Headhouse)	1800.00	276.00				
Bulk Loading (Grain Shipping)	75.00	32.50				
Bulk Loading (Feed Shipping)	7.50	3.25				
Total Emissions	2970.07	774.51	18.49	1.48	3.70	0.11

** Based on all processes except grain dryer operating 20 hours/day.
Based on grain dryer operating 24 hours/day.

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Bulk Unloading (Grain Receiving)

Process Rate: 60 tons/hr
Hours of operation: 4000 hr/yr   20 hrs/day

TSP Emissions:

Emission Factor: 0.6 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%
Calculations: 0.60 lbs/ton * 60.00 tons/hr = 36.00 lbs/hr
36.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 72.00 tons/yr
72.00 tons/yr * (1.00 - 0.000) = 72.00 tons/yr
36.00 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 720.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.3 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%
Calculations: 0.300 lbs/ton * 60.00 tons/hr = 18.00 lbs/hr
18.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 36.00 tons/yr
36.00 tons/yr * (1.00 - 0.000) = 36.00 tons/yr
18.00 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 360.00 lbs/day

Bulk Unloading (Seed Grain)

Process Rate: 10 tons/hr
Hours of operation: 4000 hr/yr   20 hrs/day

TSP Emissions:

Emission Factor: 0.6 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%   (Transfer cyclone)
Calculations: 0.60 lbs/ton * 10.00 tons/hr = 6.00 lbs/hr
6.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 12.00 tons/yr
12.00 tons/yr * (1.00 - 0.000) = 12.00 tons/yr
6.00 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 120.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.3 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%   (Transfer cyclone)
Calculations: 0.300 lbs/ton * 10.00 tons/hr = 3.00 lbs/hr
3.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 6.00 tons/yr
6.00 tons/yr * (1.00 - 0.000) = 6.00 tons/yr
3.00 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 60.00 lbs/day

Natural Gas Boiler

TSP Emissions:

Emission Factor: 12.0 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr   (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 14 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.47 tons/yr

PM-10 Emissions:

Emission Factor: 13.8 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr   (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 14 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.47 tons/yr

NOx Emissions:

Emission Factor: 100 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr   (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 100 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 3.38 tons/yr

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VOC Emissions:

Emission Factor: 8 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 8 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.27 tons/yr

CO Emissions:

Emission Factor: 20 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 20 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.68 tons/yr

SOx Emissions:

Emission Factor: 0.6 lbs/10^6 ft^3 gas (AP-42, 1.4-1)
Control Efficiency: 0%
Fuel Consumption: 67.50 10^6 ft^3/yr (Information from company)
Calculations: 67.50 * 10^6 ft^3/yr * 0.6 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.02 tons/yr

Grain Drying

Process Rate: 11.00 tons/hr
Hours of operation: 4000 hr/yr 24 hrs/day

TSP Emissions:

Emission Factor: 0.7 lbs/ton (AFSSCC 3-02-006-04, page 80)
Control Efficiency: 0%
Calculations: 0.70 lbs/ton * 11.00 tons/hr = 7.70 lbs/hr
7.70 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 15.40 tons/yr
15.40 tons/yr * (1.00 - 0.000) = 15.40 tons/yr
7.70 lbs/hr * 24 hrs/day * (1.00 - 0.00) = 184.80 lbs/day

PM-10 Emissions:

Emission Factor: 0.11 lbs/ton (AFSSCC 3-02-006-04, page 80)
Control Efficiency: 0%
Calculations: 0.110 lbs/ton * 11.00 tons/hr = 1.21 lbs/hr
1.21 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 2.42 tons/yr
2.42 tons/yr * (1.00 - 0.000) = 2.42 tons/yr
1.21 lbs/hr * 24 hrs/day * (1.00 - 0.00) = 29.04 lbs/day

Grain Cleaning

Process Rate: 9.00 tons/hr
Hours of operation: 4000 hr/yr 20 hrs/day

TSP Emissions:

Emission Factor: 3 lbs/ton (AFSSCC 3-02-006-03, page 80)
Control Efficiency: 90% (Cyclone)
Calculations: 9.00 tons/hr * 3.00 lbs/ton = 27.00 lbs/hr
27.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 54.00 tons/yr
54.00 tons/yr * (1.00 - 0.900) = 5.40 tons/yr
27.00 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 54.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.45 lbs/ton (AFSSCC 3-02-006-03, page 80)
Control Efficiency: 90% (Cyclone)
Calculations: 9.00 tons/hr * 0.45 lbs/ton = 4.05 lbs/hr
4.05 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 8.10 tons/yr
8.10 tons/yr * (1.00 - 0.900) = 0.81 tons/yr
4.05 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 8.10 lbs/day

Grain Milling

Process Rate: 11.00 tons/hr
Hours of operation: 4000 hr/yr   20 hrs/day

TSP Emissions:

Emission Factor: 0.21 lbs/ton (AFSSCC 3-02-008-015, page 84)
Control Efficiency: 90%   (Cyclone)
Calculations: 0.21 lbs/ton * 11.00 tons/hr = 2.31 lbs/hr
2.31 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 4.62 tons/yr
4.62 tons/yr * (1.00 - 0.90) = 0.46 tons/yr
2.31 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 4.62 lbs/day

PM-10 Emissions:

Emission Factor: 0.105 lbs/ton (AFSSCC 3-02-008-015, page 84) (Assumes 50% of TSP)
Control Efficiency: 90%   (Cyclone)
Calculations: 0.105 lbs/ton * 11.00 tons/hr = 1.16 lbs/hr
1.16 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 2.31 tons/yr
2.31 tons/yr * (1.00 - 0.900) = 0.23 tons/yr
1.16 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 2.31 lbs/day

Pellet Coolers

Process Rate: 4.00 tons/hr
Hours of operation: 4000 hr/yr   20 hrs/day

TSP Emissions:

Emission Factor: 0.2 lbs/ton (AFSSCC 3-02-008-16, page 84)
Control Efficiency: 90%   (Cyclone)
Calculations: 0.20 lbs/ton * 4.00 tons/hr = 0.80 lbs/hr
0.80 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 1.60 tons/yr
1.60 tons/yr * (1.00 - 0.90) = 0.16 tons/yr
0.80 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 1.60 lbs/day

PM-10 Emissions:

Emission Factor: 0.1 lbs/ton (AFSSCC 3-02-008-16, page 84) (Assumes 50% of TSP)
Control Efficiency: 90%   (Cyclone)
Calculations: 0.100 lbs/ton * 4.00 tons/hr = 0.40 lbs/hr
0.40 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 0.80 tons/yr
0.80 tons/yr * (1.00 - 0.90) = 0.08 tons/yr
0.40 lbs/hr * 20 hrs/day * (1.00 - 0.90) = 0.80 lbs/day

Elevator Legs (Headhouse)

Process Rate: 60.00 tons/hr
Hours of operation: 4000 hr/yr   20 hrs/day

TSP Emissions:

Emission Factor: 1.5 lbs/ton (AFSSCC 3-02-006-08, page 80)
Control Efficiency: 0%
Calculations: 1.50 lbs/ton * 60.00 tons/hr = 90.00 lbs/hr
90.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 180.00 tons/yr
180.00 tons/yr * (1.00 - 0.00) = 180.00 tons/yr
90.00 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 1800.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.23 lbs/ton (AFSSCC 3-02-006-08, page 80)
Control Efficiency: 0%
Calculations: 0.230 lbs/ton * 60.00 tons/hr = 13.80 lbs/hr
13.80 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 27.60 tons/yr
27.60 tons/yr * (1.00 - 0.00) = 27.60 tons/yr
13.80 lbs/hr * 20 hrs/day * (1.00 - 0.00) = 276.00 lbs/day

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Bulk Loading (Grain Shipping)

Process Rate: 50.00 tons/hr
Hours of operation: 4000 hr/yr 20 hrs/day

TSP Emissions:

Emission Factor: 0.30 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.30 lbs/ton * 50.00 tons/hr = 15.00 lbs/hr
15.00 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 30.00 tons/yr
30.00 tons/yr * (1.00 - 0.75) = 7.50 tons/yr
15.00 lbs/hr * 20 hrs/day * (1.00 - 0.75) = 75.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.13 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.13 lbs/ton * 50.00 tons/hr = 6.50 lbs/hr
6.50 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 13.00 tons/yr
13.00 tons/yr * (1.00 - 0.75) = 3.25 tons/yr
6.50 lbs/hr * 20 hrs/day * (1.00 - 0.75) = 32.50 lbs/day

Bulk Loading (Feed Shipping)

Process Rate: 5.00 tons/hr
Hours of operation: 4000 hr/yr 20 hrs/day

TSP Emissions:

Emission Factor: 0.30 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.30 lbs/ton * 5.00 tons/hr = 1.50 lbs/hr
1.50 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 3.00 tons/yr
3.00 tons/yr * (1.00 - 0.75) = 0.75 tons/yr
1.50 lbs/hr * 20 hrs/day * (1.00 - 0.75) = 7.50 lbs/day

PM-10 Emissions:

Emission Factor: 0.13 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.13 lbs/ton * 5.00 tons/hr = 0.65 lbs/hr
0.65 lbs/hr * 4000 hr/yr * 0.0005 tons/lb = 1.30 tons/yr
1.30 tons/yr * (1.00 - 0.75) = 0.33 tons/yr
0.65 lbs/hr * 20 hrs/day * (1.00 - 0.75) = 3.25 lbs/day

Equity #2
Grain and Fertilizer Elevator

Annual Emission Rates (Allowable) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			Tons/Year			
Bulk Unloading (Grain Receiving)	86.40	43.20				
Grain Drying	22.40	3.52				
Elevator Legs (Headhouse)	216.00	33.12				
Bulk Loading (Grain Shipping)	10.80	4.68				
Bulk Unloading (Fertilizer)	0.96	0.48				
Bulk Loading (Fertilizer)	0.12	0.06				
Total Emissions	336.68	85.06	0.00	0.00	0.00	0.00

* Based on operating 3200 hours/year.

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Daily Emission Rates (Allowable) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
	lbs/day					
Bulk Unloading (Grain Receiving)	864.00	432.00				
Grain Drying	336.00	52.80				
Elevator Legs (Headhouse)	2160.00	331.20				
Bulk Loading (Grain Shipping)	108.00	46.80				
Bulk Unloading (Fertilizer)	9.60	4.80				
Bulk Loading (Fertilizer)	1.20	0.60				
Total Emissions	3478.80	868.20	0.00	0.00	0.00	0.00

** Based on operating all processes except grain drying 16 hours/day.
Based on operating grain drying 24 hours/day.

Bulk Unloading (Grain Receiving)

Process Rate: 90 tons/hr
Hours of operation: 3200 hr/yr 16 hrs/day

TSP Emissions:

Emission Factor: 0.6 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%
Calculations: 0.60 lbs/ton * 90.00 tons/hr = 54.00 lbs/hr
54.00 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 86.40 tons/yr
86.40 tons/yr * (1.00 - 0.000) = 86.40 tons/yr
54.00 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 864.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.3 lbs/ton (AFSSCC 3-02-006-05, page 80)
Control Efficiency: 0%
Calculations: 0.300 lbs/ton * 90.00 tons/hr = 27.00 lbs/hr
27.00 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 43.20 tons/yr
43.20 tons/yr * (1.00 - 0.000) = 43.20 tons/yr
27.00 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 432.00 lbs/day

Grain Drying

Process Rate: 20 tons/hr
Hours of operation: 3200 hr/yr 24 hrs/day

TSP Emissions:

Emission Factor: 0.7 lbs/ton (AFSSCC 3-02-006-04, page 80)
Control Efficiency: 0%
Calculations: 20.00 tons/hr * 0.70 lbs/ton = 14.00 lbs/hr
14.00 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 22.40 tons/yr
22.40 tons/yr * (1.00 - 0.000) = 22.40 tons/yr
14.00 lbs/hr * 24 hrs/day * (1.00 - 0.00) = 336.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.11 lbs/ton (AFSSCC 3-02-006-04, page 80)
Control Efficiency: 0%
Calculations: 20.00 tons/hr * 0.11 lbs/ton = 2.20 lbs/hr
2.20 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 3.52 tons/yr
3.52 tons/yr * (1.00 - 0.000) = 3.52 tons/yr
2.20 lbs/hr * 24 hrs/day * (1.00 - 0.00) = 52.80 lbs/day

Elevator Legs (Headhouse)

Process Rate: 90 tons/hr
Hours of operation: 3200 hr/yr 16 hrs/day

TSP Emissions:

Emission Factor: 1.5 lbs/ton (AFSSCC 3-02-006-08, page 80)
Control Efficiency: 0%
Calculations: 90.00 tons/hr * 1.50 lbs/ton = 135.00 lbs/hr
135.00 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 216.00 tons/yr
216.00 tons/yr * (1.00 - 0.000) = 216.00 tons/yr
135.00 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 2160.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.23 lbs/ton (AFSSCC 3-02-006-08, page 80)
Control Efficiency: 0%
Calculations: 90.00 tons/hr * 0.23 lbs/ton = 20.70 lbs/hr
20.70 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 33.12 tons/yr
33.12 tons/yr * (1.00 - 0.000) = 33.12 tons/yr
20.70 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 331.20 lbs/day

Bulk Loading (Grain Shipping)

Process Rate: 90 tons/hr
Hours of operation: 3200 hr/yr 16 hrs/day

TSP Emissions:

Emission factor: 0.3 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.30 lbs/ton * 90.00 tons/hr = 27.00 lbs/hr
27.00 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 43.20 tons/yr
43.20 tons/yr * (1.00 - 0.75) = 10.80 tons/yr
27.00 lbs/hr * 16 hrs/day * (1.00 - 0.75) = 108.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.13 lbs/ton (AFSSCC 3-02-006-06, page 80)
Control Efficiency: 75% (Telescoping chute)
Calculations: 0.130 lbs/ton * 90.00 tons/hr = 11.70 lbs/hr
11.70 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 18.72 tons/yr
18.72 tons/yr * (1.00 - 0.75) = 4.68 tons/yr
11.70 lbs/hr * 16 hrs/day * (1.00 - 0.75) = 46.80 lbs/day

Bulk Unloading (Fertilizer)

Process Rate: 30 tons/hr
Hours of operation: 3200 hr/yr 16 hrs/day

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-01-027-09, page 48)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 30.00 tons/hr = 0.60 lbs/hr
0.60 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 0.96 tons/yr
0.96 tons/yr * (1.00 - 0.000) = 0.96 tons/yr
0.60 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 9.60 lbs/day

PM-10 Emissions:

Emission Factor: 0.01 lbs/ton (AFSSCC 3-01-027-09, page 48)
Control Efficiency: 0%
Calculations: 0.010 lbs/ton * 30.00 tons/hr = 0.30 lbs/hr
0.30 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 0.48 tons/yr
0.48 tons/yr * (1.00 - 0.000) = 0.48 tons/yr
0.30 lbs/hr * 16 hrs/day * (1.00 - 0.00) = 4.80 lbs/day

Bulk Loading (Fertilizer)

Process Rate: 15.00 tons/hr
Hours of operation: 3200 hr/yr 16 hrs/day

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-01-027-09, page 42)
Control Efficiency: 75% (Stationary chute with dust sock)
Calculations: 0.02 lbs/ton * 15.00 tons/hr = 0.30 lbs/hr
0.30 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 0.48 tons/yr
0.48 tons/yr * (1.00 - 0.750) = 0.12 tons/yr
0.30 lbs/hr * 16 hrs/day * (1.00 - 0.75) = 1.20 lbs/day

PM-10 Emissions:

Emission Factor: 0.01 lbs/ton (AFSSCC 3-01-027-09, page 43)
Control Efficiency: 75% (Stationary chute with dust sock)
Calculations: 0.010 lbs/ton * 15.00 tons/hr = 0.15 lbs/hr
0.15 lbs/hr * 3200 hr/yr * 0.0005 tons/lb = 0.24 tons/yr
0.24 tons/yr * (1.00 - 0.750) = 0.06 tons/yr
0.15 lbs/hr * 16 hrs/day * (1.00 - 0.75) = 0.60 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA required the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Equity Supply facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Equity Supply facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Equity Supply facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust and restrictions on annual operating hours, the Equity Supply facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE. 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Equity Supply Company, Air Quality Stipulation for Kalispell SIP.

Description of Project: Equity Supply Company operates an existing feed mill and seed cleaning plan known as Equity #1, located on West Montana and 3rd Avenue North and a grain and fertilizer elevator known as Equity #2, located on Center Street and 5th Avenue West, both located in the cit limits of Kalispell, Montana. The Equity #1 facility receives and ships grain and also manufactures feed. The Equity #2 facility receives and ships grain and fertilizer.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health ar Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emissic sources and makes enforceable emission limitations, hours of operation, and the operation of control equipment and techniques which, when considered with similar limitations on other Kalispell area sources, will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available anc prudent to consider: No reasonable alternatives exist.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions are contained in a signed stipulation.

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment, control techniques, and limitations on operating hours at the plant enforceable and assures that the emissions from this facili: when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin
Date: August 4, 1993

Final Stipulation: 9/17/93

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Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resources of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

Final Stipulation: 9/17/93

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BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Flathead Road Department, Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Flathead Road Department ("Flathead Co."), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

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amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to Flathead Co. were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

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results of this modeling, the PM-10 emissions from Flathead Co. were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for Flathead Co. are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Flathead Co. and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon Flathead Co.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Flathead Co. must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Flathead Co. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Flathead Road Department") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

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it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Flathead Co.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

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17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to Flathead Co.

FLATHEAD ROAD DEPARTMENT	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY ____________	BY ____________ Robert J. Robinson Director
BY ____________ Attorney	BY ____________ Timothy R. Baker Attorney
DATE 8-25-93	DATE 9/15/93

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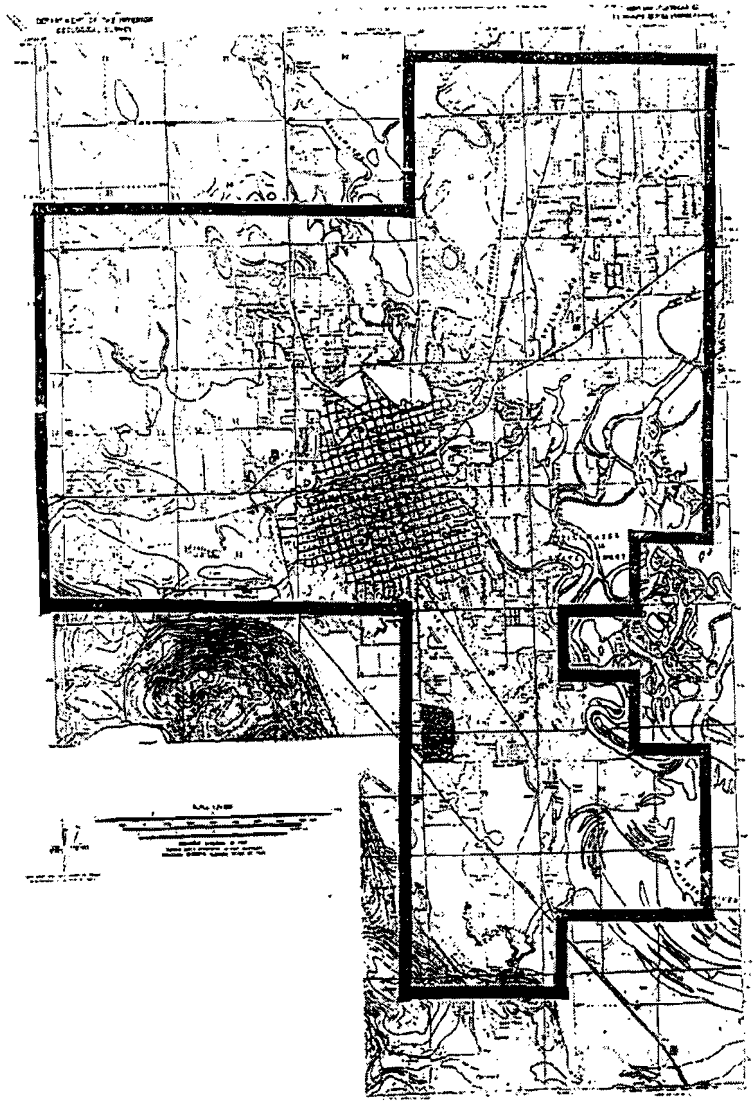

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Flathead County Road Department
P.O. Box 1102
Kalispell, MT 59902-1102

The above-named company is hereinafter referred to as "Flathead Co."

Section I: Affected Facilities

A. Equipment: A portable 1973 Pioneer Duplex Model 50VE crusher (100 TPH), Serial #303R-P-122 and a gravel screen.

B. Original Location: Four Corners Pit (N½, Sec 29, T28N, R21W, Flathead County).

Section II: Conditions

A. Operational

1. All visible emissions from the crusher plant are limited to 20% opacity[1]. (ARM 16.8.1404)

2. Flathead Co. shall not cause or authorize to be discharged into the atmosphere from other equipment such as screens or transfer points any visible emissions that exhibit opacity[1] of 20%. (ARM 16.8.1401)

3. Flathead Co. shall not cause or authorize to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property any visible fugitive emissions that exhibit opacity[1] of 5% or greater (RACT)

4. Flathead Co. shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general plant area with water/and or chemical dust suppressant as necessary to maintain compliance with the 5% opacity[1] limitation. (RACT)

5. Water spray bars are required as necessary, if fugitive emissions are greater than 20% opacity[1].

6. Crusher production is limited to 100 tons/hour.

7. The hours of operation of the gravel crusher is limited to 8760 hours per year.

---

[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

8. Total particulate emissions from this crusher in conjunction with total particulate emissions from any additional equipment at any individual site shall be less than 250 tons/year.

9. Flathead Co. shall operate and maintain all emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

B. Reporting Requirements

1. If this crushing plant is moved to another location, a Notice of Intent to Transfer Location of Air Quality Permit must be published in a newspaper of general circulation in the area to which the transfer is to be made. This notice must be published at least 15 days prior to the move. Proof of publication and a change of location form must be submitted to the Montana Department of Health and Environmental Sciences, Air Quality Bureau (AQB), prior to the move. These forms are available from the AQB.

2. Flathead Co. shall maintain on-site records showing daily hours of operation and daily production rates for the last 12 months. These records shall be available for inspection by the AQB and will be submitted to the AQB upon request.

3. Flathead Co. shall retain daily production numbers for a minimum of five (5) years.

4. Annual production information shall be submitted to the AQB by March 1 of the following calendar year. The information shall include:

   a) Tons of gravel crushed.

   b) Tons of gravel bulk loaded.

   c) Hours of operation of the crusher.

   d) Gallons of diesel used for generators.

   e) Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

      i) Number of vehicles;
      ii) Vehicle type;
      iii) Vehicle weight, loaded;
      iv) Vehicle weight, unloaded;
      v) Number of tires on vehicle;
      vi) Average trip length;
      vii) Number of trips per day;
      viii) Average vehicle speed;
      ix) Area of activity; and
      x) Vehicle fuel usage (gasoline or diesel) annual total.

f. Fugitive dust control for haul roads and general plant area:

i. Hours of operation of water trucks.
ii. Application schedule for chemical dust suppressant if applicable.

C. The AQB may modify the conditions of this stipulation based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, predicted ambient impacts which would cause or contribute to violations of a NAAQS or PSD increment, etc.

D. The department may require additional emissions testing on sources of emissions per ARM 16.8.704, Testing Requirements.

E. Flathead Co. must maintain a copy of the air quality stipulation at the Kalispell ready mix site and make that copy available for inspection by department personnel upon request.

F. Flathead Co. shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
Flathead County Road Department

I. Introduction/Process Description

The affected facility is a portable 1973 Pioneer Duplex Model 50VE crusher (100 TPH), Serial #303R-P-122 and a gravel screen. This plant crushes gravel for use in construction, repair, and maintenance of roads and highways. The maximum process rate of the crusher is 100 tons/hour.

Flathead Co. operates three (3) gravel pits in or near the Kalispell nonattainment area. They move the Cedar Rapids gravel crusher between these pits in order to crush gravel used to produce asphalt for use in construction, repair, and maintenance of roads and highways. The Barber Greene DA 55 Hot Mix Plant is permanently located at the Steel Bridge Pit The three gravel pit locations are:

Four Corners Pit (N½, Sec 29, T28N, R21W, Flathead County);
Sheepherders Pit (NW¼, Sec 15, T28N, R22W, Flathead County),
Steel Bridge Pit (SE¼, Sec 3, T28N, R21W, Flathead County).

If this crushing plant is moved to another location, including the Steel Bridge Pit or the Sheepherders Pit, a Notice of Intent to Transfer Location of Air Quality Stipulation must be published in a newspaper of general circulation in the area to which the transfer is to be made as required in Section II.B.1. Any such transfer will be subject to department review as described in Section II.C.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

ARM 16.8.821 Ambient Air Quality Standard for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards.

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. 16.8 Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2 ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity.

particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = $55\ (100\ \text{tons/hr})^{.11} - 40 = 51.28$ lbs/hr.
The estimated total particulate matter emissions for the gravel crusher are 14.00 lbs/hr, therefore the source is in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all stacks constructed or altered since November 23, 1968.

4. ARM 16.8.1423 Standards of Performance for New Stationary Sources (NSPS). This plant was constructed in 1973 so NSPS (40 CFR Part 60, general provisions, and Subpart OOO Non-Metallic Mineral Processing Plants) does not apply.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A. Crusher and Material Transfer Emission

A BACT analysis was conducted at the time of the original permit application #2716-00 and a determination had been made for controlling TSP and PM-10 emissions. The department has determined that BACT for this source is the application of water sprays as necessary to maintain compliance with the 20% opacity limitation. This applies to the crusher and all other equipment such as screens or transfer points in which emissions exist.

The BACT determination made for this source is considered to met the RACT requirements since BACT is more stringent than RACT.

B. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the departmant to be the use of water or chemical stabilization so as to maintain complience with a 5% opacity limitation.

IV. Emission Inventory

Portable Gravel Crusher
1973 Pioneer Duplex Model 50 VE

Annual Emission Rates (Potential) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			tons/year			
1973 Pioneer Duplex Model 50 VE	61.32	10.95				
Diesel Generator	0.63	0.63	8.80	0.70	1.90	0.58
Screen	35.04	26.28				
Material Transfer	12.70	2.80				
Pile Forming: Stacker	56.94	26.28				
Bulk Loading	8.76	1.05				
Haul Roads	2.36	0.85				
Total Emissions	177.75	68.84	8.80	0.70	1.90	0.58

* Based on operating 8760 hours/year.

Daily Emission Rates (Potential) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
1973 Pioneer Duplex Model 50 VE	336.00	60.00				
Diesel Generator	3.43	3.43	48.24	3.84	10.42	3.19
Screen	192.00	144.00				
Material Transfer	69.60	15.36				
Pile Forming: Stacker	312.00	144.00				
Bulk Loading	48.00	5.76				
Haul Roads (Daily)	20.08	7.23				
Total Emissions	981.11	379.78	48.24	3.84	10.42	3.19

** Based on operating 24 hours/day.

1973 Pioneer Duplex Model 50 VE

Process Rate: 100 tons/hr (Maximum Process Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.28 lbs/ton (AP-42, 8.19.2-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.28 lbs/ton * 100 tons/hr = 28.00 lbs/hr
28.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 122.64 tons/yr
122.64 tons/yr * (1.00 - 0.50) = 61.32 tons/yr

PM-10 Emissions:

Emission Factor: 0.05 lbs/ton (Ratio between TSP & PM-10 from AFSSCC)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.050 lbs/ton * 100 tons/hr = 5.00 lbs/hr
5.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 21.90 tons/yr
21.90 Tons/yr * (1.00 - 0.50) = 10.95 tons/yr

Diesel Generator

Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 0.63 tons/yr

PM-10 Emissions:

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 0.63 tons/yr

NOx Emissions:

Emission Factor: 2.01 lbs/hr (AP-42, 3.3.2)
Calculations: 2.01 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 8.80 tons/yr

VOC Emissions:

Emission Factor: 0.160 lbs/hr (AP-42, 3.3.2)
Calculations: 0.160 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 0.70 tons/yr

CO Emissions:

Emission Factor: 0.434 lbs/hr (AP-42, 3.3.2)
Calculations: 0.434 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 1.90 tons/yr

SOx Emissions:

Emission Factor: 0.133 lbs/hr (AP-42, 3.3.2)
Calculations: 0.133 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 0.58 tons/yr

Screen

Process Rate: 100 tons/hr (Maximum Process Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.16 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.16 lbs/ton * 100 tons/hr = 16.00 lbs/hr
16.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 70.08 tons/yr
70.08 tons/yr * (1.00 - 0.50) = 35.04 tons/yr

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.120 lbs/ton * 100 tons/hr = 12.00 lbs/hr
12.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 52.56 tons/yr
52.56 tons/yr * (1.00 - 0.50) = 26.28 tons/yr

Material Transfer

Process Rate: 100 tons/hr (Maximum Process Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSSCC, 3-05-025-03)
Control Efficiency: 0%
Calculations: 0.03 lbs/ton * 100 tons/hr = 2.90 lbs/hr
2.90 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 12.702 tons/yr
12.70 tons/yr * (1.00 - 0.00) = 12.70 tons/yr

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSSCC, 3-05-025-03)
Control Efficiency: 0%
Calculations: 0.006 lbs/ton * 100 tons/hr = 0.64 lbs/hr
0.64 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 2.80 tons/yr
2.80 tons/yr * (1.00 - 0.00) = 2.80 tons/yr

Pile Forming: Stacker

Process Rate: 100 tons/hr (Maximum Process Rate)
Hours of operation: 87[illegible] hr/yr

TSP Emissions:

Emission Factor: 0.13 lbs/ton (AFSSCC, 3-05-025-05)
Control Efficiency: 0%
Calculations: 0.13 lbs/ton * 100 tons/hr = 13.00 lbs/hr
13.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 56.94 tons/yr
56.94 tons/yr * (1.00 - 0.00) = 56.94 tons/yr

PM-10 Emissions:

Emission Factor: 0.06 lbs/ton (AFSSCC, 3-05-025-05)
Control Efficiency: 0%
Calculations: [illegible] lbs/ton * 100 tons/hr = 6.00 lbs/hr
6.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 26.28 tons/yr
26.28 tons/yr * (1.00 - 0.00) = 26.28 tons/yr

Bulk Loading

Process Rate: 100 tons/hr (Maximum Process Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: [illegible] lbs/ton (AFSSCC, 3-05-025-06)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 100 tons/hr = 2.00 lbs/hr
2.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 8.76 tons/yr
8.76 tons/yr * (1.00 - 0.00) = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.0024 lbs/ton (AFSSCC, 3-05-025-06)
Control Efficiency: 0%
Calculations: 0.002 lbs/ton * 100 tons/hr = 0.24 lbs/hr
0.24 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 1.05 tons/yr
1.05 tons/yr * (1.00 - 0.00) = 1.05 tons/yr

Haul Roads

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 2074 VMT/Yr (Based on Maximum Process Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 10.0 mph
W= Average weight of vehicles in Tons 18.0 Tons
w= Average number of wheels on vehicles 6 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 4.55 Lbs/VMT

E(TSP)= (2074 VMT/Yr)(4.55 Lbs/VMT)(0.5)
E(TSP)= 4719 Lbs/Yr or 2.36 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 10.0 mph
W= Average weight of vehicles in Tons 18.0 Tons
w= Average number of wheels on vehicles 8 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission Factor: 1.64 lbs/VMT

E(PM10)= (2074 VMT/Yr)(1.64 Lbs/VMT)(0.5)
E(PM10)= 1699 Lbs/Yr or 0.85 Tons/Yr

Haul Roads (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 2074 VMT/Yr (Based on Maximum Process Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 10.0 mph
W= Average weight of vehicles in Tons 18.0 Tons
w= Average number of wheels on vehicles 8 wheels
PR= Assumes no precipitation 1.0000

TSP Emissions:

TSP Emission Factor: 7.07 Lbs/VMT

E(TSP)= (2074 VMT/Yr)(7.07 Lbs/VMT)(0.5)
E(TSP)= 7329 Lbs/Yr or 3.66 Tons/Yr or 20.08 lbs/day

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 10.0 mph
W= Average weight of vehicles in Tons 18.0 Tons
w= Average number of wheels on vehicles 8 wheels
PR= Assumes no precipitation 1.0000

PM10 Emissions:

PM10 Emission Factor: 2.54 Lbs/VMT

E(PM10)= (2074 VMT/Yr)(2.54 Lbs/VMT)(0.5)
E(PM10)= 2639 Lbs/Yr or 1.32 Tons/Yr or 7.23 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Flathead Co. facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Flathead Co. facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area it is necessary to reduce or establish new emission limitations for the Flathead Co. facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust the Flathead Co. facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Flathead County Road Department, Air Quality Stipulation for Kalispell SIP.

Description of Project: This stipulation is for the operation of a portable 1973 Pioneer Duplex Model 5OVE crusher (100 TPH), Serial #303R-P-122 and a gravel screen. This plant crushes gravel for use in construction, repair, and maintenance of roads and highways.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment, control techniques, and limitations on operating hours at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin

Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Flathead Road Department, Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Flathead Road Department ("Flathead Co."), hereby stipulate and agree to all the following Paragraphs 1-16 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. BACKGROUND:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, *et seq.*, as

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amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

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tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to Flathead Co. were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

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results of this modeling, the PM-10 emissions from Flathead Co. were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for Flathead Co. are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Flathead Co. and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon Flathead Co.

B. BINDING EFFECT

12. The parties to this Stipulation agree that any such emission limitations placed on Flathead Co. must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Flathead Co. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Flathead Road Department") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell non-attainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Flathead Co.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to Flathead Co.

FLATHEAD ROAD DEPARTMENT	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY	BY Robert J. Robinson Director
BY Attorney	BY Timothy R. Baker Attorney
DATE 8-25-93	DATE 9/15/93

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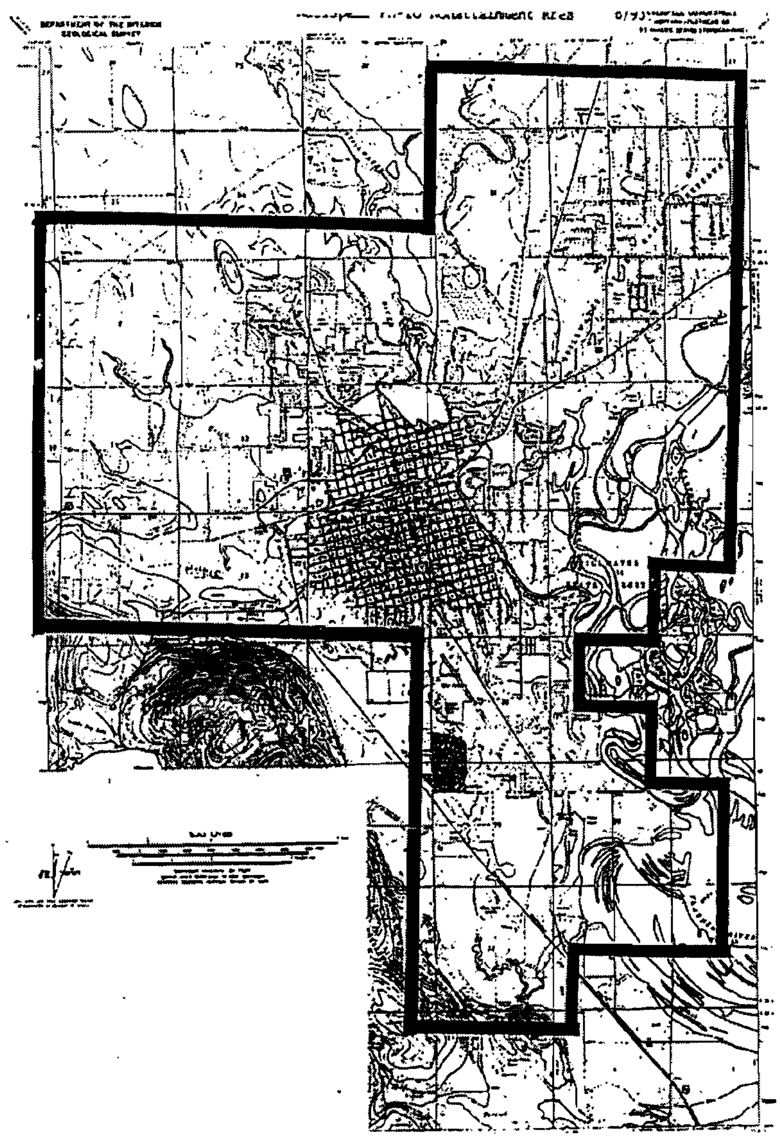

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Flathead County Road Department
P.O. Box 1102
Kalispell, MT 59902-1102

The above-named company is hereinafter referred to as "Flathead Co."

Section I: Affected Facilities

A. Equipment: A stationary 1970 Barber Green DA 55 Hot Mix Plant (150 TPH) with a cone dust collector (model CB 55) and a wet collector (model CL 63), installed in 1971.

B. Original Location: Steel Bridge Pit (SE¼, SE¼, Sec 3, T28N, R21W, Flathead County).

Section II: Limitations and Conditions

A. Emission Limitations

1. Flathead Co. shall operate and maintain the wet scrubber and all other emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

2. All visible emissions from the asphalt plant stack are limited to 20% opacity[1]. (ARM 16.8.1404)

3. Flathead Co. shall not cause or authorize to be discharged into the atmosphere from haul roads, access roads, or the general plant area any visible fugitive emissions that exhibit opacity[1] of 5% or greater. (RACT)

4. Flathead Co. shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity limitation. (RACT)

5. Flathead Co. shall not cause or authorize to be discharged into the atmosphere from material transfer and storage areas any visible emissions that exhibit opacity[1] of 20% or greater. (ARM 16.8.1401)

6. Asphalt plant TSP emissions are limited to 0.10 gr/dscf and 15.4 lbs/hr.

7. Asphalt plant PM-10 emissions are limited to 0.10 gr/dscf and 15.4 lbs/hr.

8. A device to measure the pressure drop (magnehelic gauge, manometer, etc.) on the control device (wet scrubber, baghouse, etc.) shall be installed and maintained. Pressure drop shall be measured in inches of water.

Temperature indicators at the control device inlet and outlet must be installed and maintained.

9. The original asphalt production rate is limited to 150 tons/hour.

10. Once a stack test is performed, the asphalt production rate is limited to the average production rate during the last source test demonstrating compliance.

11. The asphalt plant operation is limited to 8760 hours/year.

B. Emission Testing

1. A source test must be conducted and compliance demonstrated within 180 days from the date of the signed stipulation.

2. An EPA method 1-5 source test must be performed on the asphalt plant every four years to demonstrate compliance with Section II.A.1, 4, 5, and 6.

3. The tests shall consist of three runs, each of at least 60 minutes duration. The test shall be conducted in compliance with the requirements of 40 CFR Part 60, Subpart A, General Provisions; EPA Reference Methods 1-5, 40 CFR Part 60, Appendix A, and 40 CFR Part 60 Subpart I. The next test shall be performed during 1993.

4. An EPA Method 9 opacity test must also be performed in conjunction with the particulate tests to demonstrate compliance with Section II.A.1. This test shall consist of thirty 6-minute average observations with ten of these observations being conducted during each particulate test run.

5. These tests must be conducted in compliance with the pre-test notification and reporting requirements of the AQB's Compliance Source Test Protocol.

6. Production field data sheets must be supplied as part of the test report. Since asphalt production will be limited to the average production rate during the test, it is suggested the test be performed at the highest production rate practical.

7. The AQB must be notified of the test five working days before the test is scheduled to be performed. The AQB must also be notified the day before the test is performed to confirm the test. The responsibility for notification is that of the owner/operator.

8. Pressure drop on the control device and temperatures will be recorded during the test and recorded as part of the test results.

C. Reporting Requirements

1. The operator must maintain on-site records showing daily production rates for the current calendar year. These records shall be available for inspection by the AQB and will be submitted to the AQB upon request.

2. Flathead Co. shall retain daily production numbers for a minimum of five (5) years.

3. Annual production information shall be submitted in writing to the AQB by March 1 of the following calendar year. The information shall include:

   a) Tons of asphalt produced.

   b) Hours of operation.

   c) Type and amount of fuel used for the plant.

   d) Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

      i) Number of vehicles;
      ii) Vehicle type;
      iii) Vehicle weight, loaded
      iv) Vehicle weight, unloaded;
      v) Number of tires on vehicle;
      vi) Average trip length;
      vii) Number of trips per day;
      viii) Average vehicle speed;
      ix) Area of activity; and
      x) Vehicle fuel usage (gasoline or diesel) annual total.

   f) Fugitive dust control for haul roads and general plant area:

      i. Hours of operation of water trucks.
      ii. Application schedule for chemical dust suppressant if applicable.

D. The department may require additional emissions testing on sources of emissions per ARM 16.8.704, Testing Requirements.

E. Flathead Co. must maintain a copy of the air quality stipulation at the Kalispell ready mix site and make that copy available for inspection by department personnel upon request.

F. Flathead Co. shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
Flathead County Road Department

I. Introduction

A. Permitted Equipment

A stationary 1970 Barber Green DA 55 Hot Mix Plant (150 TPH) with a cone dust collector (model CB 55) and a wet collector (model CL 63).

B. Process Description

This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

C. Facility Location

Flathead Co. operates three (3) gravel pits in or near the Kalispell nonattainment area. They move the Cedar Rapids gravel crusher between these pits in order to crush gravel used to produce asphalt for use in construction, repair, and maintenance of roads and highways. The Barber Greene DA 55 Hot Mix Plant is permanently located at the Steel Bridge Pit. The three gravel pit locations are:

Four Corners Pit (N½, Sec 29, T28N, R21W, Flathead County);
Sheepherders Pit (NW¼, Sec 15, T28N, R22W, Flathead County);
Steel Bridge Pit (SE¼, Sec 3, T28N, R21W, Flathead County).

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

ARM 16.8.821 Ambient Air Quality Standard for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. 16.8 Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires an opacity limitation of 20% for all fugitive emission sources.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = $55\ (150\ \text{tons/hr})^{.11} - 40 = 55.44$ lbs/hr.
The estimated total particulate matter emissions for the asphalt plant are 15.43 lbs/hr, therefore the source is in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all stacks constructed or altered since November 23, 1968.

4. 16.8.1423 Standards of Performance for New Stationary Sources (NSPS) This plant was constructed in 1970 so NSPS (40 CFR Part 60, general provisions, and Subpart I Hot Mix Asphalt Facilities does not apply.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Asphalt Plant Stack Emissions

Flathead Co.'s asphalt plant was constructed in 1970, and therefore, NSPS does not apply. The department has determined that RACT for pre-NSPS asphalt plants is an emission limitation of 0.10 gr/dscf and 20% opacity. Since BACT is more stringent than RACT and this asphalt plant meets BACT, the RACT requirement is met.

B. Material Transfer Fugitive Emissions

RACT for material transfer points for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 20% opacity limitation.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emission Inventory

Barber Green DA 55 Hot Mix Plant

Annual Emission Rates (Potential) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
	Tons/Year					
Asphalt Plant Drum Dryer	67.58	67.58	23.65	18.40	24.97	47.96
Elevator, Screens, Bins, and Mixer	131.40	19.71				
Cold Aggregate Handling	65.70	26.28				
Haul Roads	3.54	1.27				
Total Emissions	268.22	114.84	23.65	18.40	24.97	47.96

* Based on operating 8760 hours/year.

Daily Emission Rates (Potential) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
	lbs/day					
Asphalt Plant Drum Dryer	370.29	370.29	129.60	100.80	136.80	262.80
Elevator, Sceens, Bins, and Mixer	720.00	108.00				
Cold Aggregate Handling	360.00	144.00				
Haul Roads (Daily)	30.12	10.84				
Total Emissions	1480.41	633.13	129.60	100.80	136.80	262.80

* Based on operating 24 hours/day.

Asphalt Plant Drum Dryer with Wet Scrubber

Maximum Process Rate: 150 tons/hr
Process Airflow Rate: 18000 dscf/min (Maximum Process Airflow Rate)
Hours of operation: 8760 hr/yr 24 hrs/day

TSP Emissions:

Emission Factor: 0.10 gr/dscf (RACT Determination)
Calculations: 0.10 gr/dscf * 18000 dscf/min * 1/7000 lbs/gr * 60 min/hr = 15.43 lbs/hr
15.43 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 67.58 tons/yr

PM-10 Emissions:

Emission Factor: 0.10 gr/dscf (Assume 100% of TSP is PM-10)
Calculations: 0.10 gr/dscf * 18000 dscf/min * 1/7000 lbs/gr * 60 min/hr = 15.43 lbs/hr
15.43 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 67.58 tons/yr

NOx Emissions:

Emission Factor: 0.036 lbs/ton (APSSC 3-05-002-01, page 116)
Calculations: 0.036 lbs/ton * 150 tons/hr = 5.40 lbs/hr
5.40 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 23.65 tons/yr

VOC Emissions:

Emission Factor: 0.028 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.028 lbs/ton * 150 tons/hr = 4.20 lbs/hr
4.20 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 18.40 tons/yr

CO Emissions:

Emission Factor: 0.038 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.038 lbs/ton * 150 tons/hr = 5.70 lbs/hr
5.70 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 24.97 tons/yr

Emission Factor: 0.073 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.073 lbs/ton * 150 tons/hr = 10.95 lbs/hr
10.95 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 47.96 tons/yr

Elevator, Screens, Bins, and Mixer

Process Rate: 150 tons/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.2 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.20 lbs/ton * 150 tons/hr = 30.00 lbs/hr
30.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 131.40 tons/yr

PM-10 Emissions:

Emission Factor: 0.03 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.03 lbs/ton * 150 tons/hr = 4.50 lbs/hr
4.50 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 19.71 tons/yr

Cold Aggregate Handling

Process Rate: 150 tons/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions

Emission Factor: 0.10 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.10 lbs/ton * 150 tons/hr = 15.00 lbs/hr
15.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 65.70 tons/yr

PM-10 Emissions:

Emission Factor: 0.04 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.04 lbs/ton * 150 tons/hr = 6.00 lbs/hr
6.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 26.28 tons/yr

Haul Roads

Operating Hours: 8760 Hours/Yr
Vehicle Miles Trav: 3111 VMT/Yr (Based on Maximum Design)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*Pk
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles 10.0 mph
W= Average weight of vehicle 18.0 Tons
w= Average number of wheels 8 wheels
Pk= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
Pk= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 4.55 Lbs/VMT

E(TSP)= (3111 VMT/Yr)(4.55 Lbs/VMT)(0.5)
E(TSP)= 7078 Lbs/Yr or 3.54 Tons/Yr

PM10 Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
   Where:
      E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
      k= Particle sizing constant       0.36
      s= Silt Content in percent         8.7 %
      S= Average Speed of vehicles      10.0 mph
      W= Average weight of vehicle      18.0 Tons
      w= Average number of wheels          8 wheels
     PR= Precipitation Ratio based on the following:
13051 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days =  0.6438
```

PM10 Emissions:

PM10 Emission Factor: 1.64 Lbs/VMT

E(PM10)= (3111 VMT/Yr)(1.64 Lbs/VMT)(0.5)
E(PM10)= 2542 Lbs/Yr or 1.27 Tons/Yr

Haul Roads (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Trav: 3111 VMT/Yr (Based on Maximum Design)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
   Where:
      E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
      k= Particle sizing constant       1.0
      s= Silt Content in percent        8.7 %
      S= Average Speed of vehicles     10.0 mph
      W= Average weight of vehicle     18.0 Tons
      w= Average number of wheels         8 wheels
     PR= Assumes no precipitation    1.0000
```

TSP Emissions:

TSP Emission Factor: 7.07 Lbs/VMT

E(TSP)= (3111 VMT/Yr)(7.07 Lbs/VMT)(0.5)
E(TSP)= 10994 Lbs/Yr or 5.50 Tons/Yr or 30.12 lbs/day

PM10 Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
   Where:
      E= PM10 Emission factor in Lbs/Vehicle Mile Traveled (VMT)
      k= Particle sizing constant       0.36
      s= Silt Content in percent         8.7 %
      S= Average Speed of vehicles      10.0 mph
      W= Average weight of vehicle      18.0 Tons
      w= Average number of wheels          8 wheels
     PR= Assumes no precipitation     1.0000
```

PM10 Emissions:

PM10 Emission Factor: 2.54 Lbs/VMT

E(PM10)= (3111 VMT/Yr)(2.54 lbs/VMT)(0.5)
E(PM10)= 3958 Lbs/Yr or 1.98 Tons/Yr or 10.84 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Flathead Co. facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Flathead Co. facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Flathead Co. facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and application of reasonable control techniques (watering or application of dust suppressant) for haul road dust the department has determined that the Flathead Co. facility can operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Flathead County Road Department, Air Quality Stipulation for Kalispell SIP.

Description of Project: This permit is for the operation of a stationary 1970 Barber Green DA 55 Hot Mix Plant (150 TPH) with a cone dust collector (model CB 55) and a wet collector (model CL 63). This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin
Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				x		
2	Water Quality, Quantity and Distribution				x		
3	Geology and Soil Quality, Stability and Moisture				x		
4	Vegetation Cover, Quantity and Quality				x		
5	Aesthetics				x		
6	Air Quality			x			
7	Unique Endangered, Fragile or Limited Environmental Resource					x	
8	Demands on Environmental Resource of Water, Air and Energy				x		
9	Historical and Archaeological Sites					x	
10	Cumulative and Secondary Impacts			x			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				x		
2	Cultural Uniqueness and Diversity				x		
3	Local and State Tax Base and Tax Revenue				x		
4	Agricultural or Industrial Production				x		
5	Human Health				x		
6	Access to and Quality of Recreational and Wilderness Activities				x		
7	Quantity and Distribution of Employment				x		
8	Distribution of Population				x		
9	Demands for Government Services				x		
10	Industrial and Commercial Activity				x		
11	Locally Adopted Environmental Plans and Goals			x			
12	Cumulative and Secondary Impacts				x		

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Klingler Lumber Company, Inc., Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Klingler Lumber Company Inc. ("Klingler"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

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tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to Klingler were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

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results of this modeling, the PM-10 emissions from Klingler were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for Klingler are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Klingler and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon Klingler.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Klingler must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Klingler. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Klingler Lumber Company Inc.") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

(STIPULATION)

it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Klingler.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

(STIPULATION)

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to Klingler.

KLINGLER LUMBER COMPANY INC.	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY [illegible]	BY [illegible] Robert J. Robinson Director
BY ______ Attorney	BY [illegible] Timothy R. Baker Attorney
DATE 9/2/93	DATE 9/15/93

(STIPULATION)
7

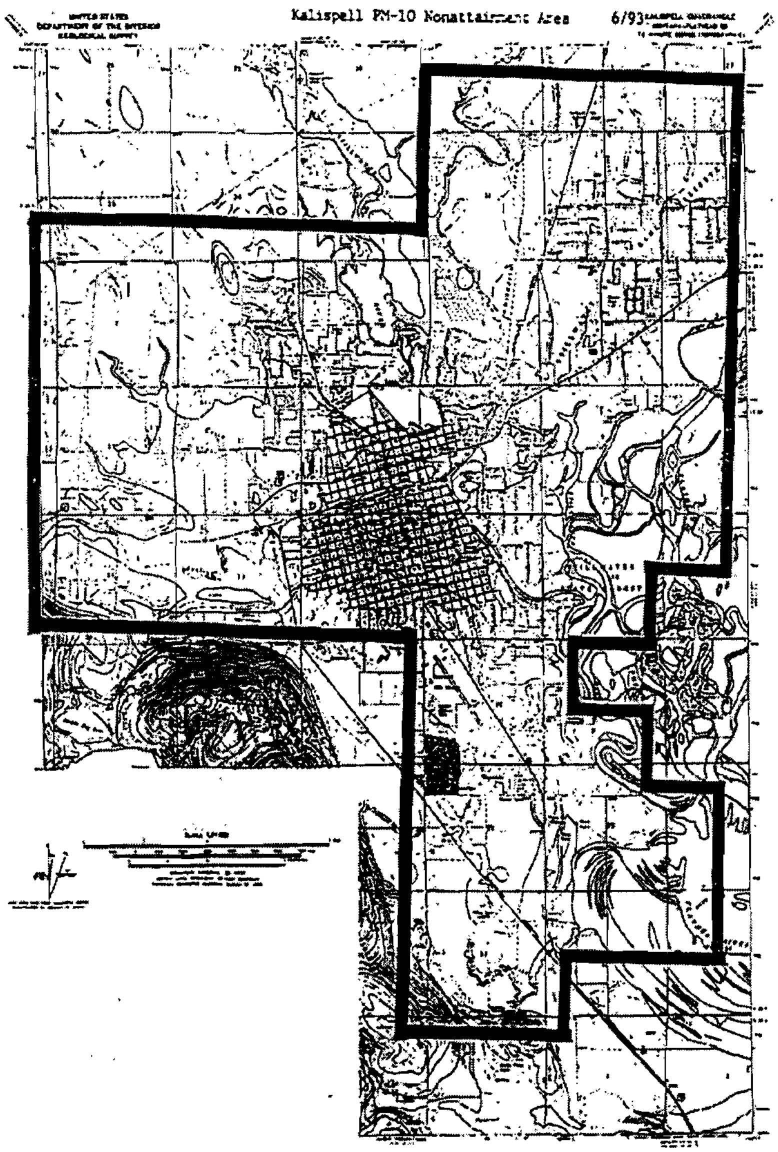
Kalispell PM-10 Nonattainment Area
6/93

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Klingler Lumber Company, Inc.
P.O. Box 1097
Kalispell, MT 59903

The above-named company is hereinafter referred to as "Klingler."

SECTION I: Affected Facilities

A. Plant Location:

A 14 MMBF/yr planer mill located ¼ mile northeast of Kalispell, Montana on Whitefish Stage Road (Section 22, Township 29 North, Range 21 West, Flathead County).

B. Affected Equipment and Facilities:

1. Lumber planer with cyclone[1];
2. Trim saw with cyclone[1];
3. Trim block chipper with cyclone[1];
4. Two (2) wood-waste bins with two (2) cyclones;
5. Wood-waste bins truck loadout;
6. Fugitive emissions from lumber handling.

C. Existing Equipment not allowed to operate:

1. Tepee burner. (See Section II.A.7)

SECTION II: Limitations and Conditions

A. Emission Limitations and Conditions:

1. Klingler shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968 that exhibit an opacity[2] of twenty percent (20%) or greater averaged over six (6) consecutive minutes. This applies to stack emissions from the two (2) wood-waste bin cyclones.

2. Klingler shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed prior to November 23, 1968 that exhibit an opacity[2] of forty percent (40%) or greater averaged over six (6) consecutive minutes. This applies to stack emissions from

[1] The planer, trim saw, and block chipper are all controlled by a common cyclone.

[2] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

the cyclone used to collect the shavings and sawdust from the lumber planer, trim saw, and chipper.

3. Klingler shall operate the planer mill facility so as not to cause or authorize emissions to be discharged into the outdoor atmosphere from access roads, parking lots, or the general plant property any visible fugitive emissions that exhibit opacity[3] of 5% or greater averaged over six (6) consecutive minutes. This applies to fugitive emissions from any hauling, handling, loading, and unloading operation. (RACT)

4. Klingler shall treat all unpaved portions of the haul roads, access roads, parking lots, lumber yard, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity[3] limitation. (RACT)

5. Klingler shall submit final engineering plans for the complete wood waste collection system, including the two (2) wood waste storage bins, the two (2) wood waste bin cyclones and the piping system, to the department within 180 days of completion of construction.

6. Klingler shall dismantle, demolish or otherwise render the tepee burner incapable of being operated by November 15, 1993.

B. Operational Reporting Requirement:

Klingler shall supply the Department of Health and Environmental Sciences Air Quality Bureau with an annual emission inventory for the listed emission points. The annual emission inventory report must be submitted in writing to the department by March 1 of the following calendar year. The emission inventories shall include the following production and emission inventory information:

1. Mill Production: - total hours of operation,
   - total mill cut for the year.

2. Hours of operation and flow rate for each of the following cyclones:

   a. Planer, trim saw, and chipper cyclone;
   b. Wood-waste bin cyclone #1;
   c. Wood-waste bin cyclone #2.

3. Fugitive dust information consisting of a listing of all plant vehicles including:

   a. Vehicle type;
   b. Vehicle weight loaded;
   c. Vehicle weight unloaded;

[3] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

d. Number of tires on vehicles;
e. Average trip length;
f. Number of trips per day;
g. Average vehicle speed;
h. Area of activity; and
i. Vehicle fuel usage (gasoline or diesel in gallons) - annual total.

4. Fugitive dust control for haul roads and general plant area:

a. Hours of operation of water trucks.
b. Application schedule for chemical dust suppressant if applicable.

C. The department may require additional emissions testing on sources in the plant per ARM 16.8.704 Testing Requirements.

D. Klingler must maintain a copy of the air quality stipulation at the Kalispell planer mill and make that copy available for inspection by department personnel upon request.

E. Klingler shall comply with all other applicable state, federal and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions

Klingler Lumber Company, Inc.

I. Introduction/Process Description

Klingler operates an existing planer mill located ½ mile north east of Kalispell, Montana on Whitefish Stage Road. The mill receives rough cut lumber from area forest product companies and stockpiles them in their lumber yard prior to processing them in the planer mill.

The rough lumber is air dried to reduce shrinkage in the final dimension cut lumber. Once the lumber is dry it is run through a thickness planer where the rough cut lumber is planed to the proper dimensions. The planed lumber is then cut to the proper length using a trim saw. The final dimension lumber is then inspected and shipped.

At present, the planer shavings, saw dust, and chipped trim blocks from this process are collected and transferred pneumatically to the tepee burner. Klingler has operated a tepee burner, which is used for the disposal of the wood wastes generated from the planer mill processes, since 1962. By June 1993, an alternate means of disposing of the unmarketable wood wastes must be used.

Klingler has purchased and installed two used wood-waste bins with two cyclones, for the collection, storing, and shipping of marketable wood wastes. The new collection system became operational on approximately July 1, 1993. Since this date, the planer shavings, saw dust, and chipped trim blocks from this process are to be collected and transferred pneumatically to the wood waste bins and loaded into trucks.

II. Applicable Rules and Regulations

A. ARM 16.8.821, Ambient Air Quality Standards for PM-10:

This section requires that the 24-hour and annual average concentrations of PM-10 in the ambient air not exceed the set standards. (See Existing Air Quality and Impacts, Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration of Air Quality (PSD):

ARM 16.8.921 Definitions. Klingler's planer mill is not a "major stationary source" because it is not a listed source and does not have the potential to emit more than 250 tons of any pollutant. Once the tepee burner is removed this source will no longer have the potential to emit more than 250 tons per year of any pollutant.

C. ARM 16.8, Subchapter 14, Emission Standards, Including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents installed after November 23, 1968.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Wood Waste Collection Cyclones

A cyclone would provide the best level of particulate control (85%). Klingler currently uses a cyclone for particulate control from the planer, trim saw, chipper, and two wood waste bins. The department has determined that the cyclones will constitute RACT for these sources.

B. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emissions Inventory

Planer Mill

Annual Emission Rates (Potential) *

Source	TSP	PM-10	SOX	tons/year NOX	VOC	CO
Wood Waste Bin Cyclone #1	5.09	2.04				
Wood Waste Bin Cyclone #2	5.09	2.04				
Shavings Bin Loadout	5.75	3.45				
Chip Bin Loadout	1.36	0.36				
Trim Saw Cyclone	2.65	1.06				
Lumber Yard - Fugitives	1.42	0.51				
Total Emissions	21.36	9.45	0.00	0.00	0.00	0.00

* Based on operating 8760 hours/year.

Daily Emission Rates (Potential) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
	lbs/day					
Wood Waste Bin Cyclone #1	27.88	11.15				
Wood Waste Bin Cyclone #2	27.88	11.15				
Shavings Bin Loadout	31.53	18.52				
Chip Bin Loadout	8.37	3.05				
Trim Saw Cyclone	16.52	5.51				
Lumber Yard - Fugitives (Daily)	12.07	4.35				
Total Emissions	122.46	54.43	0.00	0.00	0.00	0.00

** Based on operating 24 hours/day.

✓ Wood Waste Bin Cyclone #1

Production Flowrate: 4523 scfm (Designed flow rate)
Hours of operation: 8760 hrs (Maximum Potential)
Fraction of year operating: 1.00 %/yr

TSP Emissions:

Emission Factor: 2.23 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 4523 scfm * 2.25 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 5.09 tons/yr

PM-10 Emissions:

Emission Factor: 0.90 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 4523 scfm * 0.90 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 2.04 tons/yr

✓ Wood Waste Bin Cyclone #2

Production Flowrate: 4523 scfm (Designed flow rate)
Hours of operation: 8760 hrs (Maximum Potential)
Fraction of year operating: 1.00 %/yr

TSP Emissions

Emission Factor: 2.25 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 4523 scfm * 2.25 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 5.09 tons/yr

PM-10 Emissions:

Emission Factor: 0.90 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 4523 scfm * 0.90 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 2.04 tons/yr

Shavings Bin Loadout

Lumber Production: 14.00 MMBF/yr (Based on two shifts)
Shavings Production: 411 tons/MMBF

TSP Emissions:

Emission Factor: 2.00 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 14.00 MMBF/yr * 411 tons/MMBF * 2.00 lbs/ton * 0.0005 tons/lb = 5.75 tons/yr

PM-10 Emissions:

Emission Factor: 1.20 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 14.00 MMBF/yr * 411 tons/MMBF * 1.20 lbs/ton * 0.0005 tons/lb = 3.45 tons/yr

Chip Bin Loadout

Lumber Production: 14.00 MMBF/yr (Based on two shifts)
Chip Production: 621 tons/MMBF

TSP Emissions:

Emission Factor: 0.36 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 14.00 MMBF/yr * 621 tons/MMBF * 0.36 lbs/ton * 0.0005 tons/lb = 1.56 tons/yr

PM-10 Emissions:

Emission Factor: 0.128 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 14.00 MMBF/yr * 621 tons/MMBF * 0.13 lbs/ton * 0.0005 tons/lb = 0.56 tons/yr

Trim Saw Cyclone

Production Flowrate: 2356 scfm (Designed flow rate)
Hours of operation: 8760 hrs (Maximum Potential)
Fraction of year operating: 1.00 %/yr

TSP Emissions

Emission Factor: 2.25 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 2356 scfm * 2.25 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 2.65 tons/yr

PM-10 Emissions:

Emission Factor: 0.90 lbs/scfm (3-07-008-05, AFSSCC page 143)
Calculations: 2356 scfm * 0.90 lbs/scfm * 1.00 %/yr * 0.0005 tons/lb = 1.06 tons/yr

Lumber Yard - Fugitives

Operating Hours 8760 Hours/Yr
Vehicle Miles Traveled 9300 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	3.67 Tons
w= Average number of wheels on vehicles	5.33 wheels
PR= Precipitation Ratio based on the following:	
130 Days with more than .01" of Precipitation	
PR= (365 days - 130 days)/365 Days =	0.6438

TSP Emissions:

TSP Emission Factor 0.61 Lbs/VMT

E(TSP)= (9300 VMT/Yr)(0.61 Lbs/VMT)(0.5)
E(TSP)= 2837 Lbs/Yr
or 1.42 Tons/Yr

4 Final Stipulation: 8/17/93

```
PM10 Emission Factor is determined by the following equation:

    E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
       Where:
          E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
          k= Particle sizing constant for PM10              0.36
          s= Silt Content in percent                        4.7 %
          S= Average Speed of vehicles in mph               5.0 mph
          W= Average weight of vehicles in Tons             3.67 Tons
          w= Average number of wheels on vehicles           5.33 wheels
         PR= Precipitation Ratio based on the following:
    130 Days with more than .01" of Precipitation
    PR= (365 days - 130 days)/365 Days =                   0.6438

PM10 Emissions:
    PM10 Emission Factor                                   0.22 Lbs/VMT

      E(PM10)= (9300 VMT/Yr)(0.22 Lbs/VMT)(0.5)
      E(PM10)=          1021 Lbs/Yr
            or          0.51 Tons/Yr


Lumber Yard - Fugitives (Daily)

    Operating Hours               8760 Hours/Yr
    Vehicle Miles Traveled        9300 VMT/Yr
    Control Efficiency is 50% for watering.

 TSP Emission Factor is determined by the following equation:

    E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
       Where:
          E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
          k= Particle sizing constant for TSP               1.0
          s= Silt Content in percent                        4.7 %
          S= Average Speed of vehicles in mph               5.0 mph
          W= Average weight of vehicles in Tons             3.67 Tons
          w= Average number of wheels on vehicles           5.33 wheels
         PR= Assumes no precipitation                       1.0000

TSP Emissions:
    TSP Emission Factor                                    0.95 Lbs/VMT

      E(TSP)= (9300 VMT/Yr)(0.95 Lbs/VMT)(0.5)
      E(TSP)=           4407 Lbs/Yr
            or          2.20 Tons/Yr
                        12.07 lbs/day

 PM10 Emission Factor is determined by the following equation:

    E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
       Where:
          E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
          k= Particle sizing constant for PM10              0.36
          s= Silt Content in percent                        4.7 %
          S= Average Speed of vehicles in mph               5.0 mph
          W= Average weight of vehicles in Tons             3.67 Tons
          w= Average number of wheels on vehicles           5.33 wheels
         PR= Assumes no precipitation                       1.0000

PM10 Emissions:

    PM10 Emission Factor                                   0.34 Lbs/VMT

      E(PM10)= (9300 VMT/Yr)(0.34 Lbs/VMT)(0.5)
      E(PM10)=          1586 Lbs/Yr
            or          0.79 Tons/Yr
                        4.35 lbs/day
```

V. *Existing Air Quality and Impacts*

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA required the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Klingler facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Klingler facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Klingler facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed-stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust, the Klingler facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Klingler Lumber Company, Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: Klingler Lumber Company, Inc. operates an existing planer mill located ¼ mile northeast of Kalispell, Montana on Whitefish Stage Road. This facility manufacturers dimension lumber for use in the construction industry. The mill receives rough cut lumber from area forest product companies. The rough cut lumber is air dried to reduce shrinkage and planed into dimension cut lumber. The wood wastes that this facility generates is sold as a by-product which is used in the manufacture of other wood products.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives exist.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions are contained in a signed stipulation.

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin

Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resources					X	
8	Demands on Environmental Resources of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of McElroy and Wilkens, Inc., Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10	)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and McElroy and Wilkens, Inc. ("Mc&W"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

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tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to Mc&W were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

results of this modeling, the PM-10 emissions from Mc&W were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for Mc&W are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Mc&W and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon Mc&W.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Mc&W must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Mc&W. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, McElroy and Wilkens, Inc.") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, *et seq.*, the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Mc&W.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to McEW .

McELROY & WILKENS, INC.

BY ______________________

BY ______________________
Attorney

DATE ______________________

MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

BY ______________________
Robert J. Robinson
Director

BY ______________________
Timothy R. Baker
Attorney

DATE 9/15/93

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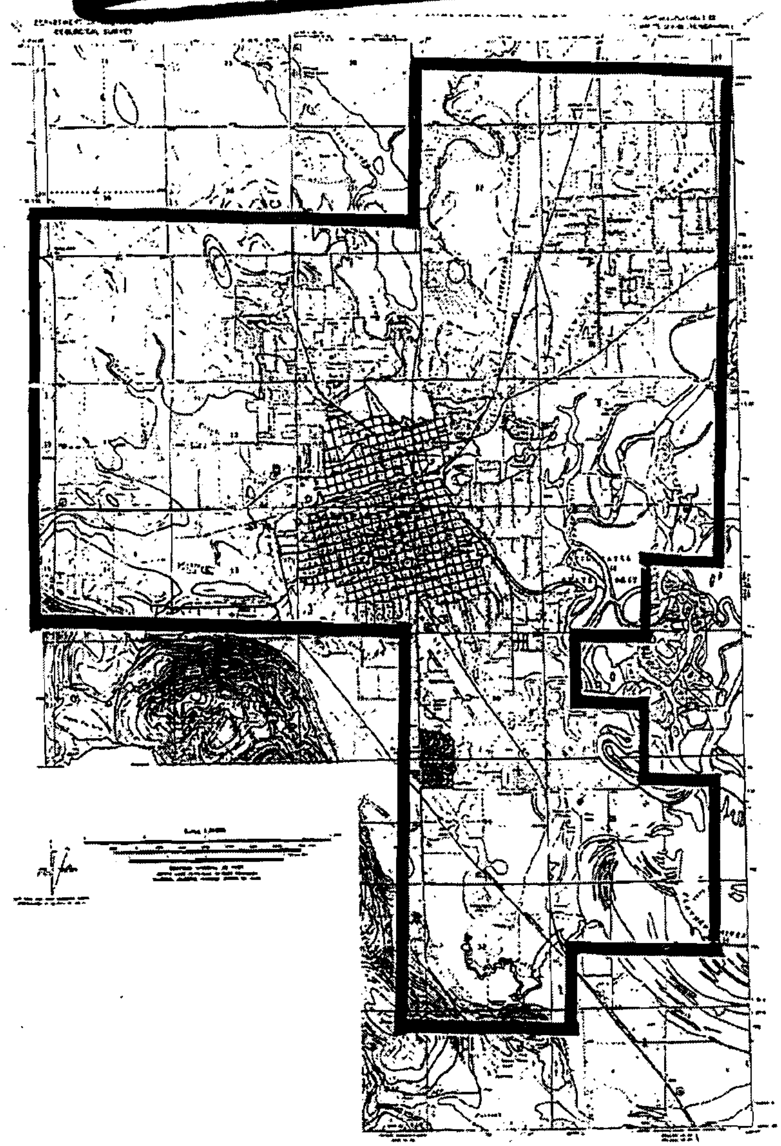

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

McElroy and Wilken, Inc.
P.O. Box 35
Kalispell, MT 59901

The above-named company is hereinafter referred to as "Mc & W."

SECTION I: Affected Facilities

A. Plant Location: Mc & W's concrete batch plant is located at NW ¼, SW ¼, Section 2, Township 28 North, Range 21 West, Flathead County, Montana. The mailing address of the facility is P.O. Box 35, Kalispell, MT 59901.

B. Affected Equipment

1. A 1976 Ross stationary concrete batch plant (125 cu.yds/hr). Particulate emissions are to be controlled by three (3) fabric filter vents, one on each of the three cement silos;

2. One stationary conveyor;

3. Four (4) sand/aggregate storage bins;

4. One gravel washing plant.

5. Local access road located north of facilities. This road extends from Whitefish Stage Road (west end) to the BN railroad tracks (east end). The length of the road is approximately one half (½) mile long.

SECTION II: Limitations and Conditions

A. Emission Control Requirements

1. Mc & W shall operate and maintain the fabric filter vents and all other emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

2. Mc & W shall treat all unpaved portions of the haul roads and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity[1] limitation. (RACT)

3. Mc & W shall not operate the gravel washing plant in a dry screening mode.

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[1] Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources or CEMs.

B. Emission Limitations

Mc & W shall not cause or authorize to be discharged into the atmosphere;

1. Any vent emission which exhibits greater than 20% opacity[1] averaged over six (6) consecutive minutes. (RACT)

2. Any fugitive emission from any truck loading or unloading which exhibit greater than 10% opacity[1] averaged over six (6) consecutive minutes. (RACT)

3 Any fugitive emissions from any transferring operations which exhibit greater than 10% opacity[1] averaged over six (6) consecutive minutes. (RACT)

4. Any fugitive emissions from the haul roads, plant area, or local access road which exhibit greater than 5% opacity[1] averaged over six (6) consecutive minutes. (RACT)

C. Emissions Monitoring

1. Mc & W shall inspect and keep record of repairs for the fabric filter vents on the cement silo every six (6) months of operation so as to ensure that each such collector is operating at optimum efficiency as recommended by the manufacturer.

2. The records compiled in accordance with this section shall be maintained by Mc & W as a permanent business record for at least two years and shall be available at the plant site for inspection by the duly authorized representative of the department.

D. Operational Reporting Requirement:

Mc & W will provide the department with a production report by March 1 for the previous calendar year production. The report is to contain the following information:

1. Total amount of concrete produced, in cubic yards;
2. Annual total of sand, in tons;
3. Annual total of cement, in tons;
4. Annual total of aggregate, in tons;
5. Hours of operation;
6. Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

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[1] Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources or CEMs.

a. Total number of vehicles;
b. Vehicle type;
c. Vehicle weight, loaded;
d. Vehicle weight, unloaded;
e. Number of tires on vehicle;
f. Average trip length;
g. Number of trips per day;
h. Average vehicle speed; and
i. Area of activity.

7. Fugitive dust control for haul roads and general plant area:

   a. Hours of operation of water trucks.
   b. Application schedule for chemical dust suppressant if applicable.

E. The department may require additional emissions testing on sources in the plant per ARM 16.8.704 Testing Requirements.

F. Mc & W must maintain a copy of the air quality stipulation at the Kalispell site and make that copy available for inspection by department personnel upon request.

G. Mc & W shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
McElroy and Wilken, Inc.

I. Introduction/Process Description

A. Affected Equipment

McElroy and Wilken, Inc. operates a 1976 Ross stationary concrete batch plant with three (3) fabric filter vents, one on each of the three cement silos. Mc & W's concrete batch plant is located at NW¼, Section 8, Township 28 North, Range 21 West, Flathead County, Montana. The mailing address of the facility is P.O. Box 35, Kalispell, MT 59901.

This concrete batching plant produces concrete for use in commercial and residential construction projects in the Kalispell area.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to: ARM 16.8.821 Ambient Air Quality Standards for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. ARM 16.8, Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = 55 (256 tons/hr)$^{.11}$ - 40 = 61.22 lbs/hr.

The estimated total particulate emissions from the cement silos are 0.048 lbs/hr, therefore the source is in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents. The requirements of

this stipulation supersede this rule because they are more stringent or they are equivalent.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Process Particulate Vent Emissions

Mc & W currently controls particulate vent emissions with a fabric filter having an estimated efficiency of 99.35%. High efficiency fabric filters are the highest efficiency particulate control system for a source of this type. Since Mc & W is currently using this option, no other options need be considered. The department has determined that the fabric filter control system will constitute RACT in this case. The department has also determined that an opacity of 20% will constitute RACT for all vent emissions with fabric filter control.

B. Material Transfer Fugitive Emissions

RACT for material transfer points for sources of this type has been determined by the department to be the use of washed product; or water or chemical stabilization so as to maintain compliance with a 10% opacity limitation.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emission Inventory

Concrete Batch Plant

Annual Emission Rates (Potential)

Source	TSP	PM-10	NOX	VOC	CO	SOX
			Tons/Year			
Cement Handling Emissions	0.21	0.11				
Batch Bin Loading of Cement/Sand/Aggregate	22.45	11.22				
Mixer Loading of Cement/Sand/Aggregate	44.90	22.45				
Transfer: Sand/Aggregate to Elevated Bins	44.90	22.45				
Plant Yard - Fugitives	0.15	0.06				
Local Access Road	47.30	17.03				
Total Emissions	159.90	73.31	0.00	0.00	0.00	0.00

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Daily Emission Rates (Potential) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
Cement Handling Emissions	1.16	0.58				
Batch Bin Loading of Cement/Sand/Aggregate	123.00	61.50				
Mixer Loading of Cement/Sand/Aggregate	246.00	123.00				
Transfer: Sand/Aggregate to Elevated Bins	246.00	123.00				
Plant Yard Fugitives (Daily)	1.31	0.47				
Local Access Road (Daily)	402.57	144.92				
Total Emissions	1020.04	453.48	0.00	0.00	0.00	0.00

* Based on a 24 hour day.

Cement Handling Emissions

Process Rate: 31 tons/hr (Maximum Production Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.24 lbs/ton (AFSSCC 3-05-011-07, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.24 lbs/ton * 31 tons/hr = 7.44 lbs/hr
7.44 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 32.59 tons/yr
32.59 tons/yr * (1.00 - 0.9935) = 0.21 tons/yr

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AFSSCC 3-05-011-07, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.120 lbs/ton * 31 tons/hr = 3.72 lbs/hr
3.72 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 16.29 tons/yr
16.29 tons/yr * (1.00 - 0.9935) = [illegible] tons/yr

Batch Bin Loading of Cement/Sand/Aggregate

Process Rate: 125 cu.yds/hr (Maximum Production Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-08, page 122)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 5.13 lbs/hr
5.13 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 22.45 tons/yr
22.45 tons/yr * (1.00 - 0.000) = 22.45 tons/yr

PM-10 Emissions:

Emission Factor: 0.01 lbs/ton (AFSSCC 3-05-011-08, page 122)
Control Efficiency: 0%
Calculations: 0.01 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 2.56 lbs/hr
2.56 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 11.22 tons/yr
11.22 tons/yr * (1.00 - 0.000) = 11.22 tons/yr

Mixer Loading of Cement/Sand/Aggregate

Process Rate: 125 cu.yds/hr (Maximum Production Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.04 lbs/ton (AFSSCC 3-05-011-09, page 122)
Control Efficiency: 0%
Calculations: 0.04 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 10.25 lbs/hr
10.25 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 44.90 tons/yr
44.90 tons/yr * (1.00 - 0.000) = 44.90 tons/yr

PM-10 Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-09, page 122)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 5.13 lbs/hr
5.13 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 22.45 tons/yr
22.45 tons/yr * (1.00 - 0.000) = 22.45 tons/yr

Transfer: Sand/Aggregate to Elevated Bins

Process Rate: 125 cu.yds/hr (Maximum Production Rate)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.04 lbs/ton (AFSSCC 3-05-011-06, page 122)
Control Efficiency: 0%
Calculations: 0.04 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 10.25 lbs/hr
10.25 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 44.90 tons/yr
44.90 tons/yr * (1.00 - 0.000) = 44.90 tons/yr

PM-10 Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-06, page 122)
Control Efficiency: 0%
Calculations: 0.020 lbs/ton * 125 cu.yds/hr * 2.05 tons/cu.yd = 5.13 lbs/hr
5.13 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 22.45 tons/yr
22.45 tons/yr * (1.00 - 0.000) = 22.45 tons/yr

Plant Yard - Fugitives

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
```

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	20.8 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:
TSP Emission Factor 1.78 Lbs/VMT

E(TSP)= (346 VMT/Yr)(1.78 Lbs/VMT)(0.5)
E(TSP)= 308 Lbs/Yr or 0.15 Tons/Yr

PM10 Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
```

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	8.7 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	20.8 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission Factor: 0.64 Lbs/VMT

E(PM10)= (346 VMT/Yr)(0.64 Lbs/VMT)(0.5)
E(PM10)= 111 Lbs/Yr or 0.06 Tons/Yr

Plant Yard - Fugitives (Dally)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E= TSP Emission factor in Lbs/Vehicle Mile Traveled (VMT)		
k= Particle sizing constant for TSP	1.0	
s= Silt Content in percent	8.7	%
S= Average Speed of vehicles in mph	5.0	mph
W= Average weight of vehicles in Tons	20.8	Tons
w= Average number of wheels on vehicles	4	wheels
PR= Assumes no precipitation	1.0000	

TSP Emissions:

TSP Emission Factor= 2.77 Lbs/VMT

E(TSP)= (346 VMT/Yr)(2.77 Lbs/VMT)(0.5)
E(TSP)= 478 Lbs/Yr or 0.24 Tons/Yr or 1.31 Lbs/day

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E= PM10 Emission factor in Lbs/Vehicle Mile Traveled (VMT)		
k= Particle sizing constant for PM10	0.36	
s= Silt Content in percent	8.7	%
S= Average Speed of vehicles in mph	5.0	mph
W= Average weight of vehicles in Tons	20.8	Tons
w= Average number of wheels on vehicles	4	wheels
PR= Assumes no precipitation	1.0000	

PM10 Emissions:

PM10 Emission Factor: 1.00 Lbs/VMT

E(PM10)= (346 VMT/Yr)(1.00 Lbs/VMT)(0.5)
E(PM10)= 172 Lbs/Yr or 0.09 Tons/Yr or 0.47 Lbs/day

Local Access Road

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 91250 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)		
k= Particle sizing constant for TSP	1.0	
s= Silt Content in percent	8.7	%
S= Average Speed of vehicles in mph	30.0	mph
W= Average weight of vehicles in Tons	2.0	Tons
w= Average number of wheels on vehicles	4	wheels
PR= Precipitation Ratio based on the following:		

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 2.07 Lbs/VMT

E(TSP)= (91250 VMT/Yr)(2.07 Lbs/VMT)(0.5)
E(TSP)= 94603 Lbs/Yr or 47.30 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 = 0.36
s= Silt Content in percent = 8.7 %
S= Average Speed of vehicles in mph 30.0 mph
W= Average weight of vehicles in Tons 2.0 Tons
w= Average number of wheels on vehicles 4 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0 6438

PM10 Emissions:

PM10 Emission Factor: 0.75 Lbs/VMT

E(PM10)= (91250 VMT/Yr)(0.75 Lbs/VMT)(0.5)
E(PM10)= 34057 Lbs/Yr or 17.03 Tons/Yr

Local Access Road (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 91250 VMT/Yr
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 30.0 mph
W= Average weight of vehicles in Tons = 2.0 Tons
w= Average number of wheels on vehicles = 4 wheels
PR= Assumes no precipitation 1.00

TSP Emissions:

TSP Emission Factor: 3.22 Lbs/VMT

E(TSP)= (91250 VMT/Yr)(3.22 Lbs/VMT)(0.5)
E(TSP)= 146936 Lbs/Yr or 73.47 Tons/Yr or 402.57 lbs/day

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 30.0 mph
W= Average weight of vehicles in Tons 2.0 Tons
w= Average number of wheels on vehicles 4 wheels
PR= Assumes no precipitation 1.00

PM10 Emissions:

PM10 Emission factor: 1.16 Lbs/VMT

E(PM10)= (91250 VMT/Yr)(1.16 Lbs/VMT)(0.5)
E(PM10)= 52897 Lbs/Yr or 26.45 Tons/Yr or 144.92 lbs/day

V Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Mc & W facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Mc & W facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Mc & W facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust the MC & W facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5338000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VII. Environmental Assessment

An environmental assessment, required by the Montana Environmenta Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: McElroy and Wilken, Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: A concrete batching plant with a maximum design rate of 125 cubic yards per hour. This concrete batching plant produces concrete for use in commercial and residential construction projects in the Kalispell area.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives are available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau

EA prepared by: Michael Glavin

Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resources					X	
8	Demands on Environmental Resources of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

McElroy and Wilken, Inc.
P.O. Box 35
Kalispell, MT 59901

The above-named company is hereinafter referred to as "Mc & W."

SECTION I: Affected Facilities

A. Plant Location: Mc & W's two gravel crushers are located at SW¼, NW¼, Section 2, Township 28 North, Range 21 West, Flathead County, Montana. The mailing address of the facility is P.O. Box 35, Kalispell, MT 59901.

B. Equipment

1. A portable 1988 Baromac Impact Crusher (225 TPH), Model Mark II, Serial #764-385 with screen.

2. A portable 1986 KHD Humbolt Wedzg (300 TPH) Model B, Serial #462-012 with screen.

Section II: Conditions

A. Operational

1. All visible emissions from the crusher plants are limited to 15% opacity[1]. (ARM 16.8.1423)

2. Mc & W shall not cause or authorize to be discharged into the atmosphere from other equipment such as screens or transfer points any visible emissions that exhibit opacity[1] of 10%. (ARM 16.8.1423)

3. Mc & W shall not cause or authorize to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property any visible fugitive emissions that exhibit opacity[1] of 5% or greater. (RACT)

4. Mc & W shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity limitation. (RACT)

5. Water spray bars are required as necessary, if fugitive emissions are greater than 10% opacity. (ARM 16.8.1423)

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[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

Final Stipulation

1

6. The portable 1988 Eeromac Impact Crusher, Model Mark II, Serial #764-385 is limited to the following:

   a. Production rate of 225 tons/hour.

   b. Daily hours of operation of 24 hours/day.

   c. Annual hours of operation of 4050 hours/year.

7. The portable 1986 KHD Humbolt Wedag, Model B, Serial #462-012 is limited to the following:

   a. Production rate of 300 tons/hour.

   b. Daily hours of operation of 24 hours/day.

   c. Annual hours of operation of 4050 hours/year.

8. Total particulate emissions from this crusher in conjunction with total particulate emissions from any additional equipment at any individual site shall be less then 250 tons/year.

9. Mc & W shall operate and maintain all emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

B. Reporting Requirements

1. If this crushing plant is moved to another location, a Notice of Intent to Transfer Location of Air Quality Stipulation must be published in a newspaper of general circulation in the area to which the transfer is to be made. This notice must be published at least 15 days prior to the move. Proof of publication and a change of location form must be submitted to the Montana Department of Health and Environmental Sciences, Air Quality Bureau (AQB), prior to the move. These forms are available from the AQB.

2. Mc & W shall maintain on-site records showing daily hours of operation and daily production rates for the last 12 months. These records shall be available for inspection by the department and must be submitted to the department upon request.

3. Mc & W shall retain daily production numbers for a minimum of five (5) years.

4. Mc & W shall provide an annual report identifying any days in which the hours of operation, or the process rates in Section II.A. are exceeded. The report shall be submitted by March 1 of each year.

5. Annual production information shall be submitted to the AQB by March 1 of the following calendar year. The information shall include:

   a) Tons of gravel crushed in each crusher.

   b) Tons of gravel bulk loaded.

   c) Hours of operation of each crusher.

   d) Gallons of diesel used in each generator.

   e) Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

      i) Number of vehicles;
      ii) Vehicle type;
      iii) Vehicle weight, loaded;
      iv) Vehicle weight, unloaded;
      v) Number of tires on vehicle;
      vi) Average trip length;
      vii) Number of trips per day;
      viii) Average vehicle speed;
      ix) Area of activity; and
      x) Vehicle fuel usage (gasoline or diesel) annual total.

   f) Fugitive dust control for haul roads and general plant area:

      i. Hours of operation of water trucks
      ii. Application schedule for chemical dust suppressant if applicable.

C. The AQB may modify the conditions of this stipulation based on local conditions of any future site. These factors may include but are not limited to local terrain, meteorological conditions, proximity to residences, predicted ambient impacts which would cause or contribute to violations of a NAAQS or PSD increment, etc.

D. The department may require additional emissions testing on sources of emissions per ARM 16.8.704, Testing Requirements.

E. Mc & W must maintain a copy of the air quality stipulation at the Kalispell ready mix site and make that copy available for inspection by department personnel upon request.

F. Mc & W shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
McElroy and Wilken, Inc.

I. Introduction

A. Affected Equipment

A Portable 1988 Baromac Impact Crusher, Model Mark II, Serial #764-385 and a 1986 KHD Humbolt Wedag, Model B, Serial #462-012.

B. Process Description

This plant crushes gravel for use in construction, repair, and maintenance of roads and highways. The maximum process rate of the 1988 Baromac Impact Crusher is 225 tons/hour. The maximum process rate of the 1986 KHD Humbolt Wedag is 300 tons/hour.

Mc & W operates two (2) gravel pits in the Kalispell nonattainment area. They move their two gravel crushers between these pits in order to crush gravel for use in construction, repair, and maintenance of roads and highways. The Ross concrete batch plant is permanently located at the Mc & W Main Pit #2. In 1991 Mc & W moved their existing 1986 KHD Humbolt Wedag (300 TPH) to the Flathead River Bridge Pit #1 and at that time added the 1988 Baromac Impact Crusher (225 TPH). Mc & W's two gravel pit locations within the Kalispell nonattainment area are:

Flathead River Bridge Pit #1. (NW¼, Sec 2, T28N, R21W, Flathead County)
Mc & W Main Pit #2. (NW¼, Sec 8, T28N, R21W, Flathead County)

If this crushing plant is moved to another location, including Mc & W Main Pit #2, a Notice of Intent to Transfer Location of Air Quality Stipulation must be published in a newspaper of general circulation in the area to which the transfer is to be made as required in Section II.B.1. Any such transfer will be subject to department review as described in Section II.C.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to: ARM 16.8.821 Ambient Air Quality Standard for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. 16.8 Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has

determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

   Allowable Emissions = 55 (225 tons/hr)$^{.11}$ - 40 = 59.79 lbs/hr.
   Allowable Emissions = 55 (300 tons/hr)$^{.11}$ - 40 = 63.00 lbs/hr.

   The estimated total particulate matter emissions for the two gravel crushers are 31.50 lbs/hr and 42.00 lbs/hr, respectively, therefore the sources are in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all stacks constructed or altered since November 23, 1968. This rule is superseded by ARM 16.8.1423 (NSPS).

4. ARM 16.8.1423 Standards of Performance for New Stationary Sources (NSPS). The crusher plants were constructed in 1986 and 1988, respectively, so NSPS (40 CFR Part 60, general provisions, and Subpart OOO Non-Metallic Mineral Processing Plants) applies to both crushers. NSPS requirements are 15% opacity limitation for the crusher and 10% opacity for all other equipment such as screens or transfer points.

BACT/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A. Crusher and Material Transfer Emissions

   A BACT analysis was conducted at the time of the original permit application #2716-00, and a determination had been made for controlling TSP and PM-10 emissions. The department has determined that BACT for this source is the application of water sprays as necessary to maintain compliance with the 15% opacity limitation for the crusher and 10% opacity for all other equipment such as screens or transfer points.

   The BACT determination made for this source is considered to met the RACT requirements since BACT is more stringent than RACT.

E. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

Emission Inventory

Two Portable Gravel Crushers with Screening Plant

Annual Emission Rates (Allowable) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			Tons/Year			
1526 Baromac Impact Crusher	63.79	11.39				
Cummins Engine Model VTA28-G1	0.29	0.29	4.07	0.32	0.22	0.27
Baromac Screen	36.45	27.34				
1526 KHD Humbolt Wedag Crusher	85.05	15.19				
Caterpillar Generator	0.29	0.29	4.07	0.32	0.22	0.37
KHD Humbolt Screen	48.60	36.45				
Material Transfer	15.42	3.40				
Pile Forming: Stacker	69.12	31.89				
Bulk Loading	10.63	1.28				
Haul Roads	0.67	0.11				
Total	330.31	127.63	8.14	0.65	1.76	[illegible]

* Based on operating 4050 hours/year.

Daily Emission Rates (Allowable) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
1528 Baromac Impact Crusher	756.00	135.00				
Cummins Engine Model VTA28-G1	3.43	3.43	48.24	3.84	10.42	3.19
Baromac Screen	432.00	324.00				
1924 KHD Humbolt Wedag Crusher	1008.00	180.00				
Caterpillar Generator	3.43	3.43	48.24	3.84	10.42	3.19
KHD Humbolt Screen	576.00	432.00				
Material Transfer	182.70	40.32				
Pile Forming: Stacker	819.00	378.00				
Bulk Loading	126.00	15.12				
Haul Roads (Daily)	5.91	0.94				
Total	3912.48	1512.25	96.48	7.68	20.83	6.38

** Based on a 24 hour day.

1528 Baromac Impact Crusher

Process Rate: 225 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.28 lbs/ton (AP-42, 8.19.2-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.28 lbs/ton * 225 tons/hr = 63.00 lbs/hr
63.00 lbs/hr * 4050 hr/yr* 0.0005 tons/lb = 127.58 tons/yr
127.58 tons/yr * (1.00 - 0.50) = 63.79 tons/yr
63.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 756.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.05 lbs/ton (Ratio between TSP and PM-10 from AIRS[illegible]
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.050 lbs/ton * 225 tons/hr = 11.25 lbs/hr
11.25 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 22.78 tons/yr
22.78 tons/yr * (1.00 - 0.50) = 11.39 tons/yr
11.25 lbs/hr * 24 hr/day * (1.00 - 0.50) = 135.00 lbs/day

3

Cummins Engine Model VTA28-C1

Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.29 tons/yr
0.143 lbs/hr * 24 hr/day = 3.43 lbs/day

PM-10 Emissions:

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.29 tons/yr
0.143 lbs/hr * 24 hr/day = 3.43 lbs/day

NOx Emissions:

Emission Factor: 2.01 lbs/hr (AP-42, 3.3.2)
Calculations: 2.01 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 4.07 tons/yr
2.010 lbs/hr * 24 hr/day = 48.24 lbs/day

VOC Emissions:

Emission Factor: 0.160 lbs/hr (AP-42, 3.3.2)
Calculations: 0.160 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.32 tons/yr
0.160 lbs/hr * 24 hr/day = 3.84 lbs/day

CO Emissions:

Emission Factor: 0.434 lbs/hr (AP-42, 3.3.2)
Calculations: 0.434 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.88 tons/yr
0.434 lbs/hr * 24 hr/day = 10.42 lbs/day

SOx Emissions:

Emission Factor: 0.133 lbs/hr (AP-42, 3.3.2)
Calculations: 0.133 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.27 tons/yr
0.133 lbs/hr * 24 hr/day = 3.19 lbs/day

Terex Screen

Process Rate: 225 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.16 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.16 lbs/ton * 225 tons/hr = 36.00 lbs/hr
36.00 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 72.9 tons/yr
72.90 tons/yr * (1.00 - 0.50) = 36.45 tons/yr
36.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 432.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.120 lbs/ton * 225 tons/hr = 27.00 lbs/hr
27.00 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 54.68 tons/yr
54.68 tons/yr * (1.00 - 0.50) = 27.34 tons/yr
27.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 324.00 lbs/day

1986 KMD Humboldt Wedag Crusher

Process Rate: 300 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.28 lbs/ton (AP-42, 8.19.2-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.28 lbs/ton * 300 tons/hr = 84.00 lbs/hr
84.00 lbs/hr * 4050 hr/yr* 0.0005 tons/lb = 170.1 tons/yr
170.10 tons/yr * (1.00 - 0.50) = 85.05 tons/yr
84.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 1008.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.05 lbs/ton (AP-42, 8.19.2-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.050 lbs/ton * 300 tons/hr = 15.00 lbs/hr
15.00 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 30.38 tons/yr
30.38 tons/yr * (1.00 - 0.50) = 15.19 tons/yr
15.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 180.00 lbs/day

Catarpillar Generator

Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.29 tons/yr
0.143 lbs/hr * 24 hr/day = 3.43 lbs/day

PM-10 Emissions:

Emission Factor: 0.143 lbs/hr (AP-42, 3.3.2)
Calculations: 0.143 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.29 tons/yr
0.143 lbs/hr * 24 hr/day = 3.43 lbs/day

NOx Emissions:

Emission Factor: 2.01 lbs/hr (AP-42, 3.3.2)
Calculations: 2.01 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 4.07 tons/yr
2.010 lbs/hr * 24 hr/day = 48.24 lbs/day

VOC Emissions:

Emission Factor: 0.160 lbs/hr (AP-42, 3.3.2)
Calculations: 0.160 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.32 tons/yr
0.160 lbs/hr * 24 hr/day = 3.84 lbs/day

CO Emissions:

Emission Factor: 0.434 lbs/hr (AP-42, 3.3.2)
Calculations: 0.434 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.88 tons/yr
0.434 lbs/hr * 24 hr/day = 10.42 lbs/day

SOx Emissions:

Emission Factor: 0.133 lbs/hr (AP-42, 3.3.2)
Calculations: 0.133 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 0.27 tons/yr
0.133 lbs/hr * 24 hr/day = 3.19 lbs/day

EMO Humbolt Screen

Process Rate: 300 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.16 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.16 lbs/ton * 300 tons/hr = 48.00 lbs/hr
48.00 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 97.20 tons/yr
97.20 tons/yr * (1.00 - 0.50) = 48.60 tons/yr
48.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 576.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.120 lbs/ton * 300 tons/hr = 36.00 lbs/hr
36.00 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 72.90 tons/yr
72.90 tons/yr * (1.00 - 0.50) = 36.45 tons/yr
36.00 lbs/hr * 24 hr/day * (1.00 - 0.50) = 432.00 lbs/day

Material Transfer

Process Rate: 525 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSSCC, 3-05-025-03)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.03 lbs/ton * 525 tons/hr = 15.23 lbs/hr
15.23 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 30.83 tons/yr
30.83 tons/yr * (1.00 - 0.50) = 15.42 tons/yr
15.23 lbs/hr * 24 hr/day * (1.00 - 0.50) = 182.70 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSSCC, 3-05-025-03)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.006 lbs/ton * 525 tons/hr = 3.36 lbs/hr
3.36 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 6.80 tons/yr
6.80 tons/yr * (1.00 - 0.50) = 3.40 tons/yr
3.36 lbs/hr * 24 hr/day * (1.00 - 0.50) = 40.32 lbs/day

Pile Forming: Stacker

Process Rate: 525 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.13 lbs/ton (AFSSCC, 3-05-025-05)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.13 lbs/ton * 525 tons/hr = 68.25 lbs/hr
68.25 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 138.21 tons/yr
138.21 tons/yr * (1.00 - 0.50) = 69.10 tons/yr
68.25 lbs/hr * 24 hr/day * (1.00 - 0.50) = 819.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.06 lbs/ton (AFSSCC, 3-05-025-05)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.060 lbs/ton * 525 tons/hr = 31.50 lbs/hr
31.50 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 63.79 tons/yr
63.79 tons/yr * (1.00 - 0.50) = 31.89 tons/yr
31.50 lbs/hr * 24 hr/day * (1.00 - 0.50) = 378.00 lbs/day

Bulk Loading

Process Rate: 525 tons/hr (Maximum Process Rate)
Hours of operation: 4050 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC, 3-05-025-06)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Material)
Calculations: 0.02 lbs/ton * 525 tons/hr = 10.50 lbs/hr
10.50 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 21.2625 tons/yr
21.26 tons/yr * (1.00 - 0.50) = 10.63 tons/yr
10.50 lbs/hr * 24 hr/day * (1.00 - 0.50) = 126.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.0024 lbs/ton (AFSSCC, 3-05-025-06)
Control Efficiency: 50% (Water Spray Bars or Naturally Wet Materials)
Calculations: 0.002 lbs/ton * 525 tons/hr = 1.26 lbs/hr
1.26 lbs/hr * 4050 hr/yr * 0.0005 tons/lb = 2.55 tons/yr
2.55 tons/yr * (1.00 - 0.50) = 1.28 tons/yr
1.26 lbs/hr * 24 hr/day * (1.00 - 0.50) = 15.12 lbs/day

Haul Roads

Operating Hours: 4050 Hours/Yr
Vehicle Miles Traveled: 692 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E=	TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k=	Particle sizing constant for TSP	1.0
s=	Silt Content in percent	8.7 %
S=	Average Speed of vehicles in mph	10.0 mph
W=	Average weight of vehicles in Tons	18.5 Tons
w=	Average number of wheels on vehicles	6 wheels
PR=	Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission factor: 4.02 Lbs/VMT

E(TSP)= (692 VMT/Yr)(4.02 Lbs/VMT)(0.5)
E(TSP)= 1390 Lbs/Yr
or 0.69 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where,

E=	PM10 Emission factor in Lbs/Vehicle Mile Traveled (VMT)	
k=	Particle sizing constant for PM10	0.36
s=	Silt Content in percent	8.7 %
S=	Average Speed of vehicles in mph	5.0 mph
W=	Average weight of vehicles in Tons	20.8 Tons
w=	Average number of wheels on vehicles	4 wheels
PR=	Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission factor: 0.64 Lbs/VMT

E(PM10)= (692 VMT/Yr)(0.64 Lbs/VMT)(0.5)
E(PM10)= 222 Lbs/Yr or 0.11 Tons/Yr

Haul Roads (Daily)

Operating Hours: 0.060 Hours/Yr
Vehicle Miles Traveled: 692 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PE
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 10.0 mph
W= Average weight of vehicles in Tons 18.3 Tons
w= Average number of wheels on vehicles 6 wheels
PE= Assumes no precipitation 1.0000

TSP Emissions:

TSP Emission Factor: 6.24 Lbs/VMT

E(TSP)= (692 VMT/Yr)(6.24 Lbs/VMT)(0.5)
E(TSP)= 2159 Lbs/Yr or 1.08 Tons/Yr or 5.91 lbs/day

PM10 Emission factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PE
Where:
E= PM10 Emission factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicles 6 wheels
PE= Assumes no precipitation 1.0000

PM10 Emissions:

PM10 Emission Factor: 1.00 Lbs/VMT

E(PM10)= (692 VMT/Yr)(1.00 Lbs/VMT)(0.5)
E(PM10)= 346 Lbs/Yr or 0.17 Tons/Yr or 0.95 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Mc & W facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Mc & W facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Mc & W facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust and restrictions on annual operating hours the department has determined that the Mc & W facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: McElroy and Wilken, Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: This stipulation is for the operation of a portable 1988 Baromac Impact Crusher, Model Mark II, Serial #764-385 and a 1986 KHD Humbolt Wedag, Model B, Serial #462-012 and gravel screening facility. This plant crushes gravel for use in construction, repair, and maintenance of roads and highways, and for use in concrete batching.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this operation will be reduced by further reducing the allowable hours of operation. This action makes the control equipment, control techniques, and limitations on operating hours at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin

Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Montana Mokko, Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Montana Mokko ("MT Mokko"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

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amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act of all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

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tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition project, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A major

deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicted that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The department has determined that emission limitations applicable to MT Mokko were in some cases nonexistent (no permit requirements) or significantly higher than actual emissions during the CMB modeling study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the

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results of this modeling, the PM-10 emissions from MT Mokko were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. Furthermore, both parties agree that based upon these modeling results, revised emission limitation for MT Mokko are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for MT Mokko and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, both parties agree that revised emission limitation must be imposed upon MT Mokko.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on MT Mokko must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to MT Mokko. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Montana Mokko") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves

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it or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Board is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Under Sections 75-2-101, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state and such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell nonattainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to MT Mokko.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to statute.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in the permit issued to the air source/party to this agreement (if issued), supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order which requires the imposition of the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopts the same as enforceable measures applicable to MT Mokko.

MONTANA MOKKO	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY [signature]	BY [signature] Robert J. Robinson, Director
BY [signature] Attorney	BY [signature] Timothy R. Baker, Attorney
DATE 9/9/93	DATE 9/15/93

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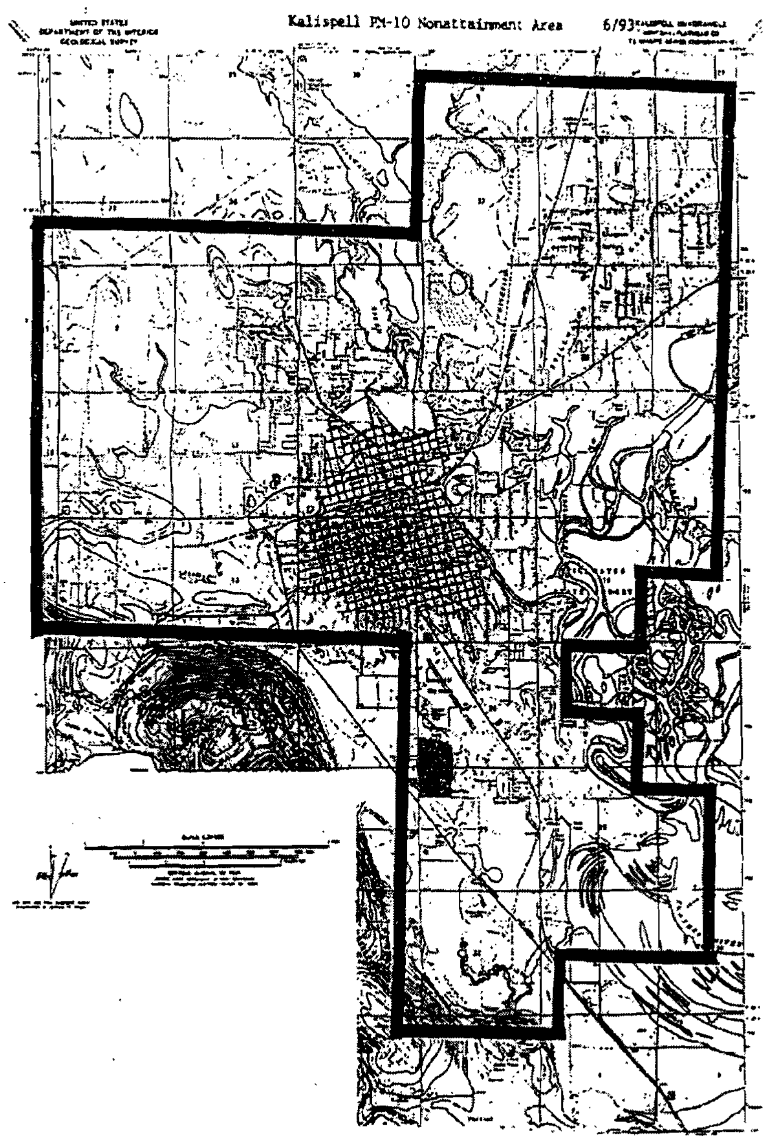
Kalispell PM-10 Nonattainment Area
6/93
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

EXHIBIT E

Montana Mokko
P.O. Box 2820
Kalispell, MT 59901

The above-named company is hereinafter referred to as "MT Mokko."

SECTION I: Affected Facilities

A. Plant Location:

A 54 MMBF/yr lumber mill located at 555 Whitefish Stage Road, in Kalispell, Montana (Section 22, Township 29 North, Range 21 West, Flathead County).

B. Affected Equipment and Facilities:

1. One (1) 6 MMBTU/hr natural gas boiler (1970);
2. Dry kiln;
3. Log debarker;
4. Log sawing deck;
5. Slab chipper;
6. Chip bin rail loadout with target box;
7. Lumber planer with cyclone;
8. Finger jointer with cyclone;
9. Shaving bin truck loadout with two (2) cyclones;
10. Fugitive emission from haul trucks and log handling.

SECTION II: Limitations and Conditions

A. Emission Limitations and Conditions:

1. MT Mokko shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968 that exhibit an opacity[1] of twenty percent (20%) or greater averaged over six (6) consecutive minutes. This applies to stack emissions from the slab chipper, planer cyclone, finger jointer cyclone, two (2) shaving bin cyclones and the natural gas boiler. (ARM 16.8.1404)

2. MT Mokko shall not cause or authorize emissions to be discharged into the atmosphere from access roads, parking lots, log decks, or the

[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

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general plant property any visible fugitive emissions that exhibit opacity[2] of 5% or greater averaged over six (6) consecutive minutes. This applies to fugitive emissions from any hauling, handling, loading, and unloading operation. (RACT)

3. MT Mokko shall treat all unpaved portions of the haul roads, access roads, parking lots, log decks, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the 5% opacity[2] limitation. (RACT)

4. MT Mokko shall operate and maintain all emission control equipment, identified in Section I.B, as designed to provide the maximum control of air pollutants.

B. Operational Reporting Requirement:

MT Mokko shall supply the Department of Health and Environmental Sciences Air Quality Bureau with an annual emission inventory for the listed emission points. The annual emission inventory report must be submitted in writing to the department by March 1 of the following calendar year. The emissions inventory shall include the following production and emission inventory information:

1. Sawmill: - total hours of operation.
   - total mill cut for the year.

2. Planer: - total hours of operation.
   - total mill cut for the year.

3. Finger Jointer: - total hours of operation.
   - total mill cut for the year.

4. Slab Chipper: - total hours of operation.

5. Million cubic feet of natural gas burned in the natural gas boiler.

6. Hours of operation and flow rate for each of the following cyclones:

   a. Planer cyclone;
   b. Finger jointer cyclone;
   c. Shaving bin cyclones from the planer;
   d. Shaving bin cyclones from the finger jointer.

7. Fugitive dust information consisting of a listing of all plant vehicles including:

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[2] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

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a. Vehicle type;
b. Vehicle weight loaded;
c. Vehicle weight unloaded;
d. *Number of tires on vehicles;*
e. Average trip length;
f. Number of trips per day;
g. Average vehicle speed;
h. Area of activity; and
i. Vehicle fuel usage (gasoline or diesel in gallons) - annual total.

8. Fugitive dust control for haul roads and general plant area.

a. Hours of operation of water trucks.
b. Application schedule for chemical dust suppressant if applicable.

C. The department may require additional emissions testing on sources in the plant per ARM 16.8.704 Testing Requirements.

D. MT Mokko must maintain a copy of the air quality stipulation at the Kalispell planer mill and make that copy available for inspection by department personnel upon request.

E. MT Mokko shall comply with all other applicable state, federal and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
Montana Mokko

I. Introduction/Process Description

Montana Mokko operates an existing lumber mill located at 955 Whitefish Stage Road, in Kalispell, Montana. The mill receives logs from area forest product companies and stockpiles them in the log deck prior to processing them in the lumber mill. Montana Mokko is currently leasing the Kalispell Pole and Timber site to expand their log storage area.

The logs are debarked, cut into rough lumber, and stacked in bundles to be dried. The sawmill uses conveyor belts to transfer the bark and sawdust to their respective bins. The emissions from these sources are negligible. The rough lumber is then air dried or dried in the dry kiln to reduce shrinkage in the final dimension cut lumber. The dry kiln is heated by a natural gas boiler. The log slabs are run through a chipper and the wood chips are collected and transferred pneumatically to a target box and loaded into rail cars.

Once the lumber is dry it is run through a thickness planer where the rough cut lumber is planed to the proper dimensions. The planed lumber is then cut to the proper length using a trim saw. The final dimension lumber is then inspected and shipped. The planer shavings and saw dust from this process are collected and transferred pneumatically to the wood shavings bin and loaded into trucks.

In 1991, Montana Mokko constructed a new building for a finger jointer process. This process takes trim blocks and off-grade lumber and cuts out knots and joins the pieces to make door and window moldings. Montana Mokko receives the lumber supplies for the finger jointer from their own lumber mill and trim blocks and off-grade lumber from other area lumber mills. The sawdust and shavings from this process are collected and transferred pneumatically to the wood shavings bin and loaded into trucks.

Montana Mokko originally had a permit to operate a tepee burner (Permit #460), which is used for the disposal of the wood wastes generated from the saw mill and planing processes. In 1976 a new shavings bin was installed for the collection, storing, and shipping of marketable wood wastes. From 1976 until June 1992, the tepee burner was limited to cleanup and overflow of shavings when the bin is full. In June 1992, the tepee burner was dismantled and alternate means of disposing of the unmarketable wood wastes are now being used.

In 1992, Montana Mokko laid approximately 20,000 sq. ft. of asphalt in the lumber yard in order to control fugitive dust from the use of forklifts. Also, the main runways in the log deck were graveled with large rock.

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II. Applicable Rules and Regulations

A. ARM 16.8.821, Ambient Air Quality Standards for PM-10:

This section requires that the hourly and annual average concentrations of PM-10 in the ambient air not exceed the set standards. (See Existing Air Quality and Monitoring Requirements, Section III)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration of Air Quality (PSD):

ARM 16.8.921 Definitions. MT Mokko's lumber mill is not a "major stationary source" because it is not a listed source and does not have the potential to emit more than 250 tons of any pollutant.

C. ARM 16.8, Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents installed after November 23, 1968.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Natural Gas Boiler

The natural gas boiler was installed in 1970 and is therefore limited to 20% opacity as per ARM 16.8.1404. Since natural gas is a clean burning fuel with negligible PM-10 emissions, the department has determined that RACT for this source is no controls.

B. Wood Waste Collection Cyclones

The planer cyclone, finger jointer cyclone, and two (2) shaving bin cyclones were installed after 1968 and are therefore limited to 20% opacity as per ARM 16.8.1404. A cyclone would provide the best level of particulate control (85%). MT Mokko currently uses a cyclone for particulate control from the slab chipper, planer, finger jointer, and two cyclones on the shaving bin. The department has determined that the cyclones will constitute RACT for these sources.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emissions Inventory

Lumber & Planer Mill

Annual Emission Rates (Potential) *

Source	TSP	PM-10	NOX	tons/year VOC	CO	SOX
Natural Gas Boiler	0.36	0.36	3.44	0.15	0.92	0.02
Log Debarking	2.25	1.26				
Log Sawing	4.50	2.47				
Chipper Cyclone	8.76	3.50				
Chip Bin Rail Loadout	2.00	0.71				
Planer Cyclone	8.76	3.50				
Finger Jointer Cyclone	8.76	3.50				
Shaving Bin Cyclone from Planer	8.76	3.50				
Shaving Bin Cyclone from Jointer	8.76	3.50				
Shaving Bin Truck Loadout	54.86	32.92				
Hog Fuel Bin Truck Loadout	12.72	4.58				
Haul Roads - Fugitives	0.32	0.11				
Log Deck - Fugitives	3.61	1.30				
Total Emissions	124.61	61.21	3.44	0.15	0.92	0.02

* Based on operating 8760 hours/year.

Daily Emission Rates (Potential) **

Source	TSP	PM-10	NOX	lbs/day VOC	CO	SOX
Natural Gas Boiler	1.97	1.97	20.16	0.84	5.04	0.09
Log Debarking	12.32	6.78				
Log Sawing	24.64	13.55				
Chipper Cyclone	48.00	19.20				
Chip Bin Rail Loadout	10.94	3.89				
Planer Cyclone	48.00	19.20				
Finger Jointer Cyclone	48.00	19.20				
Shaving Bin Cyclone from Planer	48.00	19.20				
Shaving Bin Cyclone from Jointer	48.00	19.20				
Shaving Bin Truck Loadout	300.62	180.37				
Hog Fuel Bin Truck Loadout	49.68	25.09				
Haul Roads - Fugitives (Daily)	2.71	0.97				
Log Deck - Fugitives (Daily)	30.70	11.05				
Total Emissions	693.60	339.68	20.16	0.84	5.04	0.09

** Based on operating 24 hours/day.

[illegible] Stipulation: 2.17.93

3

Emission Factor: 13.7 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 13.7 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.36 tons/yr

PM-10 Emissions:

Emission Factor: 13.7 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 13.7 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.36 tons/yr

NOx Emissions:

Emission Factor: 140 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 140 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 3.68 tons/yr

VOC Emissions:

Emission Factor: 5.8 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 5.8 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.15 tons/yr

CO Emissions:

Emission Factor: 35 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 35 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.92 tons/yr

SOx Emissions:

Emission Factor: 0.6 lbs/10^6 ft^3 gas (AP-42, 1.4-1, Revised Oct 92)
Control Efficiency: 0.0%
Fuel Consumption: 52.56 10^6 ft^3/yr (Maximum Design)
Calculations: 52.56 * 10^6 ft^3/yr * 0.6 lbs/10^6 ft^3 gas * 0.0005 tons/lb = 0.02 tons/yr

Log Debarking

Lumber Production: 54.00 MMBF/yr (Based on Maximum Production Rate)
Tons of logs processed: 54.00 MMBF/yr * 4164 tons MMBF = 224,856 tons/yr (ACB Estimate)

TSP Emissions:

Emission Factor: 0.02 lbs/ton (3-07-008-01, AFSSCC page 143)
Calculations: 224,856 tons/yr * 0.02 lbs/ton * 0.0005 tons/lb = 2.25 tons/yr

PM-10 Emissions:

Emission Factor: 0.011 lbs/ton (3-07-008-01, AFSSCC page 143)
Calculations: 224,856 * tons/yr * 0.011 lbs/ton * 0.0005 tons/lb = 1.24 tons/yr

Log Sawing

Lumber Production: 54.00 MMBF/yr (Based on Maximum Production Rate)
Tons of logs processed: 54.00 MMBF/yr * 4164 tons/MMBF = 224,856 tons/yr (ACB Estimate)

TSP Emissions:

Emission Factor: 0.04 lbs/ton (Based on knowledge of the process)
Calculations: 224,856 tons/yr * 0.04 lbs/ton * 0.0005 tons/lb = [illegible] tons/yr

Final Stipulation: 9/17/93

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Chipper Cyclone

Hours of operation: 8760 hrs

TSP Emissions:

Emission Factor: 2.00 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 2.00 lbs/hr * 0.0005 tons/lb = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.80 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 0.80 lbs/hr * 0.0005 tons/lb = 3.50 tons/yr

Chip Bin Rail Loadout

Lumber Production: 54.00 MMBF/yr (Based on Maximum Production Rate)
Chip Production: 411 tons/MMBF (AQB Estimate)

TSP Emissions:

Emission Factor: 0.18 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 54.00 * MMBF/yr * 411 tons/MMBF * 0.18 lbs/ton * 0.0005 tons/lb = 2.00 tons/yr

PM-10 Emissions:

Emission Factor: 0.064 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 54.00 * MMBF/yr * 411 tons/MMBF * 0.06 lbs/ton * 0.0005 tons/lb = 0.71 tons/yr

Planer Cyclone

Hours of operation: 8760 hrs

TSP Emissions:

Emission Factor: 2.00 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 2.00 lbs/hr * 0.0005 tons/lb = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.80 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 0.80 lbs/hr * 0.0005 tons/lb = 3.50 tons/yr

Finger Jointer Cyclone

Hours of operation: 8760 hrs

TSP Emissions:

Emission Factor: 2.00 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 2.00 lbs/hr * 0.0005 tons/lb = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.80 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 0.80 lbs/hr * 0.0005 tons/lb = 3.50 tons/yr

Final Stipulation: 9/17/93

Shaving Bin Cyclone from Planer

Hours of operation: 8760 hrs

TSP Emissions:

Emission Factor: 2.00 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 2.00 lbs/hr * 0.0005 tons/lb = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.80 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 0.80 lbs/hr * 0.0005 tons/lb = 3.50 tons/yr

Shaving Bin Cyclone from Jointer

Hours of operation: 8760 hrs

TSP Emissions:

Emission Factor: 2.00 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 2.00 lbs/hr * 0.0005 tons/lb = 8.76 tons/yr

PM-10 Emissions:

Emission Factor: 0.80 lbs/hr (3-07-008-08, AFSSCC page 144)
Calculations: 8760 * hrs * 0.80 lbs/hr * 0.0005 tons/lb = 3.50 tons/yr

Shaving Bin Truck Loadout

Lumber Production: 54.00 MMBF/yr (Based on Maximum Production Rate)

Planer Shavings Production:	621 tons/MMBF	
Finger Jointer Shavings Production:	395 tons/MMBF	
Total Shavings Production:	1016 tons/MMBF	(AOE Estimate)

TSP Emissions:

Emission Factor: 2.00 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 54.00 * MMBF/yr * 1016 tons/MMBF * 2.00 lbs/ton * 0.0005 tons/lb = 54.86 tons/yr

PM-10 Emissions:

Emission Factor: 1.20 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 54.00 * MMBF/yr * 1016 tons/MMBF * 1.20 lbs/ton * 0.0005 tons/lb = 32.92 tons/yr

Hog Fuel Bin Truck Loadout

Lumber Production: 54.00 MMBF/yr (Based on Maximum Production Rate)

Sawdust Production:	395 tons/MMBF	
Bark Production:	76 tons/MMBF	
Total Hog Fuel Production:	471 tons/MMBF	(AOE Estimate)

TSP Emissions:

Emission Factor: 1.00 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 54.00 * MMBF/yr * 471 tons/MMBF * 1.00 lbs/ton * 0.0005 tons/lb = 12.72 tons/yr

PM-10 Emissions:

Emission Factor: 0.36 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 54.00 * MMBF/yr * 471 tons/MMBF * 0.36 lbs/ton * 0.0005 tons/lb = 4.58 tons/yr

Haul Roads - Fugitives

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 303 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
```

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	6.5 mph
W= Average weight of vehicles in Tons	27.0 Tons
w= Average number of wheels on vehicles	18 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 4.20 Lbs/VMT

E(TSP)= (303 VMT/Yr)(4.20 Lbs/VMT)(0.5)
E(TSP)= 636 Lbs/Yr or 0.32 Tons/Yr

PM10 Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
```

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	6.5 mph
W= Average weight of vehicles in Tons	27.0 Tons
w= Average number of wheels on vehicles	18 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission Factor: 1.51 Lbs/VMT

E(PM10)= (303 VMT/Yr)(1.51 Lbs/VMT)(0.5)
E(PM10)= 229 Lbs/Yr or 0.11 Tons/Yr

Haul Roads - Fugitives (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 303 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
```

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	6.5 mph
W= Average weight of vehicles in Tons	27.0 Tons
w= Average number of wheels on vehicles	18 wheels
PR= Assumes no precipitation	1.0000

TSP Emissions:

TSP Emission Factor: 6.52 Lbs/VMT

E(TSP)= (303 VMT/Yr)(6.52 Lbs/VMT)(0.5)
E(TSP)= 988 Lbs/Yr or 0.49 Tons/Yr or 2.71 lbs/day

PM10 Emission Factor is determined by the following equation:

$$E = 5.9 \cdot k \cdot (s/12) \cdot (S/30) \cdot (W/3)^{0.7} \cdot (w/4)^{0.5} \cdot PR$$

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	6.5 mph
W= Average weight of vehicles in Tons	27.0 Tons
w= Average number of wheels on vehicles	18 wheels
PR= Assumes no precipitation	1.0000

PM10 Emissions:

PM10 Emission Factor: 2.35 Lbs/VMT

E(PM10)= (303 VMT/Yr)(2.35 Lbs/VMT)(0.5)
E(PM10)= 356 Lbs/Yr or 0.12 Tons/Yr or 0.97 lbs/day

Log Deck - Fugitives

Operating Hours: 8752 Hours/Yr
Vehicle Miles Traveled: 10000 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

$$E = 5.9 \cdot k \cdot (s/12) \cdot (S/30) \cdot (W/3)^{0.7} \cdot (w/4)^{0.5} \cdot PR$$

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	25.0 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission Factor: 1.44 Lbs/VMT

E(TSP)= (10000 VMT/Yr)(1.44 Lbs/VMT)(0.5)
E(TSP)= 7215 Lbs/Yr or 3.61 Tons/Yr

PM10 Emission Factor is determined by the following equation:

$$E = 5.9 \cdot k \cdot (s/12) \cdot (S/30) \cdot (W/3)^{0.7} \cdot (w/4)^{0.5} \cdot PR$$

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	25.0 Tons
w= Average number of wheels on vehicles	4 wheels
PR= Precipitation Ratio based on the following:	

130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission Factor: 0.52 Lbs/VMT

E(PM10)= (10000 VMT/Yr)(0.52 Lbs/VMT)(0.5)
E(PM10)= 2597 Lbs/Yr or 1.30 Tons/Yr

Log Deck Fugitives (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 10000 VMT/Yr (Based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

$E = 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*P1$

Where:

E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for TSP	1.0
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	25.0 Tons
w= Average number of wheels on vehicles	6 wheels
P1= Assumes no precipitation	1.0000

TSP Emissions:

TSP Emission Factor 2.24 Lbs/VMT

E(TSP)= (10000 VMT/Yr)(2.24 Lbs/VMT)(0.5)
E(TSP)= 11206 Lbs/Yr or 5.60 Tons/Yr or 30.70 lbs/day

PM10 Emission Factor is determined by the following equation:

$E = 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*P1$

Where:

E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k= Particle sizing constant for PM10	0.36
s= Silt Content in percent	6.2 %
S= Average Speed of vehicles in mph	5.0 mph
W= Average weight of vehicles in Tons	25.0 Tons
w= Average number of wheels on vehicles	6 wheels
P1= Assumes no precipitation	1.0000

PM10 Emissions:

PM10 Emission Factor 0.81 Lbs/VMT

E(PM10)= (10000 VMT/Yr)(0.81 Lbs/VMT)(0.5)
E(PM10)= 4034 Lbs/Yr or 2.02 Tons/Yr or 11.05 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA required the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to MT Mokko were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the MT Mokko facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that MT Mokko contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the MT Mokko facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust, the MT Mokko facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Montana Mokko, Air Quality Stipulation for Kalispell SIP.

Description of Project: Montana Mokko operates an existing lumber mill located at 955 Whitefish Stage Road, in Kalispell, Montana. This facility manufacturers dimension lumber for use in the construction industry. The wood wastes that this facility generates is sold as a by-product which is used in the manufacture of other wood products.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives exist.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions are contained in the signed air quality stipulation.

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin
Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health			X			
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services			X			
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts			X			

Final Stipulation: 9/17/93

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Pack and Company, Inc., Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Pack and Company, Inc. ("Pack"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

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tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document. Pack is located outside of the Kalispell non-attainment area boundary.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition projects, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicated that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The results of the earlier CMB modeling study were in part dependent upon the level of actual emissions from the various sources in the Kalispell area during the study period. However, and based upon a review of the allowable emissions for those same sources, the department is concerned that the allowable emissions do not correlate well to the actual emissions occurring during the period of CMB analysis.

For example, in the case of Pack, some emission points are not subject to emissions limitations, and other emission points have emissions limitations that are significantly higher that the actual emissions during the CMB study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell non-attainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the results of this modeling, the PM-10 emissions from Pack were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. As used in the preceding sentence, the term "significant" means that the PM-10 emissions from Pack, when modeled, were greater than 5 micrograms per cubic meter impact for at least one receptor point within the Kalispell nonattainment area, consistent with the federal Clean Air Act, implementing regulations found at 40 CFR Part 51, and pertinent EPA guidance. Both parties agree that based upon these modeling results, and notwithstanding the location of Pack outside of the Kalispell nonattainment area, revised emission limitations for Pack are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates for Pack and other sources in the Kalispell area to determine the level of emissions

which achieves the particulate matter NAAQS. Based upon these modeling results, the department and Pack agree to the revised emission limitations for Pack, as set forth in Exhibit B.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Pack must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Pack. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Pack and Company, Inc.") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves the plan, or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Department is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act.

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Section 75-2-112(2)(c), MCA. Under Sections 75-2-101, _et seq._, the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state. Such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell non-attainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Pack.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to that Act.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in an air quality permit issued to Pack, supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order imposing the

terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopting the same as enforceable measures applicable to Pack.

PACK AND COMPANY, INC.	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY [signature] Its: President	BY William J. Opitz Robert J. Robinson Director
BY [signature] Attorney	BY Timothy R. Baker Timothy R. Baker Attorney
DATE 9/16/93	DATE 9/17/93

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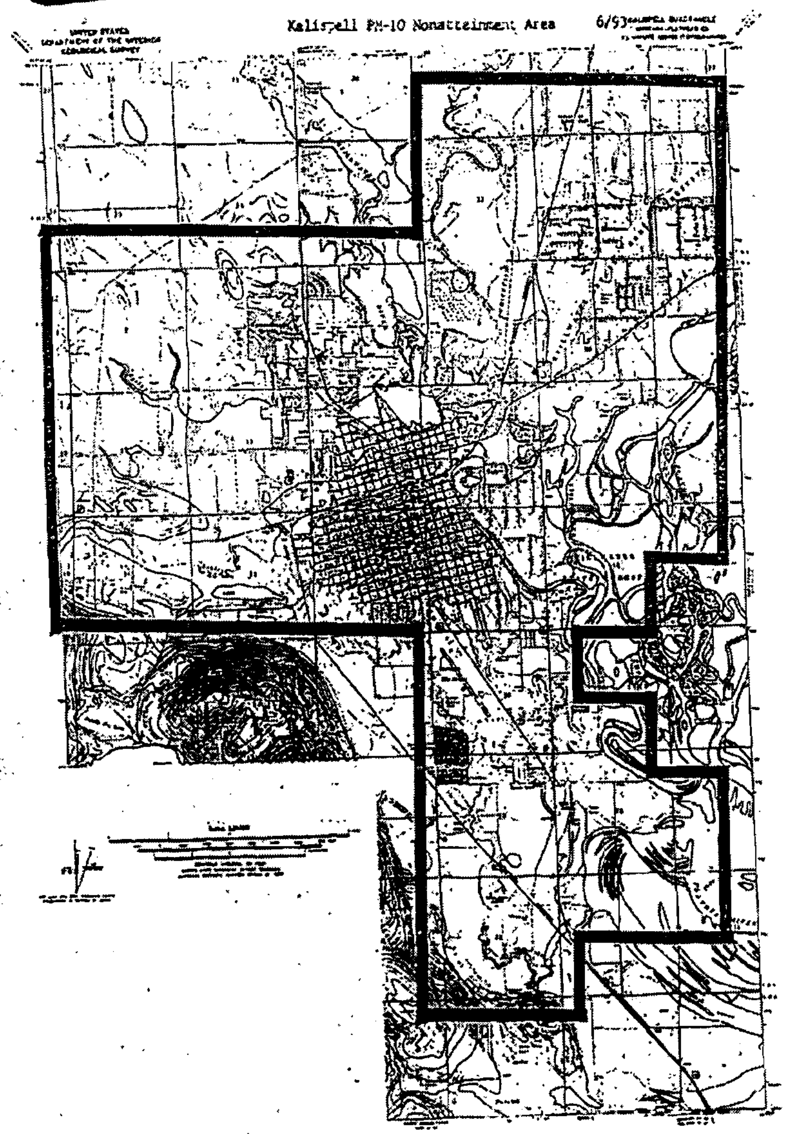
Kalispell PM-10 Nonattainment Area
6/93

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Pack and Company, Inc.
2355 Highway 93 North
Kalispell, MT 59901

The above-named company is hereinafter referred to as "Pack"

Section I: Affected Facilities

A. Equipment: A stationary 1967 Stansteel #RM 5000 asphalt plant (200 TPH) serial #854 with a Stansteel Wet Scrubber - Model 260A, installed in 1977.

B. Plant Location: 2355 Highway 93 North (SW¼, NW¼, Sec 31, T29N, R21W, Flathead County).

Section II: Limitations and Conditions

A. Emission Limitations

1. Pack shall operate and maintain the wet scrubber and all other emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

2. All visible emissions from the asphalt plant stack are limited to 20% opacity[1]. (ARM 16.8.1404)

3. Pack shall not cause or authorize to be discharged into the atmosphere from haul roads, access roads, or the general plant area any visible fugitive emissions that exhibit opacity[1] of 5% or greater. (RACT)

4. Pack shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water, chemical dust suppressant and/or acceptable oil or asphalt products as necessary to maintain compliance with the 5% opacity limitation.(RACT) The use by Pack Concrete of any dust suppressants, including any oil or asphalt products, shall be in compliance with all applicable local, state or federal environmental requirements.

5. Pack shall not cause or authorize to be discharged into the atmosphere from material transfer and storage areas any visible emissions that exhibit opacity[1] of 20% or greater. (ARM 16.8.1401)

6. Asphalt plant TSP emissions are limited to 0.10 gr/dscf and 21.00 lbs/hr.

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[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

7. Asphalt plant PM-10 emissions are limited to 0.10 gr/dscf and 21.00 lbs/hr.

8. A device to measure the pressure drop (magnehelic gauge, manometer, etc.) on the control device (wet scrubber, baghouse, etc.) shall be installed and maintained. Pressure drop shall be measured in inches of water. Temperature indicators at the control device inlet and outlet must be installed and maintained.

9. The original asphalt production rate is limited to 200 tons/hour. It is recognized that the Pack asphalt plant is governed by an existing Air Quality Permit, in addition to the terms of this Stipulation (Air Quality Permit #1125). Notwithstanding the limitation contained in this Stipulation, Pack shall have the opportunity to seek an increase in the allowed production rate by requesting that the Department consider an alteration to the existing Air Quality Permit. Similarly, Pack is not foreclosed by this Stipulation from seeking an Air Quality Permit from the Department for the utilization of additional equipment on-site. Pack recognizes that before the Department may approve any alteration to the existing Air Quality Permit, or issue an additional Air Quality Permit for the use of additional equipment on-site, the emissions from the permitted facility or facilities must be reviewed for their impacts on PM-10 ambient air quality, and the Department may withhold approval if such impacts are found to be unacceptable.

10. Once a stack test is performed, the asphalt production rate is limited to the average production rate during the last source test demonstrating compliance. As noted immediately above in Paragraph No. 9, and notwithstanding this limitation, Pack shall have the opportunity to seek to increase this production rate or otherwise add to its production capacity, as may be consistent with the obligation and duty of the Department to ensure that there are not unacceptable impacts on PM-10 ambient air quality.

11. The asphalt plant operation is limited to 8760 hours/year.

B. Emission Testing

1. A source test must be conducted and compliance demonstrated within 320 days from the date of the signed stipulation.

2. An EPA method 1-5 source test must be performed on the asphalt plant every four years to demonstrate compliance with Section II.A.1, 5 and 6.

3. The tests shall consist of three runs, each of at least 60 minutes duration. The test shall be conducted in compliance with the requirements of 40 CFR Part 60, Subpart A, General Provisions; EPA Reference Methods 1-5, 40 CFR Part 60, Appendix A, and 40 CFR Part 60 Subpart I.

4. An EPA Method 9 opacity test must also be performed in conjunction with the particulate tests to demonstrate compliance with condition Section II.A.1. This test shall consist of thirty 6-minute average observations with ten of these observations being conducted during each particulate test run.

5. The tests identified in subsections 1-4 above must be conducted in compliance with the pre-test notification and reporting requirements of the AQB's Compliance Source Test Protocol.

6. Production field data sheets must be supplied as part of the test report. Since asphalt production will be limited to the average production rate during the test, it is suggested the test be performed at the highest production rate practical.

7. The AQB must be notified of the test five working days before the test is scheduled to be performed. The AQB must also be notified the day before the test is performed to confirm the test. The responsibility for notification is that of the owner/operator.

8. Pressure drop on the control device and temperatures will be recorded during the test and reported as part of the test results.

C. .Reporting Requirements

1. The operator must maintain on-site records showing daily production rates for the current calendar year. These records shall be available for inspection by the department and must be submitted to the department upon request.

2. Pack shall retain daily production numbers for a minimum of five (5) years.

3. Pack shall provide an annual report identifying any days in which the hours of operation, or the process rates in Section II.A. are exceeded. The report shall be submitted by March 1 of each year.

4. Annual production information shall be submitted in writing to the AQB by March 1 of the following calendar year. The information shall include:

a) Tons of asphalt produced.

b) Hours of operation.

c) Type and amount of fuel used for the plant.

d) Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

i) Number of vehicles;
ii) Vehicle type;
iii) Vehicle weight, loaded
iv) Vehicle weight, unloaded;
v) Number of tires on vehicle;
vi) Average trip length;
vii) Average number of trips annually;
viii) Average vehicle speed;
ix) Area of activity; and
x) Vehicle fuel usage (gasoline or diesel) annual total.

f) Fugitive dust control for haul roads and general plant area:

i. Hours of operation of water trucks.
ii. Application schedule for chemical dust suppressant if applicable.

D. The department may require additional emissions testing on sources of emissions per ARM 16.8.704, Testing Requirements.

E. Pack must maintain a copy of the air quality stipulation at the Kalispell ready mix

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site and make that copy available for inspection by department personnel upon request.

F. Pack shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
Pack and Company, Inc.

I. Introduction

A. Equipment

A stationary 1967 Stansteel #RM 5000 asphalt plant (200 TPH) Serial #654 with a Stansteel Wet Scrubber - Model 260A, installed in 1977.

B. Process Description

This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

C. Facility Location

Pack operates a stationary asphalt plant and a ready mix concrete batch plant in a gravel pit at 2355 Hwy 93 North (SW¼, NW¼, Sec 31, T29N, R21W, Flathead County) in the Kalispell nonattainment area. The 1967 Stansteel #RM 5000 asphalt plant is permanently located at this pit.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to:

ARM 16.8.821 Ambient Air Quality Standard for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards. (See Section V)

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. 16.8 Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires an opacity limitation of 20% for all fugitive emission sources.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = $55\ (200\ \text{tons/hr})^{.11} - 40 = 58.51$ lbs/hr.

The enforceable total particulate matter emission limit is 21.00 lbs/hr, therefore the source is in compliance.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% from all stacks constructed or altered since November 23, 1968.

4. 16.8.1423 Standards of Performance for New Stationary Sources (NSPS). This plant was constructed in 1967 so NSPS (40 CFR Part 60, general provisions, and Subpart I Hot Mix Asphalt Facilities) does not apply.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State Implementation Plans (SIP's) must contain "reasonably available control measures" (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Asphalt Plant Stack Emissions

Pack's asphalt plant was constructed in 1967, and therefore, NSPS does not apply. The department has determined that BACT for pre-NSPS asphalt plants is an emission limitation of 0.10 gr/dscf and 20% opacity. The plant was tested in 1988 and the results showed emissions at 0.082 gr/dscf. Since BACT is more stringent than RACT and this asphalt plant meets BACT, the RACT requirement is met.

B. Material Transfer Fugitive Emissions

RACT for material transfer points for sources of this type has been determined by the department to be the use of water of chemical stabilization so as to maintain compliance with a 20% opacity limitation.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emission Inventory

1967 Stansteel RM 5000 Portable Asphalt Plant

Annual Emission Rates (Potential) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
			Tons/Year			
Asphalt Plant Drum Dryer	91.98	91.98	31.54	24.53	33.29	63.95
Elevator, Screens, Bins, and Mixer	175.20	26.28				
Cold Aggregate Handling	87.60	35.04				
Haul Roads	0.15	0.06				
Total	354.95	153.36	31.54	24.53	33.29	63.95

* Based on operating 8760 hours/year.

Daily Emission Rates (Potential) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
			lbs/day			
Asphalt Plant Drum Dryer	504.00	504.00	172.80	134.40	182.40	350.40
Elevator, Screens, Bins, and Mixer	960.00	144.00				
Cold Aggregate Handling	480.00	192.00				
Haul Roads (Daily)	1.31	0.47				
Total	1945.31	840.47	172.80	134.40	182.40	350.40

** Based on operating 24 hours/day.

Asphalt Plant Drum Dryer with Wet Scrubber

Maximum Process Rate: 200 tons/hr
Process Airflow Rate: 24500 dscf/min (Maximum Process Airflow Rate)
Hours of operation: 8760 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.10 gr/dscf (RACT Determination)
Calculations: 0.10 gr/dscf * 24500 dscf/min * 1/7000 lbs/gr * 60 min/hr = 21.00 lbs/hr
21.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 91.98 tons/yr
21.00 lbs/hr * 24.0 hr/day = 504.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.10 gr/dscf (Assume 100% of TSP is PM-10)
Calculations: 0.10 gr/dscf * 24500 dscf/min * 1/7000 lbs/gr * 60 min/hr = 21.00 lbs/hr
21.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 91.98 tons/yr
21.00 lbs/hr * 24.0 hr/day = 504.00 lbs/day

NOx Emissions:

Emission Factor: 0.036 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.036 lbs/ton * 200 tons/hr = 7.20 lbs/hr
7.20 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 31.54 tons/yr
7.20 lbs/hr * 24.0 hr/day = 172.80 lbs/day

VOC Emissions:

Emission Factor: 0.028 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.028 lbs/ton * 200 tons/hr = 5.60 lbs/hr
5.60 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 24.53 tons/yr
5.60 lbs/hr * 24.0 hr/day = 134.40 lbs/day

CO Emissions:

Emission Factor: 0.038 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.038 lbs/ton * 200 tons/hr = 7.60 lbs/hr
7.60 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 33.29 tons/yr
7.60 lbs/hr * 24.0 hr/day = 182.40 lbs/day

SOx Emissions:

Emission Factor: 0.073 lbs/ton (AFSSC 3-05-002-01, page 116)
Calculations: 0.073 lbs/ton * 200 tons/hr = 14.60 lbs/hr
14.60 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 63.95 tons/yr
14.60 lbs/hr * 24.0 hr/day = 350.40 lbs/day

Elevator, Screens, Bins, and Mixer

Process Rate: 200 tons/hr (Maximum Design)
Hours of operation: 8760 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.2 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.20 lbs/ton * 200 tons/hr = 40.00 lbs/hr
40.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 175.20 tons/yr
40.00 lbs/hr * 24.0 hr/day = 960.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.03 lbs/ton (AFSSC 3-05-002-02, page 116)
Calculations: 0.03 lbs/ton * 200 tons/hr = 6.00 lbs/hr
6.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 26.28 tons/yr
6.00 lbs/hr * 24.0 hr/day = 144.00 lbs/day

Cold Aggregate Handling

Process Rate: 200 tons/hr (Maximum Design)
Hours of operation: 8760 hr/yr 24 hr/day

TSP Emissions:

Emission Factor: 0.10 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.10 lbs/ton * 200 tons/hr = 20.00 lbs/hr
20.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 87.60 tons/yr
20.00 lbs/hr * 24.0 hr/day = 480.00 lbs/day

PM-10 Emissions:

Emission Factor: 0.04 lbs/ton (AFSSC 3-05-002-04, page 116)
Calculations: 0.04 lbs/ton * 200 tons/hr = 8.00 lbs/hr
8.00 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 35.04 tons/yr
8.00 lbs/hr * 24.0 hr/day = 192.00 lbs/day

Haul Roads

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr (Estimated based on maximum production rate)

Control Efficiency is 50% for watering.

TSP Emission factor is determined by the following equation:

```
E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
   Where:
      E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
      k= Particle sizing constant for TSP        1.0
      s= Silt Content in percent                 8.7 %
      S= Average Speed of vehicles in mph        5.0 mph
      W= Average weight of vehicles in Tons      20.5 Tons
      w= Average number of wheels on vehicle     4 wheels
     PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438
```

TSP Emissions:

TSP Emission Factor: 1.78 Lbs/VMT

E(TSP)= (346 VMT/Yr)(1.78 Lbs/VMT)(0.5)
E(TSP)= 308 Lbs/Yr or 0.15 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicle 4 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission factor: 0.64 Lbs/VMT

E(PM10)= (346 VMT/Yr)(0.64 Lbs/VMT)(0.5)
E(PM10)= 111 Lbs/Yr or 0.06 Tons/Yr

Haul Roads (Daily)

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr (Estimated based on maximum production rate)

Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicle 4 wheels
PR= Assumes no precipitation 1.0000

TSP Emissions:

TSP Emission Factor: 2.77 Lbs/VMT

E(TSP)= (346 VMT/Yr)(2.77 Lbs/VMT)(0.5)
E(TSP)= 478 Lbs/Yr
or 0.24 Tons/Yr
1.31 lbs/day

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicle 4 wheels
PR= Assumes no precipitation 1.0000

PM10 Emissions:

PM10 Emission Factor: 1.00 Lbs/VMT

E(PM10)= (344 VMT/Yr)(1.00 Lbs/VMT)(0.5)
E(PM10)= 172 Lbs/Yr or 0.09 Tons/Yr or 0.47 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Pack facility were in some cases nonexistent (no permit required) or several timeshigher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Pack facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that some emission points within the facility contributed significantly to the PM-10 concentrations in the Kalispell nonattainment area. As used in the preceding sentence, the term "significantly" means that the PM-10 emissions from Pack Concrete, when modeled, were greater than 5 micrograms per cubic meter impact for at least one receptor point within the Kalispell nonattainment area, consistent with the federal Clean Air Act, implementing regulations found at 40 CFR Part 51, and pertinent EPA guidance.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Pack facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and application of reasonable control techniques (watering or application of dust suppressant) for haul road dust the department has determined that the Pack facility can operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Pack and Company, Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: This stipulation is for the operation of a stationary 1967 Stansteel #RM 5000 asphalt plant (200 TPH) Serial #654 with a Stansteel Wet Scrubber - Model 260A. This plant produces asphalt for use in construction, repair, and maintenance of roads and highways.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: No EIS is required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Michael Glavin
Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

ORIGINAL

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Pack Concrete, Inc., Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Pack Concrete, Inc. ("Pack Concrete"), hereby stipulate and agree to all the following Paragraphs 1-18 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

(STIPULATION)

amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document. Pack Concrete is located outside of the Kalispell non-attainment area boundary.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition projects, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally approved if certain deficiencies were corrected. A deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicated that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The results of the earlier CMB modeling study were in part dependent upon the level of actual emissions from the various sources in the Kalispell area during the study period. However, and based upon a review of the allowable emissions for those same sources, the department is concerned that the allowable emissions do not correlate well to the actual emissions occurring during the period of CMB analysis.

For example, in the case of Pack Concrete, some emission points are not subject to emissions limitations, and other emission points have emissions limitations that are significantly higher that the actual emissions during the CMB study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell nonattainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the results of this modeling, the PM-10 emissions from Pack Concrete were identified as a significant contributor to ambient levels of PM-10 in the Kalispell nonattainment area. As used in the preceding sentence, the term "significant" means that the PM-10 emissions from Pack Concrete, when modeled, were greater than 5 micrograms per cubic meter impact for at least one receptor point within the Kalispell nonattainment area, consistent with the federal Clean Air Act, implementing regulations found at 40 CFR Part 51, and pertinent EPA guidance. Both parties agree that based upon these modeling results, and notwithstanding the location of Pack Concrete outside of the Kalispell nonattainment area, revised emission limitations for Pack Concrete are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using revised emission rates

for Pack Concrete and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, the department and Pack Concrete agree to the revised emission limitations for Pack Concrete, as set forth in Exhibit B.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Pack Concrete must be enforceable by both the department and EPA. To this end, the parties have negotiated specific limitations and conditions that are to be applicable to Pack Concrete. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Pack Concrete, Inc.") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves the plan, or if future violations of the particulate matter NAAQS or PM-10 standard MAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Department is the state agency that is primarily responsible for the development and implementation of the

State Implementation Plan under the Federal Clean Air Act. Section 75-2-112(2)(c), MCA. Under Sections 75-2-101, *et seq.*, the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state. Such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell non-attainment area to meet the particulate matter NAAQS and the PM-10 NAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Pack Concrete.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to that Act.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in an air quality permit issued to Pack Concrete, supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this

(STIPULATION)
7

Stipulation for the Board to issue an Order imposing the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopting the same as enforceable measures applicable to Pack Concrete.

PACK CONCRETE, INC.	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY [signature] Its PRESIDENT	BY William J. Opitz for Robert J. Robinson, Director
BY [signature] Attorney	BY [signature] Timothy R. Baker, Attorney
DATE 9/14/93	DATE 9/17/93

(STIPULATION)
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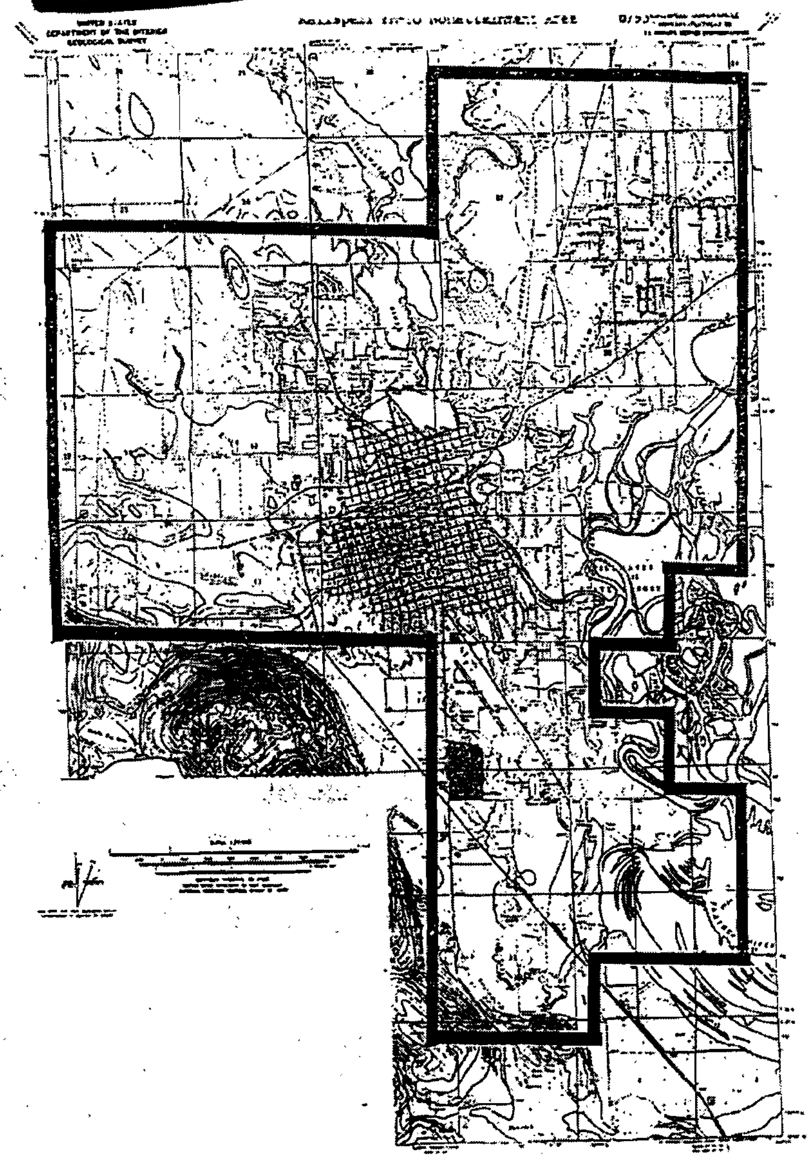

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Pack Concrete, Inc.
2356 Highway 93 North
Kalispell, MT 59901

The above-named company is hereinafter referred to as "Pack Concrete"

SECTION I: Affected Facilities

A. Plant Location: Pack Concrete's batch concrete plant is located at 2355 Highway 93 North, Kalispell, Montana 59901 (SW¼, NW¼, Sec 31, T29N, R21W, Flathead County).

B. Affected Equipment

1. A Johnson Dry Batch stationary concrete batch plant (60 cu.yds/hr). Particulate emissions are to be controlled by three (3) fabric filter vents, one on each of the three cement silos and one fabric filter vent on the batch bin loading area;

2. One stationary conveyor;

3. Three (3) sand/aggregate storage bins;

4. One gravel washing plant.

SECTION II: Limitations and Conditions

A. Emission Control Requirements

1. Pack Concrete shall operate and maintain the fabric filter vents and all other emission control equipment and utilize all techniques specified in this stipulation to provide the maximum air pollution control for which they were designed.

2. Pack Concrete shall treat all unpaved portions of the haul roads and the general plant area with water, chemical dust suppressant and/or acceptable oil or asphalt products as necessary to maintain compliance with the 5% opacity[1] limitation. (RACT) The use by Pack Concrete of any dust suppressants, including any oil or asphalt products, shall be in compliance with all applicable local, state or federal environmental requirements.

3. Pack Concrete shall not operate the gravel washing plant in a dry screening mode.

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[1] Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources or CEMS.

B. Emission Limitations

Pack Concrete shall not cause or authorize to be discharged into the atmosphere;

1. Any vent emission which exhibits greater than 20% opacity[2] averaged over six (6) consecutive minutes. (RACT)

2. Any fugitive emission from any truck loading or unloading which exhibit greater than 10% opacity[2] averaged over six (6) consecutive minutes. (RACT)

3. Any fugitive emissions from any transferring operations which exhibit greater than 10% opacity[2] averaged over six (6) consecutive minutes. (RACT)

4. Any fugitive emissions from the haul roads or plant area which exhibit greater than 5% opacity[2] averaged over six (6) consecutive minutes. (RACT)

C. Emissions Monitoring

1. Pack Concrete shall inspect and keep record of repairs for the fabric filter vents on the cement silo every six (6) months of operation and the fabric filter vent on the batch bin loading area every one (1) month of operation so as to ensure that each such collector is operating at optimum efficiency as recommended by the manufacturer.

2. The records compiled in accordance with this section shall be maintained by Pack Concrete as a permanent business record for at least five (5) years and shall be available at the plant site for inspection by the duly authorized representative of the department.

D. Operational Reporting Requirement:

Pack Concrete will provide the department with a production report by March 1 for the previous calendar year production. The report is to contain the following information:

1. Total amount of concrete produced, in cubic yards;
2. Annual total of sand, in tons;
3. Annual total of cement, in tons;
4. Annual total of aggregate, in tons;
5. Hours of operation;
6. Fugitive dust information consisting of a listing of all plant vehicles including the following for each vehicle type:

[2] Opacity shall be determined according to 40 CFR Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources or CEMs.

a. Total number of vehicles;
b. Vehicle type;
c. Vehicle weight, loaded;
d. Vehicle weight, unloaded;
e. Number of tires on vehicle;
f. Average trip length;
g. Average number of trips annually;
h. Average vehicle speed; and
i. Area of activity.

7. Fugitive dust control for haul roads and general plant area:

   a. Hours of operation of water trucks.
   b. Application schedule for chemical dust suppressant if applicable.

E. The department may require additional emissions testing on sources in the plant per ARM 16.8.704 Testing Requirements.

F. Pack Concrete must maintain a copy of the air quality stipulation at the Kalispell concrete batch plant site and make that copy available for inspection by department personnel upon request.

G. Pack Concrete shall comply with all other applicable state, federal, and local laws and regulations.

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this stipulation.

B. Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

C. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for penalties.

Analysis of Conditions
Pack Concrete

I. Introduction/Process Description

A. Affected Equipment

Pack Concrete operates a Johnson Dry Batch stationary concrete batch plant with three (3) fabric filter vents, one on each of the three cement silos and one fabric filter vent on the batch bin loading area. Pack Concrete's concrete batch plant is located at 2355 Highway 93 North, Kalispell, MT 59901 (SW¼, NW¼, Sec 31, T29N, R21W, Flathead County).

This concrete batching plant produces concrete for use in commercial and residential construction projects in the Kalispell area.

II. Applicable Rules and Regulations

A. ARM 16.8, Subchapter 8, Ambient Air Quality, including but not limited to: ARM 16.8.821 Ambient Air Quality Standards for PM-10. This section states that no person may cause or contribute to concentrations of PM-10 in the ambient air which exceed the set standards.

B. ARM 16.8, Subchapter 9, Prevention of Significant Deterioration - This facility is not a PSD source since this facility is not a listed source and the potential to emit is below 250 tons per year of any pollutant.

C. ARM 16.8, Subchapter 14, Emission Standards, including but not limited to:

1. ARM 16.8.1401 Particulate Matter, Airborne. This section requires reasonable precautions for fugitive emissions sources and Reasonably Available Control Technology (RACT) for existing fugitive sources located in a nonattainment area. The department, in consultation with EPA, has determined that the use of chemical stabilization or paving on major haul roads will satisfy these requirements.

2. ARM 16.8.1403 Particulate Matter, Industrial Process. This section states that no person shall cause, allow, or permit to be discharged into the outdoor atmosphere from any operation, process, or activity, particulate matter in excess of the amount determined by using the following equation:

Allowable Emissions = 55 (123 tons/hr)$^{.11}$ - 40 = 53.38 lbs/hr.

The estimated total particulate emissions from the cement silos are 0.024 lbs/hr, therefore the source is in compliance with this rule.

3. ARM 16.8.1404 Visible Air Contaminants. This section requires an opacity limitation of 20% for all stacks or vents. The requirements of this stipulation supersede this rule because they are more stringent or they are equivalent.

III. RACM/RACT Determination

Under section 189(a)(1)(C) of the amended Clean Air Act of 1990, moderate area State *Implementation Plans (SIP's) must contain "reasonably available control measures"* (RACM) for the control of PM-10 emissions. RACM for stationary sources is the application of reasonably available control technology (RACT). Since the Kalispell area has been designated as a nonattainment for PM-10 by EPA, RACT must be applied to those stationary sources which cause or contribute to the nonattainment area.

A RACT determination is required for:

A. Process Particulate Vent Emissions

Pack Concrete currently controls particulate vent emissions with a fabric filter having an estimated efficiency of 99.35%. High efficiency fabric filters are the highest efficiency particulate control system for a source of this type. Since Pack Concrete is currently using this option, no other options need be considered. The department has determined that the fabric filter control system will constitute RACT in this case. The department has also determined that an opacity of 10% will constitute RACT for all vent emissions with fabric filter control.

B. Material Transfer Fugitive Emissions

RACT for material transfer points for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 10% opacity limitation.

C. Fugitive Road Dust Emissions

RACT for fugitive road dust emissions for sources of this type has been determined by the department to be the use of water or chemical stabilization so as to maintain compliance with a 5% opacity limitation.

IV. Emission Inventory

Concrete Batch Plant

Annual Emission Rates (Potential)

Source	TSP	PM-10	NOX	VOC	CO	SOX
	Tons/Year					
Cement Handling Emissions	0.11	0.05				
Batch Bin Loading of Cement/Sand/Aggregate	0.07	0.04				
Mixer Loading of Cement/Sand/Aggregate	21.55	10.77				
Transfer: Sand/Aggregate to Elevated Bins	21.55	10.77				
Haul Roads	0.15	0.06				
Total	43.43	21.69	0.00	0.00	0.00	0.00

Daily Emission Rates (Potential) *

Source	TSP	PM-10	NOX	Lbs/Day VOC	CO	SOx
Cement Handling Emissions	0.58	0.29				
Batch Bin Loading of Cement/Sand/Aggregate	0.38	0.19				
Mixer Loading of Cement/Sand/Aggregate	118.08	59.04				
Transfer: Sand/Aggregate to Elevated Bins	118.08	59.04				
Haul Roads (Daily)	1.31	0.47				
Total: (lbs/day)	236.43	119.03	0.00	0.00	0.00	0.00

* Based on a 24 hour day.

Cement Handling Emissions

Process Rate: 15.5 tons/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.24 lbs/ton (AFSSCC 3-05-011-07, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.24 lbs/ton * 15.5 tons/hr = 3.72 lbs/hr
3.72 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 16.29 tons/yr
16.29 tons/yr * (1.00 - 0.9935) = 0.11 tons/yr

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AFSSCC 3-05-011-07, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.12 lbs/ton * 15.5 tons/hr = 1.86 lbs/hr
1.86 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 8.15 tons/yr
8.15 tons/yr * (1.00 - 0.9935) = 0.05 tons/yr

Batch Bin Loading of Cement/Sand/Aggregate

Process Rate: 60 cu.yds/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-08, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.02 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 2.46 lbs/hr
2.46 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 10.77 tons/yr
10.77 tons/yr * (1.00 - 0.9935) = 0.07 tons/yr

PM-10 Emissions:

Emission Factor: 0.01 lbs/ton (AFSSCC 3-05-011-08, page 122)
Control Efficiency: 99.35% (Fabric Filter)
Calculations: 0.010 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 1.23 lbs/hr
1.23 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 5.39 tons/yr
5.39 tons/yr * (1.00 - 0.9935) = 0.04 tons/yr

Mixer Loading of Cement/Sand/Aggregate

Process Rate: 60 cu.yds/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.04 lbs/ton (AFSSCC 3-05-011-09, page 122)
Control Efficiency: 0%
Calculations: 0.04 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 4.92 lbs/hr
4.92 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 21.55 tons/yr
21.55 tons/yr * (1.00 - 0.000) = 21.55 tons/yr

PM-10 Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-07, page 122)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 2.46 lbs/hr
2.46 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 10.77 tons/yr
10.77 tons/yr * (1.00 - 0.000) = 10.77 tons/yr

Transfer: Sand/Aggregate to Elevated Bins

Process Rate: 60 cu.yds/hr (Maximum Design)
Hours of operation: 8760 hr/yr

TSP Emissions:

Emission Factor: 0.04 lbs/ton (AFSSCC 3-05-011-06, page 122)
Control Efficiency: 0%
Calculations: 0.04 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 4.92 lbs/hr
4.92 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 21.55 tons/yr
21.55 tons/yr * (1.00 - 0.000) = 21.55 tons/yr

PM-10 Emissions:

Emission Factor: 0.02 lbs/ton (AFSSCC 3-05-011-06, page 122)
Control Efficiency: 0%
Calculations: 0.02 lbs/ton * 60 cu.yds/hr * 2.05 tons/cu.yd = 2.46 lbs/hr
2.46 lbs/hr * 8760 hr/yr * 0.0005 tons/lb = 10.77 tons/yr
10.77 tons/yr * (1.00 - 0.000) = 10.77 tons/yr

Haul Roads

Operating Hours: 8760 Hours/Yr
Vehicle Miles Traveled: 346 VMT/Yr (Estimated based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for TSP 1.0
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicles 4 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

TSP Emissions:

TSP Emission factor: 1.78 Lbs/VMT

E(TSP)= (346 VMT/Yr)(1.78 Lbs/VMT)(0.5)
E(TSP)= 308 Lbs/Yr or 0.15 Tons/Yr

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:
E= PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)
k= Particle sizing constant for PM10 0.36
s= Silt Content in percent 8.7 %
S= Average Speed of vehicles in mph 5.0 mph
W= Average weight of vehicles in Tons 20.8 Tons
w= Average number of wheels on vehicles 4 wheels
PR= Precipitation Ratio based on the following:
130 Days with more than .01" of Precipitation
PR= (365 days - 130 days)/365 Days = 0.6438

PM10 Emissions:

PM10 Emission Factor: 0.64 Lbs/VMT

E(PM10)= (346 VMT/Yr)(0.64 Lbs/VMT)(0.5)
E(PM10)= 111 Lbs/Yr or 0.06 Tons/Yr

Haul Roads (Daily)

Operating Hours: 24 hours/day
Vehicle Miles Traveled: 346 VMT/Yr (Estimated based on Maximum Production Rate)
Control Efficiency is 50% for watering.

TSP Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E=	TSP Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k=	Particle sizing constant for TSP	1.0
s=	Silt Content in percent	8.7 %
S=	Average Speed of vehicles in mph	5.0 mph
W=	Average weight of vehicles in Tons	20.8 Tons
w=	Average number of wheels on vehicles	4 wheels
PR=	Assumes no precipitation	1.0000

TSP Emissions:

TSP Emission Factor: 2.77 Lbs/VMT

E(TSP)= (346 VMT/Yr)(2.77 Lbs/VMT)(0.5)
E(TSP)= 478 Lbs/Yr or 1.31 lbs/day

PM10 Emission Factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)**0.7*(w/4)**0.5*PR
Where:

E=	PM10 Emission Factor in Lbs/Vehicle Mile Traveled (VMT)	
k=	Particle sizing constant for PM10	0.36
s=	Silt Content in percent	8.7 %
S=	Average Speed of vehicles in mph	5.0 mph
W=	Average weight of vehicles in Tons	20.8 Tons
w=	Average number of wheels on vehicles	4 wheels
PR=	Assumes no precipitation	1.0000

PM10 Emissions:

PM10 Emission Factor: 1.00 Lbs/VMT

E(PM10) = (346 VMT/Yr)(1.00 Lbs/VMT)(0.5)
E(PM10) = 172 Lbs/Yr or 0.47 lbs/day

V. Existing Air Quality and Impacts

On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition, since technical studies determined these sources to be the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA is now requiring the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

After an analysis, the department determined that emission limitations applicable to the Pack Concrete facility were in some cases nonexistent (no permit required) or several times higher than actual emissions (ARM 16.8.1403). Dispersion modelling conducted using emissions from the Pack Concrete facility at its potential to emit (emissions associated with maximum design capacity or as limited by ARM 16.8.1403) indicated that some emission points within the facility were significantly contributing to the PM-10 concentrations in the Kalispell nonattainment area. As used in the preceding sentence, the term "significantly" means that the PM-10 emissions from Pack Concrete, when modeled, were greater than 5 micrograms per cubic meter impact for at least one receptor point within the Kalispell nonattainment area, consistent with the federal Clean Air Act, implementing regulations found at 40 CFR Part 51, and pertinent EPA guidance.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for the Pack Concrete facility. The new emission limitations in this document, in conjunction with similar limitations on other Kalispell area facilities, demonstrates through dispersion modeling that compliance with the NAAQS for PM-10 will be attained. These reductions in allowable emissions will be enforced through a signed stipulation.

With the proper utilization of existing control equipment and reasonable control techniques (watering or application of dust suppressant) for haul road dust the Pack Concrete facility should be able to operate at maximum design rates and remain in compliance with the stipulated emission limitations.

Kalispell and Evergreen Nonattainment Boundaries

The area is bounded by lines from UTM Coordinate 700000mE, 5347000mN, east to 704000mE, 5346000mN, south to 704000mE, 5341000mN, west to 703000mE, 5341000mN, south to 703000mE, 5340000mN, west to 702000mE, 5340000mN, south to 702000mE, 5339000mN, east to 703000mE, 5339000N, south to 703000mE, 5338000mN, east to 704000mE, 5338000mN, south to 704000mE, 5336000mN, west to 702000mE, 5336000mN, west to 702000mE, 5336000mN, south to 702000mE, 5335000mN, west to 700000mE, 5335000mN, north to 700000mE, 5340000mN, west to 695000mE, 5340000mN, north to 695000mE, 5345000mN, east to 700000mE, 5345000mN, north to 700000mE, 5347000mN.

VI. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Pack Concrete Inc., Air Quality Stipulation for Kalispell SIP.

Description of Project: Concrete batching plant with a maximum design rate of 60 cubic yards per hour. This concrete batching plant produces concrete for use in commercial and residential construction projects in the Kalispell area.

Benefits and Purpose of Proposal: On July 1, 1987 the Environmental Protection Agency (EPA) promulgated new National Ambient Air Quality Standards (NAAQS) for particulate matter with an aerodynamic diameter of 10 microns or less (PM-10). Due to exceedances of the national standards for PM-10, the city of Kalispell and the nearby Evergreen area have been designated by EPA as nonattainment for PM-10. As a result of this designation, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The stipulation identifies the emission sources and makes enforceable emission limitations and the operation of control equipment and techniques which when considered with similar limitations on other Kalispell area sources will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives are available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of enforceable conditions and an analysis of conditions are contained in a signed stipulation.

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from this plant will not change. This action makes the control equipment and control techniques at the plant enforceable and assures that the emissions from this facility when considered with similar emission limitations at other sources will attain the PM-10 NAAQS.

Other groups or agencies contacted or which may have overlapping jurisdiction: None

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau

EA prepared by: Michael Glavin

Date: July 22, 1993

Potential Impact on Physical Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy				X		
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue				X		
4	Agricultural or Industrial Production				X		
5	Human Health				X		
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment				X		
8	Distribution of Population				X		
9	Demands for Government Services				X		
10	Industrial and Commercial Activity				X		
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts				X		

8 Final Stipulation: 9/17/93

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Plum Creek Manufacturing, L.P., Kalispell, Montana, with 40 CFR 50.6, National Ambient Air Quality Standard for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10)	STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Plum Creek Manufacturing, L.P., ("Plum Creek"), hereby stipulate and agree to all the following Paragraphs 1-19 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. <u>BACKGROUND</u>:

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers) ("particulate matter NAAQS"). The annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration), were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, <u>et seq</u>., as

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amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the state. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean), and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 ("PM-10 MAAQS").

5. On August 7, 1987, the Kalispell area was designated as a Group I area by EPA. 52 Fed. Reg. 29383. Pursuant to the Federal Clean Air Act all Group I areas, including Kalispell, are designated by operation of law to be in nonattainment for the particulate matter NAAQS. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Kalispell area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as "moderate", the state was required to submit to EPA an implementa-

tion plan no later than one year from enactment of November 15, 1990 amendments to the Act. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Kalispell nonattainment area") generally includes the City of Kalispell and that portion of Flathead County within the vicinity of the boundaries of the City of Kalispell. A map of the Kalispell nonattainment area is attached to the Stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Kalispell nonattainment area of the 24-hour standard contained in both the particulate matter NAAQS and the PM-10 NAAQS.

7. On November 25, 1991, Governor Stephens submitted to EPA an implementation plan for Kalispell, Montana, demonstrating attainment of the particulate matter NAAQS. The implementation plan relied upon the receptor modeling technique known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dusts emissions from roads, parking lots, construction and demolition projects, and barren ground.

8. On April 29, 1992, EPA notified Governor Stephens that the Kalispell implementation plan could be conditionally

approved if certain deficiencies were corrected. A deficiency identified by EPA was that the emission limitations set for industrial sources (or in some cases for industrial sources where there was no emission limitation set at all) could result in significant emission increases above the emission levels occurring during the source apportionment modeling study (CMB). Furthermore, such potential emissions increases were not accounted for in the particulate matter NAAQS demonstration of attainment.

9. On June 15, 1992, Governor Stephens submitted a letter to EPA committing to additional analysis utilizing dispersion modeling technique on the Kalispell area industrial sources. If the dispersion modeling indicated that a source significantly impacted the nonattainment area, the Governor further committed to developing new emission limitations on the Kalispell area industrial sources which would demonstrate attainment of the particulate matter NAAQS.

10. The results of the earlier CMB modeling study were in part dependent upon the level of actual emissions from the various sources in the Kalispell area during the study period. However, and based upon a review of the allowable emissions for those same sources, the department is concerned that the allowable emissions do not correlate well to the actual emissions occurring during the period of CMB analysis. For example, in the case of Plum Creek, some emission points are not subject to emissions limitations, and other emission

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points have emissions limitations that are significantly higher that the actual emissions during the CMB study.

11. Dispersion modeling analysis has been conducted by the department for the Kalispell nonattainment area. The dispersion modeling incorporates the allowable emission rates from the sources of PM-10 emissions in the Kalispell non-attainment area to determine the extent of their respective contributions to the ambient levels of PM-10. Based upon the results of this modeling, the PM-10 emissions from Plum Creek were identified as a significant contributor to ambient lev-els of PM-10 in the Kalispell nonattainment area. The de-partment believes that based upon these modeling results, revised emission limitations for Plum Creek are necessary to demonstrate compliance with the particulate matter NAAQS. The department has performed additional modeling using re-vised emission rates for Plum Creek and other sources in the Kalispell area to determine the level of emissions which achieves the particulate matter NAAQS. Based upon these modeling results, the department and Plum Creek agree to the revised emission limitations for Plum Creek, as set forth in Exhibit B.

B. <u>BINDING EFFECT</u>

12. The parties to this Stipulation agree that any such emission limitations placed on Plum Creek must be enforceable by both the department and EPA. To this end, the parties

have negotiated specific limitations and conditions that are to be applicable to Plum Creek. The specific conditions which comprise these limitations are contained in Exhibit B to this Stipulation (entitled "Emission Limitations and Conditions, Plum Creek, Inc.") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

13. Both parties understand and agree that if EPA finds the Kalispell implementation plan incomplete or disapproves the plan, or if future violations of the particulate matter NAAQS or PM-10 standard NAAQS occur, this Stipulation may be renegotiated and made enforceable through an associated Board Order or simply superseded by a subsequent order of the Board upon notice of hearing.

14. The Department is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Section 75-2-112(2)(c), MCA. Under Sections 75-2-101, MCA, *et seq.*, the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state. Such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

15. The parties to this Stipulation agree that upon

finding the limitations and conditions contained in Exhibit B to this Stipulation to be necessary for the Kalispell non-attainment area to meet the particulate matter NAAQS and the PM-10 MAAQS, the Board has jurisdiction to require the imposition of such limitations and conditions, and may adopt the same as enforceable measures applicable to Plum Creek.

16. The conditions and limitations contained in Exhibit B to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to that Act.

17. Any obligations in this Stipulation and attached Exhibit B that are more stringent than conditions set forth in an air quality permit issued to Plum Creek, supersede the less stringent permit conditions.

18. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this Stipulation for the Board to issue an Order imposing the terms in this Stipulation and the limitations and conditions contained in Exhibit B of this Stipulation, and adopting the same as enforceable measures applicable to Plum Creek.

PLUM CREEK MANUFACTURING, L.P.	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY Charles P. Grenier	BY William [illegible]
Its:	for Robert J. Robinson Director

(STIPULATION)
7

BY ______________________
Attorney

DATE 9/15/93

BY ______________________
Timothy R. Baker
Attorney

DATE 9/17/93

(STIPULATION)
8

EXHIBIT B
EMISSION LIMITATIONS AND CONDITIONS

Plum Creek Manufacturing, LP
Evergreen Facility
P.O. Box 5257
Kalispell, MT 59903

The above named company is hereinafter referred to as "Plum Creek."

Section I: Affected Facility

Plum Creek's Evergreen plywood plant located approximately 3 miles northeast of Kalispell, Montana near the Evergreen subdivision in SW¼, Section 33, Township 29 North, Range 21 West, Flathead County.

Section II: Limitations and Conditions

A. Conditions

1. Plum Creek shall comply with all requirements contained in this stipulation and all requirements contained in air quality permits issued by the department unless otherwise noted.

2. Plum Creek shall comply with the emission limitations contained in Table 1. The emission limitations in Table 1 supersede the related emission limitations in the air quality permit issued by the department.

Table 1

Source	Particulate Matter lbs/hr	PM-10 lbs/hr	Part. Matter Ton/yr	PM-10 Tons/yr
Hog Fuel Boiler	16.1	16.1	70.52	70.52
Two Veneer Dryers	32.8	24.1	143.66	105.56
Sawmill Chip Bin Cyclone	2.58	1.29	11.30	5.65
Planer Shavings Bin Cyclones	16.40	8.20	71.83	35.92
Fines Cyclone	1.34	0.67	5.87	2.93
Sanderdust Silo Baghouse	0.32	0.32	1.40	1.40
Sander Cyclone Baghouse	6.17	6.17	27.02	27.02
Sawline Baghouse	0.89	0.89	3.90	3.90
Dry Fuel Baghouse	0.86	0.86	3.77	3.77

3. Plum Creek shall not cause or authorize emissions to be discharged into the atmosphere from any access roads, parking lots, and log decks of the general plant property any visible fugitive emissions that exhibit opacity[1] of five percent (5%) or greater averaged over six (6) consecutive minutes.

4. Plum Creek shall treat all unpaved portions of the haul roads, access roads, parking lots, and the general plant area with chemical dust suppressant as necessary to maintain compliance with the 5% opacity[1] limitation.

5. Plum Creek shall treat all log decks with water as necessary to maintain compliance with the 5% opacity[1] limitation.

6. Plum Creek shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source an opacity[1] of twenty percent (20%) or greater averaged over six (6) consecutive minutes.

7. Plum Creek shall operate the following control measures:

a.	Hog Fuel Boiler	ESP
b.	Two Veneer Dryers	ESP
c.	Sawmill Log Debarking	Water Sprays
d.	Plywood Log Debarking	Water Sprays
e.	Sawmill Chip Bin	Cyclone
f.	Planer Shavings Bin	Baghouse
g.	Plywood Fines	Cyclone
h.	Sanderdust Silo	Baghouse
i.	Sander Cyclone	Baghouse
j.	Sawline	Baghouse
k.	Dry Fuel	Baghouse
l.	Planner Shavings Truck Loadout	Partial Enclosure

8. Plum Creek shall not debark more than 734,400 tons of logs per year.

B. Testing

1. Plum Creek shall test the Sander Cyclone Baghouse and demonstrate compliance with the PM-10 emission limitation contained in Section II.A.2 by November 30, 1994.

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[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9 Visual Determination of Opacity of Emissions from Stationary Sources.

2. Plum Creek shall test the Planer Shavings Bin Cyclone Baghouse and demonstrate compliance with the PM-10 emission limitation contained in Section II.A.2 by November 30, 1994.

3. Plum Creek shall test the Plywood Veneer Dryer emissions and demonstrate compliance with the PM-10 emission limitation contained in Section 11.A.2 by 1995.

4. Plum Creek shall perform an analysis on the hog fuel, fines, planner shavings, and chips in accordance with the silt analysis procedures found in AP-42 Appendix C, D, and E. This analysis shall be completed and submitted to the department by March 1, 1994.

5. Testing required in Section II.B.1 and II.B.2 shall be conducted in accordance with 40 CFR Part 51 and the Montana Source Testing Protocol.

6. Testing required in Section II.B.3 shall be conducted in accordance with 40 CFR Part 51, Appendix M including backhalf, for PM-10 or 40 CFR Part 60, Appendix A including back-half, for total particulate used as a surrogate for PM-10. The test methods shall also conform to the Montana Compliance Source Testing Protocol. The dryer load shall be at 90% capacity during the test time.

C. Permitting

1. Plum Creek shall obtain a permit from the Department of Health and Environmental Sciences limiting the emissions from the Log Yard Residue Reclaim System to 3.19 tons/year of PM-10 and 26 lbs/day of PM-10 before operating the system.

2. Plum Creek shall obtain a permit to construct and operate the new Sander Baghouse and begin operation of the new Sander Baghouse prior to November 30, 1994.

3. Plum Creek shall submit a request to the department by April 1, 1994 asking the department to modify the air quality permit issued by the department to Plum Creek to include the limitations and conditions contained in this stipulation.

Analysis of Conditions

Plum Creek - Evergreen

I. Purpose of the stipulation

As a result of the designation of the City of Kalispell and the nearby Evergreen area as nonattainment, EPA required the Department of Health and Environmental Sciences and the Flathead City-County Health Department to submit the Kalispell PM-10 State Implementation Plan (SIP) to EPA in November, 1991. The SIP consisted of an emission control plan that controlled fugitive dust emissions from roads, parking lots, construction, and demolition. Technical studies determined those sources were the major contributors of PM-10 emissions.

Receptor modeling (a model which identifies contributors based on actual area and industrial emissions and ambient data) was originally used to demonstrate attainment of the federal PM-10 standards in the SIP. The EPA subsequently required the department to use a dispersion model (a model which incorporates allowable emission rates from facilities) to assure that attainment can still be demonstrated if individual sources are operating at their maximum allowable emission rates.

In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for Plum Creek. Dispersion modeling using the new emission limitations in this document, in conjunction with limitations on other Kalispell area facilities, demonstrates attainment of the NAAQS for PM-10. These reductions and changes in allowable emissions will be enforced through a signed stipulation.

II. Emission Inventory

Source	TSP	PM-10	NOX	VOC	CO	SOX
Hog Fuel Boiler	70.52	70.52	112.18	56.09	160.26	6.01
Two Veneer Dryers	143.66	105.56		12.79		
Sawmill Log Debarking	1.57	0.87				
Plywood Log Debarking	2.10	1.15				
Sawmill Block Sawing	6.30	3.46				
Plywood Block Sawing	8.39	4.62				
Sawmill Chip Bin Cyclone	11.30	5.65				
Planer Shavings Bin Cyclone	71.83	35.92				
Fines Cyclone	5.87	2.93				
Sanderdust Silo Baghouse	1.40	1.40				
Sander Cyclone B.H.	27.02	27.02				
Sawline Baghouse	3.90	3.90				
Dry Fuel B.H.	3.77	3.77				
Hog Fuel Pile & Fuel Bunker	99.85	35.95				
Plywood Chips Truck Loadout	9.54	3.39				
Sawmill/planer Chips Truck Loadout	10.67	3.79				
Fines Truck Loadout	24.19	8.71				
Planner Shavings Truck Loadout	30.00	18.00				
Roads - Fugitives - Yearly	67.39	24.26				
Total Log Yard Emissions	7.32	3.19				
Total Emissions	606.79	366.06	112.18	68.88	160.26	6.01

Hog Fuel Boiler

TSP Emissions

Emission Factor: 16.1 lbs/hr (Permit Limit)
Hours of operation: 8760 hour/year
Calculations: 16.1 lbs/hr * 8760 * 0.0005 tons/lb = 70.52 tons/yr

PM-10 Emissions:

Emission Factor: 16.1 lbs/hr (Permit Limit)
Hours of operation: 8760 hour/year
Calculations: 16.1 lbs/hr * 8760 * 0.0005 tons/lb = 70.52 tons/yr

NOx Emissions:

Emission Factor: 2.8 lbs/ton (AFSEF, SCC 1-02-009-02, page 24)
Control Efficiency: 0.0%
Process Rate: 80128 ton/year (Estimate)
Calculations: 80128 ton/year * 2.8 lbs/ton * 0.0005 tons/lb = 112.18 tons/yr

VOC Emissions:

Emission Factor: 1.4 lbs/ton (AFSEF, SCC 1-02-009-02, page 24)
Control Efficiency: 0.0%
Process Rate: 80128 ton/year (Estimate)
Calculations: 80128 ton/year * 1.4 lbs/ton * 0.0005 tons/lb = [illegible] tons/yr

CO Emissions:

Emission Factor: 4.0 lbs/ton (AFSEF, SCC 1-02-009-02, page 24)
Control Efficiency: 0.0%
Process Rate: 80128 ton/year (Estimate)
Calculations: 80128 ton/year * 4.0 lbs/ton * 0.0005 tons/lb = 160.26 tons/yr

SOx Emissions:

Emission Factor: 0.15 lbs/ton (AFSEF, SCC 1-02-009-02, page 24)
Control Efficiency: 0.0%
Process Rate: 80128 ton/year (Estimate)
Calculations: 80128 ton/year * 0.15 lbs/ton * 0.0005 tons/lb = 6.01 tons/yr

Two Veneer Dryers

TSP Emissions

Emission Factor: 32.8 lbs/hr (Permit limit)
Hours of operation: 8760 hour/year
Calculations: 32.8 lbs/hr * 8760 * 0.0005 tons/lb = 143.66 tons/yr

PM-10 Emissions:

Emission Factor: 24.1 lbs/hr (Stipulation limit)
Hours of operation: 8760 hour/year
Calculations: 24.1 lbs/hr * 8760 * 0.0005 tons/lb = 105.56 tons/yr

VOC Emissions:

Emission Factor: 1.3 lbs/10000 sq ft veneer (AFSEF, SCC 3-07-007-13, [illegible] 143)
Control Efficiency: 0.0%
Process Rate: 196720000 ton/year (Estimate)
Calculations: 196720000 * ton/yr * 1.3 lbs/10000 sq ft veneer * 0.0005 tons/lb = 12.79 tons/yr

Sawmill Log Debarking

Lumber Production: 314,800 tons/yr (Based on Maximum Production Rate)

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSEF, SCC 3-07-008-01, p. 143)
Control Efficiency: 50% (Water Sprays)
Calculations: 314800 tons/yr * 0.02 lbs/ton * (1- 0.50) * 0.0005 tons/lb = 1.57 tons/yr

PM-10 Emissions:

Emission Factor: 0.011 lbs/ton (AFSEF, SCC 3-07-008-01, p. 143)
Control Efficiency: 50% (Water Sprays)
Calculations: 314800 tons/yr * 0.01 lbs/ton * (1- 0.50) * 0.0005 tons/lb = 0.87 tons/yr

Plywood Log Debarking

Lumber Production: 419,600 tons/yr (Based on Maximum Production Rate)

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSEF, SCC 3-07-008-01, p. 143)
Control Efficiency: 50% (Water Sprays)
Calculations: 419600 tons/yr * 0.02 lbs/ton * (1- 0.50) * 0.0005 tons/lb = 2.10 tons/yr

PM-10 Emissions:

Emission Factor: 0.011 lbs/ton (AFSEF, SCC 3-07-008-01, p. 143)
Control Efficiency: 50% (Water Sprays)
Calculations: 419600 tons/yr * 0.01 lbs/ton * (1- 0.50) * 0.0005 tons/lb = 1.15 tons/yr

Sawmill Block Sawing

Lumber Production: 314,800 tons/yr (Based on Maximum Production Rate)

TSP Emissions

Emission Factor: 0.04 lbs/ton (Based on knowledge of the process)
Control Efficiency: 0%
Calculations: 314800 tons/yr * 0.04 lbs/ton * 0.0005 tons/lb = 6.30 tons/yr

PM-10 Emissions:

Emission Factor: 0.022 lbs/ton (Based on knowledge of the process)
Control Efficiency: 0%
Calculations: 314800 tons/yr * 0.022 lbs/ton * 0.0005 tons/lb = 3.46 tons/yr

Plywood Block Sawing

Lumber Production: 419,600 tons/yr (Based on Maximum Production Rate)

TSP Emissions

Emission Factor: 0.04 lbs/ton (Based on knowledge of the process)
Control Efficiency: 0%
Calculations: 419600 tons/yr * 0.04 lbs/ton * 0.0005 tons/lb = 8.39 tons/yr

PM-10 Emissions:

Emission Factor: 0.022 lbs/ton (Based on knowledge of the process)
Control Efficiency: 0%
Calculations: 419600 tons/yr * 0.022 lbs/ton * 0.0005 tons/lb = 4.62 tons/yr

Sawmill Chip Bin Cyclone

Hours of operation: 8760 hrs/yr

TSP Emissions

Emission Factor: 2.58 lbs/hr (based on ratio in AIRS)
Calculations: 8760 hrs/yr * 2.58 lbs/hr * 0.0005 tons/lb = 11.30 tons/yr
2.58 lbs/hr * 8760/92600 MBF/year = 0.24 lbs/MBF

3 Final Stipulation: 9/17/93

PM-10 Emissions:

Emission Factor: 1.29 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 1.29 lbs/hr * 0.0005 tons/lb = 5.65 tons/yr
1.29 lbs/hr * 8760/92600 MBF/year = 0.12 lbs/MBF

Planer Shavings Bin Cyclone

Hours of operation: 8760 hrs/yr

TSP Emissions:

Emission Factor: 16.40 lbs/hr (Based on AP-42 and flowrate)
Calculations: 8760 hrs/yr * 16.40 lbs/hr * 0.0005 tons/lb = 71.83 tons/yr
16.40 lbs/hr * 8760/123400 MBF/year = 1.16 lbs/MBF

PM-10 Emissions:

Emission Factor: 8.20 lbs/hr (Based on AP-42 and flowrate)
Calculations: 8760 hrs/yr * 8.20 lbs/hr * 0.0005 tons/lb = 35.92 tons/yr
8.20 lbs/hr * 8760/123400 MBF/year = 0.58 lbs/MBF

Fines Cyclone

Hours of operation: 8760 hrs/yr

TSP Emissions:

Emission Factor: 1.34 lbs/hr (based on ratio in AIRS)
Calculations: 8760 hrs/yr * 1.34 lbs/hr * 0.0005 tons/lb = 5.87 tons/yr
1.34 lbs/hr * 8760/200x10^6 ft^2/year = 0.00006 lbs/10^6 ft^2

PM-10 Emissions:

Emission Factor: 0.67 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.67 lbs/hr * 0.0005 tons/lb = 2.93 tons/yr
0.67 lbs/hr * 8760/200x10^6 ft^2/year = 0.00003 lbs/10^6 ft^2

Sanderdust Silo Baghouse

Hours of operation: 8760 hrs/yr

TSP Emissions:

Emission Factor: 0.32 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.32 lbs/hr * 0.0005 tons/lb = 1.40 tons/yr
0.32 lbs/hr * 8760/200x10^6 ft^2/year = 0.00001 lbs/10^6 ft^2

PM-10 Emissions:

Emission Factor: 0.32 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.32 lbs/hr * 0.0005 tons/lb = 1.40 tons/yr
0.32 lbs/hr * 8760/200x10^6 ft^2/year = 0.00001 lbs/10^6 ft^2

Sander Cyclone B.H.

Hours of operation: 8760 hrs/yr

TSP Emissions:

Emission Factor: 6.17 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 6.17 lbs/hr * 0.0005 tons/lb = 27.02 tons/yr
6.17 lbs/hr * 8760/200x10^6 ft^2/year = 0.00027 lbs/10^6 ft^2

PM-10 Emissions:

Emission Factor: 6.17 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 6.17 lbs/hr * 0.0005 tons/lb = 27.02 tons/yr
6.17 lbs/hr * 8760/200x10^6 ft^2/year = 0.00027 lbs/10^6 ft^2

Sawline Baghouse

Hours of operation: 8760 hrs/yr

TSP Emissions:

Emission Factor: 0.89 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.89 lbs/hr * 0.0005 tons/lb = 3.90 tons/yr
0.89 lbs/hr * 8760/200x10^6 ft^2/year = 0.00004 lbs/10^6 ft^2

PM-10 Emissions:

Emission Factor: 0.89 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.89 lbs/hr * 0.0005 tons/lb = 3.90 tons/yr
0.89 lbs/hr * 8760/200x10^6 ft^2/year = 0.00004 lbs/10^6 ft^2

Dry Fuel B.H.

Hours of operation: 8760 hrs/yr

TSP Emissions

Emission Factor: 0.86 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.86 lbs/hr * 0.0005 tons/lb = 3.77 tons/yr
0.86 lbs/hr * 8760/200x10^6 ft^2/year = 0.00004 lbs/10^6 ft^2

PM-10 Emissions:

Emission Factor: 0.86 lbs/hr (based on information from company)
Calculations: 8760 hrs/yr * 0.86 lbs/hr * 0.0005 tons/lb = 3.77 tons/yr
0.86 lbs/hr * 8760/200x10^6 ft^2/year = 0.00004 lbs/10^6 ft^2

Hog Fuel Pile & Fuel Bunker

TSP Emissions:

Emission Factor: 1.00 lbs/ton (AFSEF, SCC 3-07-008-03, page 143)
Control Efficiency: 0.0%
Process Rate: 199700 ton/year (Maximum production rate)
Calculations: 199700 ton/year * 1.00 lbs/ton * 0.0005 tons/lb = 99.85 tons/yr

PM-10 Emissions:

Emission Factor: 0.36 lbs/ton (AFSEF, SCC 3-07-008-03, page 143)
Control Efficiency: 0.0%
Process Rate: 199700 ton/year (Maximum production rate)
Calculations: 199700 ton/year * 0.36 lbs/ton * 0.0005 tons/lb = 35.95 tons/yr

Plywood Chips Truck Loadout

Process Rate: 106,000 tons/year

TSP Emissions:

Emission Factor: 0.18 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 106000 tons/year * 0.18 lbs/ton * 0.0005 tons/lb = 9.54 tons/yr

PM-10 Emissions:

Emission Factor: 0.064 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 106000 tons/year * 0.064 lbs/ton * 0.0005 tons/lb = 3.39 tons/yr

Sawmill/planer Chips Truck Loadout

Process Rate: 118,500 tons/year

TSP Emissions:

Emission Factor: 0.18 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 118500 tons/year * 0.18 lbs/ton * 0.0005 tons/lb = 10.67 tons/yr

PM-10 Emissions:

Emission Factor: 0.064 lbs/ton (Estimate based on knowledge of process & size of material)
Calculations: 118500 tons/year * 0.064 lbs/ton * 0.0005 tons/lb = 3.79 tons/yr

Fines Truck Loadout

Process Rate: 48,370 tons/year

TSP Emissions:

Emission Factor: 1.00 lbs/ton (3-07-008-03, AFSSCC page 143)
Calculations: 48370 tons/year * 1.00 lbs/ton * 0.0005 tons/lb = 24.19 tons/yr

PM-10 Emissions:

Emission Factor: 0.36 lbs/ton (3-07-008-03, AFSSCC page 143)
Calculations: 48370 tons/year * 0.36 lbs/ton * 0.0005 tons/lb = 8.71 tons/yr

Planner Shavings Truck Loadout

Production Rate: 30000 tons/year

TSP Emissions:

Emission Factor: 2.00 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 30000 tons/year * 2.00 lbs/ton * 0.0005 tons/lb = 30.00 tons/yr

PM-10 Emissions:

Emission Factor: 1.20 lbs/ton (3-07-030-02, AFSSCC page 144)
Calculations: 30000 tons/year * 1.20 lbs/ton * 0.0005 tons/lb = 18.00 tons/yr

Roads - Fugitive - Yearly

Precipitation ratio based on 130 days with more than .01" of precipitation.

Control Efficiency of 85% for chemical dust suppressant is applied to all unpaved road emissions. Control of 50% for water application used for log yards.

Unpaved road emission factor is determined by the following equation:

E= 5.9*k*(s/12)*(S/30)*(W/3)^0.7*(w/4)^0.5*PR

Where:
E= emission factor in lbs/vehicle mile traveled (VMT)
k= particle sizing constant (1.0/TSP, 0.36/PM-10)
s= assumed to be 10 % silt
S= average speed of vehicles in mph
W= average weight of vehicles in tons
w= average number of wheels on vehicles
PR= (365 - 130)/365 = 0.6438

Tons Per Year (PM-10): = (VMT) (lbs/VMT) (EF) (CE)
= 18900(3.95)(1-.85)/2000
= 5.60 tons per year of PM-10

Haul and Access Roads (85% Control):

Source	S (mph)	W (tons)	w (#)	TSP (lbs/VMT)	PM-10 (lbs/VMT)	VMT (annual)	TSP (TPY)	PM-10 (TPY)
Log Trucks Loaded	8.0	40	18	10.58	3.95	18900	15.56	5.60
Log Trucks Empty	8.0	14	18	5.25	1.90	16240	6.41	2.31
Chip Trucks Loaded	8.0	53	18	13.37	4.81	3402	3.41	1.23
Chip Trucks Empty	8.0	18	18	6.28	2.26	3402	1.60	0.58
Shavings Trucks Loaded	8.0	32	18	9.39	3.38	935.2	0.66	0.24
Shavings Trucks Empty	8.0	18	18	6.28	2.26	935.2	0.44	0.16
Sawdust Trucks Loaded	8.0	38	18	10.59	3.81	751.8	0.60	0.21
Sawdust Trucks Empty	8.0	20	18	6.76	2.43	751.8	0.38	0.14
Fuel Trucks Loaded	8.0	52	18	13.19	4.75	641	0.44	0.16
Fuel Trucks Empty	8.0	20	18	6.76	2.43	392	0.20	0.07
Dump Trucks Loaded	15.0	21	10	9.77	3.52	6412	4.70	1.69
Dump Trucks Empty	15.0	12	10	6.60	2.38	6412	3.18	1.14
Water Trucks Loaded	15.0	24	10	10.73	3.86	1568	1.26	0.45
Water Trucks Empty	15.0	11	10	6.21	2.24	7336	3.42	1.23
Wagners L90 & L100 Loaded	5.0	128	4	7.30	2.63	16204	8.87	3.19
Wagners L90 & L100 Empty	5.0	80	4	5.25	1.89	16204	6.38	2.30
Cat 966 Loaded	5.0	26	4	2.39	0.86	5040	0.90	0.33
Cat 966 Empty	5.0	20	4	1.99	0.72	14980	2.24	0.81
Employee Vehicles	20.0	3	4	2.11	0.76	6902	1.09	0.39
Subtotal:							61.74	22.23

Log Yard (50% Control):

Source	S (mph)	W (tons)	w (#)	TSP (lbs/VMT)	PM-10 (lbs/VMT)	VMT (annual)	TSP (TPY)	PM-10 (TPY)
Wagners L90 & L100 Loaded	5.0	125	4	7.30	2.63	1800	3.29	1.18
Wagners L90 & L100 Loaded	5.0	80	4	5.25	1.89	1800	2.36	0.85
Subtotal:							5.65	2.03

Total Emissions of Haul/Access Roads and Log Decks: 67.39 24.25

Clarks Log Yard Residue Reclaim System

Annual Emission Rates (Allowable) *

Source	TSP	PM-10	NOX	VOC	CO	SOX
	Tons/Year					
Front End Loader Dump to Reclaimer	1.05	0.13				
Reclaimer Material Transfer and Conveying	0.77	0.17				
Primary Classifier	0.77	0.17				
2-5" Material Conveyor Discharge to RMS	0.15	0.03				
Trommel Screen	2.07	1.56				
< 1/4" Fines Stacker Discharge	0.86	0.40				
1/4" to 2" Material Drop to RMS	0.15	0.03				
RMS #1 Discharge	0.15	0.03				
RMS #2 Discharge	0.15	0.03				
1/4" to 5" Fuel Conveyor Discharge	1.03	0.46				
1/4" to 5" Rock Conveyor Discharge	0.34	0.16				
Total Log Yard Emissions	7.52	3.10	0.00	0.00	0.00	0.00

* Based on operating 2940 hours/year.

Daily Emission Rates (Allowable) **

Source	TSP	PM-10	NOX	VOC	CO	SOX
	lbs/day					
Front End Loader Dump to Reclaimer	8.64	1.04				
Reclaimer Material Transfer and Conveying	6.25	1.38				
Primary Classifier	6.25	1.38				
2-5" Material Conveyor Discharge to RMS	1.25	0.23				
Trommel Screen	16.93	12.70				
< 1/4" Fines Stacker Discharge	7.02	3.24				
1/4" to 2" Material Drop to RMS	1.25	0.28				
RMS #1 Discharge	1.25	0.23				
RMS #2 Discharge	1.25	0.28				
1/4" to 5" Fuel Conveyor Discharge	8.42	3.89				
1/4" to 5" Rock Conveyor Discharge	2.81	1.30				
Total Emissions	61.37	25.03	0.00	0.00	0.00	0.00

** Based on operating 12 hours/day.

Front End Loader Dump to Reclaimer

Process Rate: 60 cu.yds/hr
% of Total throughput: 100%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.02 lbs/ton (AFSEF 3-05-025-06, page 129)
Control Efficiency: 0%
Calculations: 0.0200 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.7200 lbs/
0.7200 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 1.06 tons/yr
1.06 tons/yr * (1.00 - 0.000) = 1.06 tons/yr
0.72 lbs/hr * 12 hrs/day * (1.00 - 0.00) = 8.64 lbs/day

PM-10 Emissions:

Emission Factor: 0.0024 lbs/ton (AFSEF 3-05-025-06, page 129)
Control Efficiency: 0%
Calculations: 0.0024 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.0864 lbs/
0.09 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.13 tons/yr
0.13 tons/yr * (1.00 - 0.000) = 0.13 tons/yr
0.09 lbs/hr * 12 hrs/day * (1.00 - 0.00) = 1.04 lbs/day

Reclaimer Material Transfer and Conveying

Process Rate: 60 cu.yds/hr
% of Total throughput: 100%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0290 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 1.0440 lbs
1.0440 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 1.53 tons/yr
1.53 tons/yr * (1.00 - 0.500) = 0.77 tons/yr
1.04 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 6.26 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.23 lbs/
0.23 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.34 tons/yr
0.34 tons/yr * (1.00 - 0.500) = 0.17 tons/yr
0.23 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.38 lbs/day

Primary Classifier

Process Rate: 60 cu.yds/hr
% of Total throughput: 100%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 119)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0290 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 1.0440 lbs
1.0440 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 1.53 tons/yr
1.53 tons/yr * (1.00 - 0.500) = 0.77 tons/yr
1.04 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 6.26 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.23 lbs/
0.23 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.34 tons/yr
0.34 tons/yr * (1.00 - 0.500) = 0.17 tons/yr
0.23 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.38 lbs/day

2-5" Material Conveyor Discharge to RMS

Process Rate: 60 cu.yds/hr
% of Total throughput: 20%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0290 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.2088 lbs
0.2088 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.31 tons/yr
0.31 tons/yr * (1.00 - 0.500) = 0.15 tons/yr
0.21 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.25 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 125)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.05 lbs/
0.05 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.07 tons/yr
0.07 tons/yr * (1.00 - 0.500) = 0.03 tons/yr
0.05 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 0.28 lbs/day

Trommel Screen

Process Rate: 60 cu.yds/hr
% of Total throughput: 70%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.16 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 65% (Fixed Cover and Wet Material)
Calculations: 0.16 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 ton/lb = 4.0320 lbs/h
4.0320 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 5.93 tons/yr
5.93 tons/yr * (1.00 - 0.650) = 2.07 tons/yr
4.03 lbs/hr * 12 hrs/day * (1.00 - 0.65) = 16.93 lbs/day

PM-10 Emissions:

Emission Factor: 0.12 lbs/ton (AP-42, 8.19.1-1)
Control Efficiency: 65% (Fixed Cover and Wet Material)
Calculations: 0.1200 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 3.02 lbs/
3.02 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 4.45 tons/yr
4.45 tons/yr * (1.00 - 0.650) = 1.56 tons/yr
3.02 lbs/hr * 12 hrs/day * (1.00 - 0.65) = 12.70 lbs/day

< 1/4" Fines Stacker Discharge

Process Rate: 60 cu.yds/hr
% of Total throughput: 50%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.13 lbs/ton (AFSEF 3-05-025-05, page 129)
Control Efficiency: 75% (Dust Sock and Wet Material)
Calculations: 0.13 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 2.3400 lbs/
2.3400 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 3.44 tons/yr
3.44 tons/yr * (1.00 - 0.750) = 0.86 tons/yr
2.34 lbs/hr * 12 hrs/day * (1.00 - 0.75) = 7.02 lbs/day

PM-10 Emissions:

Emission Factor: 0.06 lbs/ton (AFSEF 3-05-025-05, page 129)
Control Efficiency: 75% (Dust Sock and Wet Material)
Calculations: 0.0600 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 1.08 lbs/h
1.08 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 1.59 tons/yr
1.59 tons/yr * (1.00 - 0.750) = 0.40 tons/yr
1.08 lbs/hr * 12 hrs/day * (1.00 - 0.75) = 3.24 lbs/day

1/4" to 2" Material Drop to RMS

Process Rate: 60 cu.yds/hr
% of Total throughput: 20%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.03 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.2088 lbs/hr
0.2088 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.31 tons/yr
0.31 tons/yr * (1.00 - 0.500) = 0.15 tons/yr
0.21 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.25 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.05 lbs/hr
0.05 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.07 tons/yr
0.07 tons/yr * (1.00 - 0.500) = 0.03 tons/yr
0.05 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 0.28 lbs/day

RMS #1 Discharge

Process Rate: 60 cu.yds/hr
% of Total throughput: 20%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr   12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.03 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.2088 lbs/hr
0.2088 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.31 tons/yr
0.31 tons/yr * (1.00 - 0.500) = 0.15 tons/yr
0.21 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.25 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.05 lbs/hr
0.05 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.07 tons/yr
0.07 tons/yr * (1.00 - 0.500) = 0.03 tons/yr
0.05 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 0.28 lbs/day

RMS #2 Discharge

Process Rate: 60 cu.yds/hr
% of Total throughput: 20%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr   12 hrs/day

TSP Emissions:

Emission Factor: 0.029 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.03 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.2088 lbs/hr
0.2088 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.31 tons/yr
0.31 tons/yr * (1.00 - 0.500) = 0.15 tons/yr
0.21 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.25 lbs/day

PM-10 Emissions:

Emission Factor: 0.0064 lbs/ton (AFSEF 3-05-025-03, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0064 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.05 lbs/hr
0.05 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.07 tons/yr
0.07 tons/yr * (1.00 - 0.500) = 0.03 tons/yr
0.05 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 0.28 lbs/day

1/4" to 5" Fuel Conveyor Discharge

Process Rate: 60 cu.yds/hr
% of Total throughput: 30%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.13 lbs/ton (AFSSF 3-05-025-06, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.13 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 1.4040 lbs/hr
1.4040 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 2.06 tons/yr
2.06 tons/yr * (1.00 - 0.500) = 1.03 tons/yr
1.40 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 8.42 lbs/day

PM-10 Emissions:

Emission Factor: 0.06 lbs/ton (AFSSF 3-05-025-05, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0600 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.65 lbs/hr
0.65 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.95 tons/yr
0.95 tons/yr * (1.00 - 0.500) = 0.48 tons/yr
0.65 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 3.89 lbs/day

1/4" to 5" Rock Conveyor Discharge

Process Rate: 60 cu.yds/hr
% of Total throughput: 10%
Material Density: 0.6 ton/cu.yd
Hours of operation: 2940 hr/yr 12 hrs/day

TSP Emissions:

Emission Factor: 0.13 lbs/ton (AFSSF 3-05-025-05, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.13 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.4680 lbs/hr
0.4680 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.69 tons/yr
0.69 tons/yr * (1.00 - 0.500) = 0.34 tons/yr
0.47 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 2.81 lbs/day

PM-10 Emissions:

Emission Factor: 0.06 lbs/ton (AFSSF 3-05-025-05, page 129)
Control Efficiency: 50% (Water Sprays or Naturally Wet Material)
Calculations: 0.0600 lbs/ton * 0.60 ton/cu.yd * 60.00 cu.yds/hr * 0.0005 tons/lb = 0.22 lbs/hr
0.22 lbs/hr * 2940 hr/yr * 0.0005 tons/lb = 0.32 tons/yr
0.32 tons/yr * (1.00 - 0.500) = 0.16 tons/yr
0.22 lbs/hr * 12 hrs/day * (1.00 - 0.50) = 1.38 lbs/day

III. Environmental Assessment

An environmental assessment, required by the Montana Environmental Protection Act, was completed for this project. A copy is attached.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Plum Creek Manufacturing, LP - Evergreen Facility, Air Quality Stipulation for Kalispell SIP.

Description of Project: In order to demonstrate compliance (through dispersion modeling) with the PM-10 NAAQS in the Kalispell nonattainment area, it is necessary to reduce or establish new emission limitations for Plum Creek.

Benefits and Purpose of Proposal: This stipulation identifies the emission sources and makes enforceable emission limitations which, when considered with limitations on other Kalispell area sources, will achieve the PM-10 NAAQS.

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternative exist.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A listing of enforceable conditions are contained in the signed stipulation and in permit #2602-01 (or subsequent permits).

Recommendation: An EIS is not required.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA:

If an EIS is not required, explain why the EA is an appropriate level of analysis: The emissions from the plant will not change. this action establishes enforceable emission limitations.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Catherine Quiñones

Date: August 4, 1993

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of Compliance of Stimson Lumber Company, Libby, Montana with 40 CFR 50.6, National Ambient Air Quality Standards for Particulate Matter and ARM 16.8.821, Montana Ambient Air Quality Standard for PM-10

STIPULATION

The Department of Health and Environmental Sciences ("Department") and Stimson Lumber Company ("Stimson") hereby stipulate and agree to all the following paragraphs and exhibits inclusive in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. BACKGROUND

1. On July 1, 1987, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards for particulate matter (measured in the ambient air as PM-10, or particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers). The annual standard for particulate matter (PM-10) of 50 micrograms per cubic meter (annual arithmetic mean), and the 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration) were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, et seq., as amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a standard has been promulgated for particulate matter, the State of Montana is required to submit an implementation plan for particulate matter to EPA.

3. Section 75-2-202, MCA, requires the Board to establish ambient air quality standards for the State. Sections 75-2-111(3) and 75-2-401, MCA, empower the Board to issue orders upon a hearing before the Board concerning compliance with national and state ambient air quality standards.

4. On April 29, 1988, the Board adopted state ambient air quality standards for PM-10, including an annual standard of 50 micrograms per cubic meter (annual arithmetic mean) and a 24-hour standard of 150 micrograms per cubic meter (24-hour average concentration). ARM 16.8.821 (PM-10 MAAQS).

5. Pursuant to the 1990 Federal Clean Air Act Amendments, Libby was designated to nonattainment for PM-10 by operation of law. 42 U.S.C. 7407(d)(4)(B), as amended. Further, the Act designated the Libby area as a "moderate" PM-10 nonattainment area. 42 U.S.C. 7513(a), as amended. For areas designated as moderate, the State was required to submit to EPA an implementation plan no later than one year from enactment of the 1990 amendments. 42 U.S.C. 7513a(a)(2). The area encompassed in the moderate nonattainment designation (hereafter "Libby nonattainment area") generally includes the City of Libby and that portion of Lincoln County within the vicinity of the boundaries of the City of Libby. A map of the Libby nonattainment area is attached to the stipulation as Exhibit A and by this reference is incorporated herein in its entirety as part of this document.

6. Results of air quality sampling and monitoring from 1986 through 1991 have demonstrated violations within the Libby nonattainment area of the 24-hour and annual standards contained in both the PM-10 NAAQS and the PM-10 MAAQS.

7. On November 25, 1991 Governor Stephens submitted to EPA an implementation plan for Libby, Montana demonstrating attainment of the PM-10 NAAQS. The implementation plan relied upon receptor modeling known as chemical mass balance (CMB) to identify the major emission sources contributing to noncompliance. The implementation plan consisted of an emission control plan that controlled fugitive dust emissions from roadways, emissions from residential woodburning, and industrial emissions from then Champion International (the predecessor to Stimson Lumber Company).

8. On October 7, 1992, EPA conditionally approved the Libby implementation plan pending fulfillment of certain commitments, including a contingency plan, in the event of continued PM-10 nonattainment. Governor Racicot submitted the contingency plan on May 24, 1993. EPA subsequently notified the Department of deficiencies in the plan on May 27, 1994.

9. This stipulation is necessary to ensure a contingency plan which will effectively reduce PM-10 emissions in the event of continued PM-10 nonattainment and which will be approvable by EPA. It does so by including additional reductions in emissions from Stimson Lumber Company. The Department and Stimson agree to the additional fugitive dust controls set forth in Exhibit B.

B. <u>BINDING EFFECT</u>

10. The parties to this stipulation agree that additional emission control measures imposed on Stimson must be enforceable by both the Department and EPA. To this end, the controls constituting the Stimson contingency measures have been negotiated between the parties. The specific contingency measures are contained in Exhibit B to this stipulation which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

11. Both parties understand and agree that if the Department and EPA determine that Libby has failed to attain or to maintain the PM-10 standards, and if

Stimson is found to be a significant contributor to such nonattainment, this contingency plan shall go into effect automatically within 60 days after notification and without further rulemaking action.

12. The Department is the state agency that is primarily responsible for the development and implementation of the State Implementation Plan under the Federal Clean Air Act. Section 75-2-112(2)(c), MCA. Under Sections 75-2-101, MCA, et seq., the Board is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the state. Such responsibility includes the adoption of emission standards (Section 75-2-203, MCA) and the issuance of orders (Sections 75-2-111(3), 75-2-401, MCA) to effectuate compliance with national and state ambient air quality standards.

13. The conditions and limitations contained in Exhibit B to this stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to that Act.

14. Any obligations in this stipulation and attached Exhibit B that are more stringent than conditions set forth in an air quality permit issued to Stimson supersede the less stringent permit conditions.

15. Accordingly, the parties to this stipulation agree that it would be consistent with the intent of this stipulation for the Board to issue an Order imposing the contingency plan contained in Exhibit B of this stipulation and adopting the same as enforceable measures applicable to Stimson.

STIMSON LUMBER COMPANY	MONTANA DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
BY Scott R Schmeder Its: VICE PRESIDENT - INLAND OPER.	BY Robert J. Robinson Robert J. Robinson Director
BY [signature] Attorney for Stimson Lumber Co.	BY James M Madden James Madden Attorney
BY	BY

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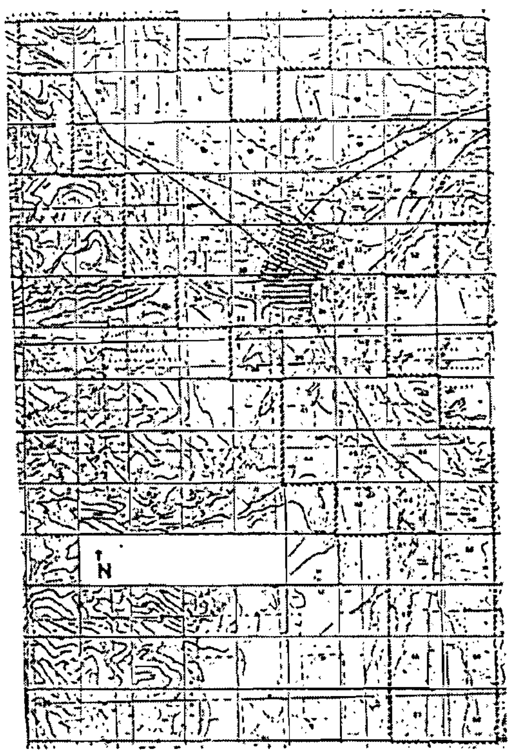
EXHIBIT A

Libby Nonattainment Area



4

EXHIBIT B

Existing Stimson Lumber Company
Fugitive Dust Controls
and
Additional Contingency Measures

Existing Permit Language

1. Chemical dust suppressant shall be applied to the major haul routes throughout the plant to control fugitive dust from haul trucks. The chemical dust suppressant shall be applied as necessary to maintain compliance with the 20% opacity limitation but shall be applied not less than once per calendar year. Opacity determinations shall be made in compliance with the requirements of EPA Method 9 (40 CFR Part 60, Appendix A) and must be determined at one point on the roadway for these sources.

2. Chemical dust suppressant shall be applied to the major roads on the log yard to control fugitive dust from all log handling equipment. The chemical dust suppressant shall be applied as necessary to maintain compliance with the 20% opacity limitation but shall be applied not less than once per calendar year. Water sprays shall be used as necessary to control dust emissions on active areas of the log yard. Opacity determinations shall be made in compliance with the requirements of EPA Method 9 (40 CFR Part 60, Appendix A and must be determined at one point on the roadway for these sources.

Addition of Fugitive Dust Contingency Measures

1. Upon notification by the Department that Libby has failed to attain or to maintain the NAAQS for PM-10 and that the Stimson Lumber Co. has been found to be a significant contributor to nonattainment, the following measures will become effective within 60 days and without further negotiation between the Montana Department of Health and Environmental Sciences and Stimson.

   (A) The facility entrance and Plywood Plant access road shall be surfaced with either asphalt, concrete, or chip seal from Highway 2 to the Plywood Plant. Sweeping and flushing shall be conducted, as necessary, to maintain compliance with a 5% opacity limitation but shall be conducted not less than twice annually, with one application during the months of April-June and one application during the months September-

November.[1],[2]

(B) The chip sealed portions of the Plywood Plant access road shall consist of a double layer of oil base and chips. They shall be watered, as necessary, to maintain compliance with a 5% opacity limitation. They shall also be maintained to avoid deterioration by evaluating the chip seal for cracking at a minimum of every 2 years, and by applying a crack sealer (e.g., rubberized asphalt) as needed. A thorough evaluation and assessment of the need to reseal the roadway shall be conducted no less than every 5 years.

(C) Chemical dust suppressant shall be applied to all remaining active, unpaved areas within the facility. The chemical dust suppressant shall be applied as necessary to maintain compliance with the 5% opacity limitation but shall be applied not less than twice annually, with one application during the months of April-June and one application during the months September-November.

(D) The facility shall maintain a written record of all implemented contingency measures which shall be made available to the Department upon request.

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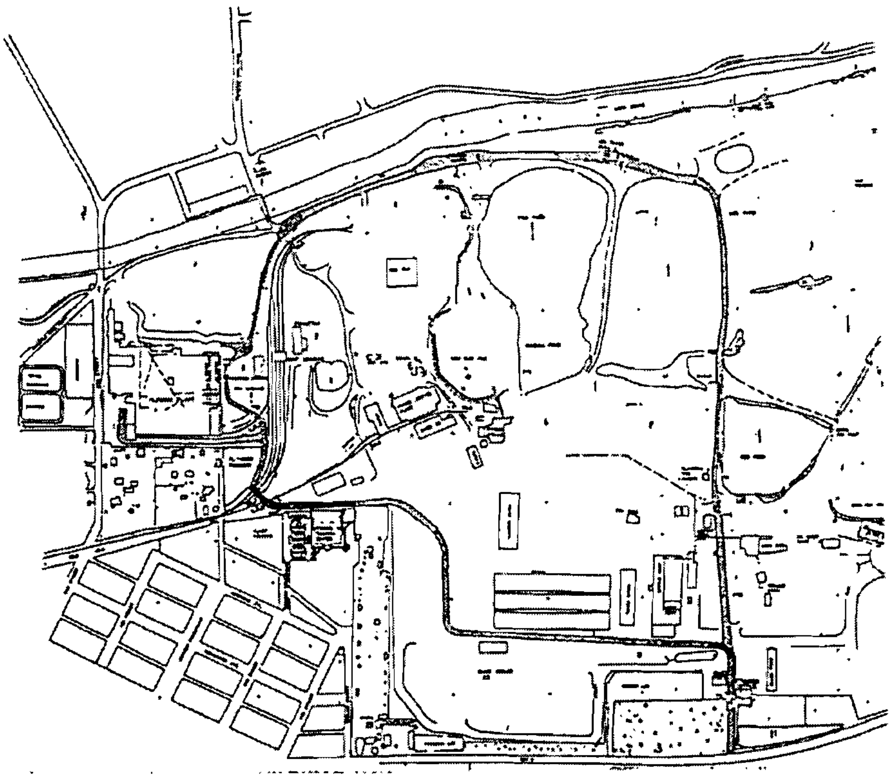
[1] Opacity shall be determined according to 40 CFR, Part 60, Appendix A, Method 9, Visual Determination of Opacity of Emissions from Stationary Sources.

[2] Sweeping and flushing shall not be required on chip sealed portions of the Plywood Plant access road since this practice would degrade the road surface.

EXHIBIT C

Stimson Lumber Company
Facility Map



— CHIP SEAL

7

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.17 JUNE 12, 1998, ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING CENEX HARVEST STATES COOPERATIVES' PETROLEUM REFINERY, LAUREL, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND CENEX HARVEST STATES COOPERATIVES

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for CENEX HARVEST STATES COOPERATIVES (Cenex). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan

(SIP). The Board of Health and Environmental Sciences approved six of the control plans in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for Cenex is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached emission control plan for Cenex, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

<u>CONCLUSIONS OF LAW</u>

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to

participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for Cenex set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: [signature]
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

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56.9.4.1 EXHIBIT A - EMISSION LIMITATIONS AND OTHER CONDITIONS - CENEX HARVEST STATES COOPERATIVES' PETROLEUM REFINERY, LAUREL, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND OTHER CONDITIONS

CENEX HARVEST STATES COOPERATIVES' Petroleum Refinery
Laurel, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

CENEX HARVEST STATES COOPERATIVES ("Cenex"), formerly Cenex, Inc., is located just south of Interstate 90 at Laurel, Montana. The plant is located in Yellowstone County, Township 2 South, Range 24 East, SE¼ Section 16.

(B) Affected Equipment and Facilities:

(1) Main crude heater
(2) FCC Regenerator/CO Boiler
(3) #3 boiler
(4) #4 boiler
(5) #5 boiler
(6) Old SRU tail gas oxidizer
(7) HDS complex SRU
(8) HDS complex fuel gas fired units: H-101 heater, H-201 heater, H-202 heater, SRU reheater E-407, and incinerator INC-401;
(9) Pre-1990 fuel gas fired units: FCC CO boiler, Alkylation unit oil heater, crude preheater, platform heater-4 sections, #1 naphtha unit charge heater, #1 naphtha unit stripper heater, naphtha unit splitter heater, MDU stripper heater, MDU charge heater, PDA asphalt heater, #2 N.U. heater-2, platformer debutanizer heater, #2 crude heater, #2 vacuum heater, #1 vacuum heater, FCC preheater, #9 boiler, saturated gas concentration hot oil heater, asphalt loading heaters (2), tank BP-2 heater, tank 11 heater, and the fuel can heaters (2).
(10) #10 Boiler

(C) Nonaffected Equipment and Facilities:

Any equipment or facilities which have no effect on the nature or quantity of emissions of sulfur-bearing gases including, but not limited to, combustion equipment which is fueled exclusively with natural gas or propane.

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors, Fuel Oil Flow Meters, and Fuel Oil Sulfur Analysis", attached to this Exhibit and incorporated herein by reference.

(3) "Attachment #2" means the "Analytical Methods for Analyzing the Sour Water Stripper Overheads for Hydrogen Sulfide and Precision and Accuracy Methods for the Sour Water Stripper Flow Meter," attached to this Exhibit and incorporated herein by reference.

(4) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(5) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(6) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration, stack gas volumetric flow rate, fuel oil flowmeter, fuel gas flow rate and sour water flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute and each hydrogen sulfide concentration monitor is designed to achieve a temporal sampling resolution of at least one concentration measurement per three minutes. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines SO_2 concentration in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rate, and associated data acquisition equipment;

(b) a continuous fuel gas monitor which determines hydrogen sulfide (H_2S) concentration in the fuel gas in the refinery section, a fuel gas flow rate monitor that determines the combined fuel gas firing rate for the fuel gas combustion units listed in Section 1 (B)(9) and (10), and associated data acquisition equipment; and

a continuous fuel gas monitor which determines H_2S concentration in the fuel gas in the HDS complex, a fuel gas flow rate monitor that determines the combined fuel gas firing rate for the fuel gas combustion units listed in Section 1 (B)(8) and associated data acquisition equipment;

(c) a pair of fuel oil flow meters which in combination measure the combined fuel oil firing rate for fuel oil combustion units, and associated data acquisition equipment; or

(d) a continuous sour water flow rate monitor which determines the sour water flow rate to the "old" sour water stripper tower and associated data acquisition equipment.

(7) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(8) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas flow rate monitor, fuel oil flowmeter, hydrogen sulfide concentration monitor, sour water flow rate monitor, and fuel gas flow rate monitor, shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(9) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of SO_2 emissions from a source (stack, fuel oil system, sour water system, or fuel gas system) determined using Hourly Averages and rounded to the nearest tenth of a pound.

(a) For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(i) If the SO_2 concentration is measured on a wet basis, Cenex shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_{ST} = K * C_H * Q_H$$

Where:

E_{ST} =	Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K =	1.663 X 10^{-7} in (pounds/SCF)/PPM;
C_H =	Hourly Average SO_2 concentration in PPM; and
Q_H =	stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(ii) If the SO_2 concentration is measured on a dry basis, Cenex shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. Cenex shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_{ST} = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:

E_{ST} =	Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K =	1.663 X 10^{-7} in (pounds/SCF)/PPM;
C_H =	Hourly Average SO_2 concentration in PPM (dry basis);
Q_H =	stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and
$\%H_2O$ =	Hourly Average stack gas moisture content, in percent by volume.

(b) For refinery fuel gas systems:

(i) H_2S concentrations are measured on an actual wet basis in PPM;

(ii) the combustion unit fuel gas firing rates shall be measured on an actual wet basis in standard cubic feet per hour (SCFH); and

(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_{FG} = K[(C_{HDS} * Q_{HDS}) + (C_R * Q_R)]$$

Where:

E_{FG} = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.688×10^{-7} in (pounds/SCF)/PPM;
C_{HDS}= Hourly Average fuel gas H_2S concentration in PPM from the H_2S CEM located in the HDS complex
Q_{HDS}= Combined Hourly Average fuel gas firing rate expressed in SCFH from the fuel gas flow rate monitor located downstream and adjacent to the amine unit fuel gas absorber in the HDS complex;
C_R = Hourly Average fuel gas H_2S concentration in PPM from the H_2S CEM located in the refinery section; and
Q_R = Combined Hourly Average fuel gas firing rate expressed in SCFH from the fuel gas flow rate monitor located downstream and adjacent to the Zone A amine unit fuel gas absorber.

(iv) When the H_2S concentration in the fuel gas exceeds the upper range of the Zone A CEMS required by Section 6(B)(3), a Surrogate H_2S Concentration "S_R" shall be determined in accordance with the H_2S sampling and analytical requirements of Section 6(B)(3) and substituted for the CEMS-derived concentration "C_R" in the equation presented in Section 2(9)(b)(iii) above.

The Surrogate H_2S Concentration "S_R" determined in accordance with Section 6(B)(3) shall not be used to satisfy the QDRR requirements.

(c) For fuel oil combustion with mass flow metering the following equation shall be used to calculate the Hourly SO_2 Emission Rate in pounds per hour:

$E_{FO} = 2.0 * M_O * \%S_O/100$

Where:

E_{FO} = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;

M_O = mass of fuel oil consumed per hour in pounds per hour;

$\%S_O$ = percentage of sulfur by weight measured in the fuel oil; and

2.0 = ratio of pounds of SO_2 per pound of sulfur.

(d) For the sour water stripper overheads (SWSOH) contribution to SO_2 emissions from the main crude heater stack or the flare:

(i) the H_2S concentrations shall be determined in accordance with Attachment #2 (or another method approved by the Department and EPA) and expressed in milligrams per liter;

(ii) sour water flow rate shall be expressed in gallons per hour; and

(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$E_{SWS} = K * C_H * Q_H$

Where:

E_{SWS}= Hourly SO_2 Emission Rate from the burning of the sour water stripper overheads in the main crude heater or the flare in pounds per hour rounded to the nearest tenth of a pound;

K = 1.57×10^{-5} in [(pounds-liters)/(gallons-milligrams)];

C_H = H_2S concentration in the sour water in milligrams per liter; and

Q_H = sour water flow rate to the "old" sour water stripper tower in gallons per hour.

(e) The total Hourly SO_2 Emission Rate (E_T) for fuel oil combustion in the combined combustion units (#3, #4, and #5 boiler stacks, main crude heater stack), fuel gas combustion in the fuel gas-fired units [listed in Section 1 (B)(8), (9) and (10)], and for SWSOH burning in the main crude heater is calculated by the following equation: $E_T = E_{FO} + E_{FG} + E_{SWS}$

Where, for a given hour:

E_T = total Hourly SO_2 Emission Rate for the combined sources in pounds per hour and rounded to the nearest tenth of a pound;

E_{FO}= Hourly SO_2 Emission Rate for fuel oil combustion calculated using the equation in Section 2 (A)(9)(c) and rounded to the nearest tenth of a pound;

E_{FG} = combined Hourly SO_2 Emission Rate (E_{FG}) for the fuel gas combustion units listed in Section 1 (B)(8) (9) and (10) calculated using the equation in Section 2 (A)(9)(b) and rounded to the nearest tenth of a pound; and

E_{SWS}= Hourly SO_2 Emission Rate from burning of the sour water stripper overheads in main crude heater calculated using the equation in Section 2(A)(9)(d) in pounds per hour rounded to the nearest tenth of a pound.

(10) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials, and SO_2 emissions are expected from the source or stack, except that:

(a) for the FCC Regenerator/CO Boiler stack, start-up and shutting down shall only include time periods when gas-oil feedstock is being delivered to the FCC;

(b) for the old SRU tail gas oxidizer stack and the HDS Complex SRU stack, start-up and shutting down shall only include time periods when sulfur-bearing gases are being delivered to the associated SRU; and

(c) for the purpose of determining the Quarterly Data Recovery Rate for the sour water flow rate CEMS, Operating shall only include those periods when sour water stripper overheads are burned in the main crude heater or the flare and exhausted up the main crude heater stack or the flare.

(11) "Quarterly Data Recovery Rate" (QDRR) means the percentage of hours in a calendar quarter when CEMS-derived Hourly SO_2 Emission Rate data are available for a source (stack, fuel oil combustion system, sour water system, or fuel gas system) in comparison to the number of corresponding Operating hours for that source.

If Cenex demonstrates, through the CEMS manufacturer's specifications and stack measurements, that stack conditions during certain periods of startup or shutdown in the FCC Regenerator/CO boiler stack are beyond the design capabilities of the CEMS, then such periods shall not be considered Operating hours for determination of the QDRR.

The QDRR for a source shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH}{OH} * 100\%$$

Where:

VH = number of hours of Hourly SO_2 Emission Rate data that are also source Operating hours in a calendar quarter;
OH = total number of source Operating hours in a calendar quarter; and
QDRR = Quarterly Data Recovery Rate.

(12) "Standard Conditions":

(a) means 20.0°C (293.2°K, 527.7°R, or 68.0 °F) and 1 atmosphere pressure (29.92" Hg) for stack gas emission calculations using the equation/method in Section 2(A)(9)(a); and

(b) means 15.6°C (288.7°K, 520.0°R, or 60.3 °F) and 1 atmosphere pressure (29.92" Hg) for refinery fuel gas emission calculations using the equation/method in Section 2(A)(9)(b).

(13) Surrogate H_2S Concentration" means an H_2S concentration expressed in parts per million (PPM) and used for purposes of demonstrating compliance with the SO_2 emission limits in Section 3(A)(1)(d) when the H_2S concentration in the Zone A fuel gas system exceeds the upper range of the CEMS required by Section 6(B)(3). The Surrogate H_2S Concentration shall be determined in accordance with the sampling and analytical requirements of Section 6(B)(3).

(14) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(15) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS AND FACILITY MODIFICATIONS

(A) Emission limitations

(1) Affected Sources:

(a) FCC Regenerator/CO boiler stack;

(i) Three Hour Emissions of SO_2 from the FCC Regenerator/CO boiler stack shall not exceed 2,142.3 pounds per three hour period,

(ii) Daily Emissions of SO_2 from the FCC Regenerator/CO boiler stack shall not exceed 17,138.4 pounds per Calendar Day, and

(iii) Annual Emissions of SO_2 from the FCC Regenerator/CO boiler stack shall not exceed 6,255,516 pounds per calendar year.

(b) Old SRU tail gas oxidizer stack;

(i) Three Hour Emissions of SO_2 from the old SRU tail gas oxidizer stack shall not exceed 2,916.3 pounds per three hour period,

(ii) Daily Emissions of SO_2 from the old SRU tail gas oxidizer stack shall not exceed 23,330.4 pounds per Calendar Day, and

(iii) Annual Emissions of SO_2 from the old SRU tail gas oxidizer stack shall not exceed 8,515,596 pounds per calendar year.

(c) HDS Complex SRU stack;

(i) Three Hour Emissions of SO_2 from the HDS complex SRU stack shall not exceed 42.6 pounds per three hour period,

(ii) Daily Emissions of SO_2 from the HDS complex SRU stack shall not exceed 340.8 pounds per Calendar Day, and

(iii) Annual Emissions of SO_2 from the HDS complex SRU stack shall not exceed 124,392 pounds per calendar year.

(d) Combustion sources (#3, #4, and #5 boiler stacks, and main crude heater stack) and the fuel gas-fired units [listed in Section 1 (B)(8), (9) and (10)];

(i) Combined Three Hour Emissions of SO_2 from the combustion sources (#3, #4, and #5 boiler stacks, and main crude heater stack), the fuel gas fired sources [listed in Section 1 (B)(8), (9) and (10)], and the combustion of sour water stripper overhead gases in the main crude heater shall not exceed 3,014.7 pounds per three hour period,

(ii) Combined Daily Emissions of SO_2 from the combustion sources (#3, #4, and #5 boiler stacks, and main crude heater stack), the fuel gas fired sources [listed in Section 1 (B)(8), (9) and (10)], and the combustion of sour water stripper overhead gases in the main crude heater shall not exceed 24,117.6 pounds per Calendar Day, and

(iii) Combined Annual Emissions of SO_2 from the combustion sources (#3, #4, and #5 boiler stacks, and main crude heater stack), the fuel gas fired sources [listed in Section 1 (B)(8), (9) and (10)], and the combustion of sour water stripper overhead gases in the main crude heater shall not exceed 8,802,924 pounds per calendar year.

(e) Other Minor Sources;

(i) Cenex shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

(ii) Cenex shall use good engineering judgement and appropriate engineering calculations to quantify emissions from activities that are not otherwise addressed by this Stipulation and Exhibit A but are known to contribute to emissions from sources listed in Section 1(B). In addition, Cenex shall account for such emissions in determining compliance with all applicable emission limits contained in Section 3.

(B) Facility Modifications

(1) By November 1, 1997, Cenex shall remove the fuel oil guns from the crude preheater unit, alkylation oil heater, and MDU charge heater and install a blind insert at the fuel oil header to the unit.

(2) Beginning January 1, 1998, Cenex shall burn the sour water stripper overheads from the "old" sour water stripper (SWS) in the FCC CO boiler and exhaust those emissions through the FCC Regenerator/CO boiler stack, except that those sour water stripper overheads may be burned in the main crude heater (and exhausted through the main crude heater stack) ~~or in the flare~~ during periods when the FCC CO boiler is unable to burn the sour water stripper overheads from the "old" SWS, provided that such periods do not exceed 55 days per calendar year and 65 days for any two consecutive calendar years.

(3) By June 1, 1998, Cenex shall install a chain and lock on the valve which supplies sour water stripper overheads from the "old" SWS to the main crude heater or the flare to insure that the valve cannot be opened (sour water stripper overheads to the main crude heater or the flare) unless the chain and lock are removed. When sour water stripper overheads are no longer being burned in the main crude heater or the flare the valve shall once again be chained and locked. Cenex shall log each date and time that the valve is opened and closed.

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations contained in Section 3 (A)(1)(a) through (c) shall be determined using data from the CEMS required by Section 6 (B)(1) and (2) and in accordance with the appropriate equation(s) in Section 2(A)(1), (7), (9), and (14) except when CEMS data is not available as provided in Section 2(A)(14). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Sections 5(A) or 6(C) and (D) shall also be used to demonstrate compliance.

(B) Compliance with the emission limitations contained in Section 3 (A)(1)(d) shall be determined by summing the Hourly SO_2 Emission Rates for fuel oil combustion, fuel gas combustion, and SWSOH burning in the main crude heater and using the result to calculate the corresponding emission rate for each of the averaging periods (for which an emission limit in Section 3(A)(1)(d) applies) in accordance with the equations in Section 2(A)(1), (7), (9), and (14). The Hourly SO_2 Emission Rate for fuel oil combustion shall be determined by using the total hourly mass of fuel oil consumed as measured by the fuel oil flowmeters and fuel oil sulfur content determined in accordance with Section 6(F). The Hourly SO_2 Emission Rate for the fuel gas combustion units shall be determined by using the H_2S concentrations and fuel gas flow rates measured by the CEMs required by Section 6 (B)(3) and (4) and the sampling required by Section 6(B)(3).

The Hourly SO_2 Emission Rate for the burning of SWSOH in the main crude heater shall be determined by using the H_2S concentration in the SWS feed stream determined in accordance with sampling required by Section 4(D) and the sour water flow rate measured by the CEMS required by Section 6(B)(6).

All calculations shall be made in accordance with the appropriate equation(s) in Section 2(A)(1), (7), (9), and (14), except when CEMS data is not available as provided in Section 2(A)(14).

(C) By November 1, 1997, Cenex shall certify for the Department that the facility modifications described in Section 3(B)(1) have been completed and are permanent in nature. Similarly, by July 1, 1998, Cenex shall certify for the Department that the facility modifications described in Section 3(B)(2) and (3) have been completed and are permanent in nature.

(D) Whenever sour water stripper overheads are being burned in the main crude heater (and exhausted through the main crude heater stack) ~~or in the flare~~, compliance with the emission limitations contained in Section 3(A)(1)(d) shall be determined using flow rate monitoring data from the CEMS required by Section 6(B)(6) and from sampling and analysis of the sour water feed to the "old" sour water stripper tower. Except for the first two hours after sour water stripper overheads are directed to the main crude heater ~~or the flare~~, Cenex shall collect at least one sample from the sour water feed to the "old" sour water stripper tower for each of the eight nonoverlapping three hour periods in a Calendar Day. In addition, the time elapsed before collection of the first sample shall not exceed four hours. Cenex shall analyze the sample for H_2S in accordance with the procedures contained in Attachment #2 (or another method approved by the Department and EPA) and Cenex shall use the results to calculate the Hourly SO_2 Emission Rate for each of the hours in the three hour period in accordance with the equations in Section 2(A)(9). Such emission rate shall be counted against the emission limitations contained in Section 3 (A)(1)(d).

(E) Compliance with the facility modifications contained in Section 3(B) shall be determined through inspection by the Department.

(F) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6(A)(2) shall be determined in accordance with Section 2 (A)(11), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether Cenex has violated the minimum Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, Cenex shall implement short-term

corrective measures and if necessary, long term corrective measures to accomplish, as expeditiously as practicable either:

(a) correction of the failure; or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rates in pounds per hour for the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack, Cenex shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6c as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C) and (D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) In order to accurately determine the hydrogen sulfide concentration in parts per million for the HDS complex fuel gas-fired units and the pre-1990 fuel gas-fired units, Cenex shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Method 11) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106).

(C) Cenex shall notify the Department in writing of each annual source test a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING AND FUEL OIL FLOWMETERING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond Cenex's control, and which could not reasonably have been prevented or mitigated by Cenex. Such circumstances may include but are not limited to earthquakes, power outages, or fire, but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, Cenex initiates the short term corrective measures and, as necessary, the long term corrective measures required by Section 4 (F)(3);

(c) within two working days of occurrence, Cenex notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) Cenex demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, Cenex shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, Cenex shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(F)(2):

(i) for the FCC Regenerator/CO boiler stack CEMS, old SRU tail gas oxidizer stack CEMS, and HDS complex SRU stack CEMS, Cenex shall achieve a QDRR for each CEMS of equal to or greater than 90%;

(ii) for the Fuel Oil Combustion Unit (#3, #4 and #5 boilers and main crude heater) CEMS, Cenex shall achieve a QDRR for the Fuel Oil Combustion Unit CEMS of equal to or greater than 94%;

(iii) for the Fuel Gas Combustion Unit CEMS:

(I) if the Three Hour Emissions from the fuel gas combustion units never exceed 300 pounds at any time during a calendar quarter or if the only exceedances are caused by Malfunctions, Cenex shall achieve a QDRR for each pair of H_2S concentration and fuel gas flow rate monitors of equal to or greater than 90%; or

(II) if the Three Hour Emissions from the fuel gas combustion units exceed 300 pounds at any time during a calendar quarter and one or more of the exceedances are not caused by a Malfunction, Cenex shall achieve a QDRR for each pair of H_2S concentration and fuel gas flow rate monitors of equal to or greater than 94%; and

(iv) for the sour water system CEMS (measures sour water flow rate to the "old" sour water stripper tower), Cenex shall achieve a QDRR of equal to or greater than 94%.

(c) In its evaluation of whether Cenex used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS, including a demonstration made by Cenex (using manufacturer's specifications and stack measurements), that stack conditions during certain periods of startup or shutdown in the FCC Regenerator/CO boiler stack are beyond the design capabilities of the CEMS; and whether:

(ii) Cenex has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) Cenex has complied with the quality assurance requirements described in Section 6;

(iv) Cenex has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, Cenex shall implement the short term corrective measures, and, if necessary, the long term corrective measures required by Section 4 (F)(3).

(B) Affected Sources

(1) By July 1, 1997, Cenex shall install, operate, and maintain continuous emission monitors to measure SO_2 from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack.

(2) By July 1, 1997, Cenex shall install, operate, and maintain continuous stack flow rate monitors to measure the stack gas flow rates from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack.

(3) By January 1, 1997, Cenex shall install, operate, and maintain hydrogen sulfide (H_2S) concentration monitors downstream but adjacent to the Zone A amine unit fuel gas absorber for the refinery fuel gas system in the refinery section and downstream but adjacent to the amine unit fuel gas absorber for the refinery fuel gas system in the HDS complex. Within 4 hours of the initial determination that the H_2S concentration in the fuel gas stream has exceeded the upper range of the Zone A CEMS required by this paragraph, Cenex shall initiate sampling of the Zone A fuel gas stream on a once-per-three-hour-period frequency using the Tutwiler method (40 CFR 60.648) or another method approved by the Department and EPA to determine the H_2S concentration.

(4) By January 1, 1997, Cenex shall install, operate, and maintain continuous fuel gas flow rate monitors downstream but adjacent to the Zone A amine unit fuel gas absorber for the refinery fuel gas system in the refinery section and downstream but adjacent to the amine unit fuel gas absorber for the refinery fuel gas system in the HDS complex.

(5) By March 1, 1997, Cenex shall install, operate, and maintain two in-line fuel oil flowmeters on the fuel loop, one immediately before the fuel oil tank in use and one before the first fuel oil loop in use.

(6) Before SWSOH may be burned in the main crude heater or the refinery flare, Cenex shall install, operate and maintain a continuous flow rate monitor to determine the sour water flow rate to the "old" sour water stripper tower.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors and hydrogen sulfide concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specification 2 and 7; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro-optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) Cenex shall notify the Department in writing of each Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department Method A-1 of Attachment #1; and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) Cenex shall notify the Department in writing of each Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(E) Refinery fuel gas flow rate monitor accuracy determinations shall be required at least once every 48 months or more frequently as routine refinery turn-arounds allow. Accuracy determinations for the sour water flow rate monitor shall be conducted every 48 months and within three months prior to any scheduled shutdown of the FCC CO Boiler which coincides with the scheduled operation of the "old" sour water stripper. Accuracy determinations for the sour water flow rate monitor shall be conducted in accordance with Attachment #2 or another method approved by the Department and EPA.

(F) Fuel Oil Flow metering and Analysis Specifications

(1) Cenex shall operate and maintain all fuel oil flowmeters required by this control plan in accordance with Method C-1 of Attachment #1.

(2) Cenex shall conduct daily fuel oil sampling in accordance with Method C-1 of Attachment #1.

(3) Cenex shall analyze all fuel oil samples collected, as required by Section 6 (F)(2), for sulfur content in accordance with Method C-1 of Attachment #1.

(4) Each fuel oil flowmeter required by this control plan shall demonstrate a flowmeter accuracy of 2.0 percent of the upper range value (i.e. maximum calibrated oil flow rate) as measured under laboratory conditions by the manufacturer or by the owner or operator, and pursuant to the calibration procedures as specified by Method C-1 of Attachment #1.

(5) Cenex shall archive a split (at least 200 cc) of each fuel oil sample collected, as required by Section 6 (F)(2), in accordance with Method C-1 of Attachment #1.

SECTION 7. DATA REPORTING

(A) Cenex shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, hourly mass of fuel oil consumed data, daily fuel oil sulfur content, stack temperature, and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media compatible with the Department's existing data management system. The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack;

(b) Hourly Average stack volumetric flow rates in SCFH from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack;

(c) Hourly Average stack gas temperature in degrees Fahrenheit from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, and HDS complex SRU stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, HDS complex SRU stack, and a combined Hourly SO_2 Emission Rate from fuel oil combustion, fuel gas fired units, and burning of sour water stripper overheads in the main crude heater;

(e) Hourly Average refinery section and HDS complex fuel gas system H_2S concentrations in PPM;

(f) Hourly Average refinery section and HDS complex fuel gas systems fuel gas flow rates in SCFH;

(g) total hourly mass of fuel oil consumed in pounds per Clock Hour;

(h) Hourly Average SWS flow rate in gal/hr whenever SWSOH are being burned in the main crude heater or the refinery flare; and

(i) daily calibration data from CEMS required by Section 6(B)(1) through (4).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, Cenex shall also record, organize and archive for at least five years the same data, and upon request by the Department, Cenex shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized Calendar Day CEMS data, Three Hour Emissions, fuel oil flowmeter data, Quarterly Data Recovery Rates and text regarding excess emissions. The quarterly written report shall identify each time period when the sour water stripper overheads were burned in the main crude heater (and exhausted through the main crude heater stack) or in the refinery flare.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emissions of SO_2 in pounds per three hour period from the FCC Regenerator/CO boiler stack; old SRU tail gas oxidizer stack; HDS complex SRU stack; and combined Three Hour Emissions from the fuel gas fired units, fuel oil combustion, and burning of sour water stripper overheads in the main crude heater;

(b) Daily Emissions of SO_2 in pounds per Calendar Day from the FCC Regenerator/CO boiler stack; old SRU tail gas oxidizer stack; HDS complex SRU stack; and combined Daily Emissions from fuel oil combustion, the fuel gas fired units, and burning of sour water stripper overheads in the main crude heater;

(c) daily fuel oil sulfur content in percent sulfur by weight;

(d) the Quarterly Data Recovery Rate for each CEMS required by Section 6 (B)(1) through (6) expressed in percent;

(e) the Operating hours during the calendar quarter for the source or units associated with the FCC Regenerator/CO boiler stack, old SRU tail gas oxidizer stack, HDS complex SRU stack, main crude heater stack (when sour water stripper overheads are being burned in the main crude heater or the refinery flare), and the combined fuel oil and fuel gas combustion units;

(f) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(g) the results of the quarterly CGAs or RAAs and flow rate checks, the annual source tests required by Section 5 (A) and (B), and the annual RATAs required in Section 6(C) and (D);

(h) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances; and

(i) the dates and times that sour water stripper overheads are diverted from the FCC CO Boiler to the main crude heater or the refinery flare, the reasons for the diversions, and corrective actions taken, as appropriate, to avoid future recurrence.

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of operation with excess emissions, the Hourly SO_2 Emission Rates, and Three Hour Emissions;

(b) all information regarding reasons for operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, Cenex shall provide Hourly SO_2 Emissions Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for Cenex while still providing the necessary information. Any revisions shall be made only after consultation with Cenex, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachments shall be construed to alter Cenex's obligations under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, Cenex reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Stipulation, Exhibit A, and Attachments, Cenex shall, pursuant to 75-2-403, MCA, allow the Department representative(s) access to all SO_2 emitting sources at the Cenex facility such that, the Department representative(s) may, pursuant to 75-2-403, MCA, enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain emissions data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all other necessary functions related to this control plan.

As provided in Section 75-2-105, MCA, Cenex may seek a court order declaring certain trade secret information as confidential and not a matter of public record. If Cenex claims that certain information is entitled to trade secret protection, the Department shall maintain such information as confidential pending issuance of a court order under Section 75-2-105, MCA, provided that Cenex initiates such court action within 14 days of delivering the information to the Department.

(B) Enforcement - Any violation of a limitation, condition or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS, FUEL OIL FLOWMETERS, AND FUEL OIL SULFUR ANALYSIS
(Includes Methods A-1, B-1, & C-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by installing straightening vanes. The department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed ±2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error .

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part 60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$CE = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;
R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\bar{d} = \frac{1}{n} \sum_{i=1}^{n} d_i$$

Where:

n=Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i

d_i = The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - [\frac{(\sum_{i=1}^{n} d_i)^2}{n}]}{n-1}} \qquad \text{(Eq. A-3)}$$

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025} \frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

where:

$t_{0.025}$ = t value (see Table 2)

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$\boldsymbol{RA} = \frac{|\bar{d}| + |cc|}{\overline{RM}} x\ 100 \qquad \text{(Eq. A-5)}$$

where:

RM = Arithmetic means of the reference method values.

|-| = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

|cc|= The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
			Confidence coefficient	
			Relative accuracy	

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) Sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;
TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses). The relative accuracy test audit shall be conducted according to the procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations (≤10.0 fps), the flow monitor mean value (if applicable) exceeds ±2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

METHOD C-1
FUEL OIL FLOWMETERING AND ANALYSIS SPECIFICATIONS

1.0 FLOWMETER SPECIFICATIONS

Cenex shall measure and record the fuel oil consumption rate within the fuel oil loop on an hourly basis. Cenex shall measure the flow of fuel oil with in-line fuel oil flowmeters, as required by Section 6 (B)(5) of Exhibit A.

1.1 Initial Calibration and Certification

Design and equip each fuel oil flowmeter used to demonstrate a flowmeter accuracy of 2.0 percent of the upper range value (i.e, maximum calibrated oil flow rate) as measured under laboratory conditions by the manufacturer or by the owner or operator. Use the procedures in the following ASME codes for flow measurement for use in the laboratory, as appropriate to the type of flowmeter: ASME MFC-3M-1989 with September 1990 Errata (Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi), ASME MFC-5M-1985 (Measurement of Liquid Flow in Closed Conduits Using Transit-Time Ultrasonic Flowmeters), ASME MFC-6M-1987 with June 1987 Errata (Measurement of Fluid Flow in Pipes Using Vortex Flow Meters), or ASME MFC-9M-1988 with December 1989 Errata (Measurement of Liquid Flow in Closed Conduits by Weighing Method) for all other flowmeter types. More current ASME or NIST (National Institute of Standards and Technology) procedures or other ASME or NIST procedures which are appropriate to flowmeter construction may, upon Department approval, be substituted. If the flowmeter accuracy exceeds 2 percent of the upper range value, the flowmeter does not qualify for certification.

1.2 Annual Calibration

Recalibrate each fuel oil flowmeter to a flowmeter accuracy of 2.0 percent of the upper range value at least annually, or more frequently if required by manufacturer specifications using the same ASME procedures required for initial calibration and certification.

1.2.1 Alternative Annual Calibration Method

Alternatively, the fuel oil flowmeter may be recalibrated to a flowmeter accuracy of 2.0 percent of the upper range value at least annually by comparing the measured flow of a flowmeter to the measured flow from another flowmeter which has been calibrated or recalibrated during the previous 365 days using the procedures in

ASME MFC-9M-1988 with December 1989 Errata, "Measurement of Liquid Flow in Closed Conduits by Weighing Method", or which has been recalibrated by the manufacturer. Perform the comparison over a period of no more than seven consecutive facility operating days. Compare the average of three fuel oil flow readings for each meter at three different flow levels: (1) a frequently used low operating level selected within the range between the minimum safe and stable operating level and 50% of maximum operating level; (2) a frequently used high operating level selected within the range between 80% of maximum operating level and maximum operating level; and (3) normal operating level. Calculate the flowmeter accuracy using the following equation:

$$ACC = \frac{|R - A|}{URV} \times 100 \qquad \text{(Eq. C-1)}$$

Where:

ACC = Flow meter accuracy as a percentage of the upper range value.
R = Average of the three low-, mid-, or high-level flow measurements of the reference flowmeter.
A = Average of the three measurements of the flowmeter being tested.
URV = Upper range value of fuel flowmeter being tested (i.e. maximum measurable flow).

If the flowmeter accuracy exceeds 2% of the upper range value, either recalibrate the flowmeter until the accuracy is within the performance specification, or replace the flowmeter with another one that is within the performance specification.

2.0 FUEL OIL SAMPLING AND ANALYSIS

Cenex shall perform sampling and analysis of as-fired fuel oil from the fuel oil loop to determine the percentage of sulfur by weight in the fuel oil.

2.1 Sampling Frequency and Methods

Cenex shall perform daily fuel oil sampling using either the flow proportional method described in Section 2.2 or the daily manual method described in Section 2.3.

2.2 Flow Proportional Sampling Method

Cenex shall conduct flow proportional fuel oil sampling or continuous drip fuel oil sampling in accordance with ASTM D4177-82 (Reapproved 1990), "Standard Practice for Automatic Sampling of Petroleum and Petroleum Products", every day the facility is combusting fuel oil within the fuel oil loop. Extract fuel oil at least once every hour and blend into a daily composite sample. The sample compositing period may not exceed 24 hours.

2.3 Daily Manual Sampling Method

Representative as-fired fuel oil samples may be taken manually every 24 hours according to ASTM D4057-88, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products", provided that the highest fuel oil sulfur content recorded at that facility from the most recent 30 daily samples is used for the purposes of calculating SO_2 emissions.

2.4 Sample Archiving

Split and label each daily fuel oil sample. Maintain a portion (at least 200 cc) of each daily sample for not less than 150 calendar days after the submittal to the Department of the quarterly data report for the calendar quarter during which the sample was collected. Analyze fuel oil samples for percent sulfur content by weight in accordance with ASTM D129-91, "Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)," ASTM D1552-90, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)," ASTM D2622-92, "Standard Test Method for Sulfur in Petroleum Products by X-Ray Spectrometry," or ASTM D4294-90, "Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectroscopy".

3.0 VOLUMETRIC FLOW MEASUREMENT

3.1 Fuel Oil Density

Where the flowmeter records volumetric flow rather than mass flow, analyze daily fuel oil samples to determine the density or specific gravity of the fuel oil (not required where the flowmeter records mass flow). Determine the density or specific gravity of the fuel oil sample in accordance with ASTM D941-88, "Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Lipkin Bicapillary Pycnometer," ASTM D1217-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer," ASTM D1481-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary," ASTM D1480-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer," ASTM D1298-85 (Reapproved 1990), "Standard Practice for Density, Relative Density (Specific Gravity) or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method," or ASTM D4052-91, "Standard Test Method for Density and Relative Density of Liquids by Digital Density Meter".

3.2 Calculation Of Mass Flow From Volumetric Flow

Where the flowmeter records volumetric flow rather than mass flow, calculate and record the fuel oil mass for each hourly period using hourly fuel oil flow measurements and the density or specific gravity of the daily oil sample.

Convert density, specific gravity, or API gravity of the fuel oil sample to density of the fuel oil sample at the sampling location's temperature using ASTM D1250-80 (Reapproved 1990), "Standard Guide for Petroleum Measurement Tables".

Where density of the fuel oil is determined by the applicable ASTM procedures from Section 3.1 of Department Method C-1, use the following equation to calculate the mass of fuel oil consumed (in lb/hr).

$$Moil = Voil \times Doil \qquad \text{(Eq. C-2)}$$

Where:

Moil = Mass of oil consumed per hr, lb/hr.
Voil = Volume of oil consumed per hr, measured in scf, gal, barrels, or m^3.
Doil = Density of oil, measured in lb/scf, lb/gal, lb/barrel, or lb/m^3.

When the mass of fuel oil consumed is determined, in accordance with Section 3.0 of Department Method C-1, such data can be used in the equation in Section 2

(A)(12)(c) of Exhibit A to determine SO_2 emissions from fuel oil combustion.

METHOD #6A-1

ANALYTICAL METHOD FOR ANALYZING THE SOUR WATER STRIPPER FEED FOR HYDROGEN SULFIDE (H_2S)
(October 1999)

1.0 SCOPE AND APPLICATION

This method is applicable to the measurement of total and dissolved sulfides in sour water produced by the refinery. Acid insoluble sulfides are not measured by the use of this test. (Copper sulfide is the only common sulfide in this class).

2.0 SUMMARY OF METHOD

Excess iodine is added to a sample which has been treated with zinc acetate to produce zinc sulfide. The iodine oxidizes the sulfide to sulfur under acidic conditions. The excess iodine is back titrated with sodium thiosulfate.

3.0 COMMENTS

Reduced sulfur compounds, such as sulfite, thiosulfate and hydrosulfite, which decompose in acid may yield erratic results. Also, volatile iodine-consuming substances such as merceptens will give high results.

The sample source is hot and under pressure.

The volumes of preservative and the normality of the reagents have been modified from the referenced methods. The modifications are to make the method appropriate for the expected high concentrations of sulfide in the samples. The method calculations are also modified to correct for the sample dilution from the preservative.

4.0 APPARATUS

4.1 Ordinary laboratory glassware.

4.2 130 ml HDPE bottles. These bottles are pre-charged with preservative. For the sour water stripper feed inlet the bottle contains 5 ml of zinc acetate and 10 ml of sodium hydroxide.

5.0 REAGENTS

5.1 Hydrochloric acid, HCl, 6 N

5.2 Standard iodine solution, 0.1000 N: Dissolved 20 to 25 g KI in a little water in a liter volumetric and add 12.8 g iodine. Allow to dissolve. Dilute to 1 liter and standardize against 0.1000 N sodium thiosulfate using a starch indicator.

5.3 Sodium thiosulfate 0.1000N: Dissolve 24.82 g $Na_2S_2O_3 \cdot 5H_2O$ in water. Add 1 ml of chloroform and dilute to 1000 ml.

5.4 Starch indicator: Dissolved 10 g soluble starch and 10 mg Hg_2I in hot water and dilute to 4 liters.

5.5 Standardize the sodium thiosulfate against KIO_3. Adjust the concentration to 0.1000 N. Use this sodium thiosulfate to standardize the iodine solution.

5.6 Zinc acetate solution, 2N: Dissolve 220 g $Zn(C_2H_3O_2)_2 \cdot 2H_2O$ in water and dilute to one liter.

5.7 Sodium hydroxide, 6N: Dissolve 240 grams of sodium hydroxide in 800 ml of water. Dilute to one liter. Caution: much heat will be liberated.

6.0 SAMPLING

6.1 The sample bottles (4.2) are pre-charged with zinc acetate and sodium hydroxide preservative and labeled. The sample bottle sample contains 5 ml of preservative and 10 of sodium hydroxide.

6.2 The sample is obtained by carefully filling the appropriate bottle. Fill the bottle slowly to prevent the sample from splashing the preservative out or overflowing the bottle. The bottle should be completely filled with no headspace air. If necessary, the sides of the bottle can be squeezed while screwing on the lid to exclude the remaining air.

6.3 Experience shows that the pH of these samples, taken and preserved as described, are above 9. No further pH adjustment is required.

7.0 PROCEDURE

7.1 Shake the container to suspend all solids and remove the sample. Measure the volume of sample. This is used to correct the results for the dilution due to the preservative. Check the pH of the sample using pH test paper to confirm that it is 9 or higher.

7.2 Place 20 ml of standard iodine solution (5.2) into a 500 ml iodine titration flask.

7.3 Add 15 ml of 6N HCl (5.1).

7.4 Thoroughly mix the sample and quickly take a 25 ml aliquot and place it in the flask.

7.5 If the iodine color disappears, add more iodine until the color remains. Record the total number of milliliters of standard iodine used steps 7.2 and 7.5.

7.6 Titrate with the reducing solution (0.1 N sodium thiosulfate) to a pale straw color. Add the starch indicator and titrate until the blue color disappears. Record the volume used.

8.0 CALCULATIONS

8.1 Sulfide as H_2S, mg/l = $\frac{(A - B) \times 17.01 \times 1000}{\text{sample aliquot, ml} \times K}$

Where: A = Volume of Iodine, ml * Normality of Iodine

B = Volume of Thiosulfate, ml * Normality of Thiosulfate

K = $\frac{\text{ml of sample} - \text{ml of preservative}}{\text{ml of sample}}$

This is a correction for the preservative volume. The volume of sample is the total volume in the sample container including the preservative. The volume of preservative is the volume added to the container before the sample was obtained.

9.0 REFERENCES

9.1 Standard Methods for the Examination of Water and Wastewater, 19th Edition, p 4-127, Method 4500-S_2 F, (1995)

EPA Method 376.1

METHOD #6B
PRECISION AND ACCURACY METHOD FOR THE SOUR WATER STRIPPER FLOW METER

1.0 SCOPE AND APPLICATION

This method is applicable to any typical orifice type flow meter that is installed consistent with ASME code procedures found under ASME MFC-3M-1989 (Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi). Such a designed and installed flow meter will, if maintained consistent with these procedures, have an accuracy of 2 percent of the upper range.

2.0 SUMMARY OF METHOD

The calibration is to ensure installation parameters are maintained and the flow measurement components maintain their integrity during the period of operation so that the output can be relied upon as representative of a 2 percent accurate flow.

3.0 PROCEDURE FOR ANNUAL CALIBRATION

3.1 Meter Information

Obtain the sour water feed meter installation information for the meter to the Sour Water Stripper. This information should be verified as consistent with the designed system and as installed in the field.

3.2 Field Verification

Verify the field orifice meter actually installed is that which was installed originally by checking the orifice plate tab at the meter between the orifice flanges. Verify the transmitter differential pressure range is the same as required in the design and originally set.

3.3 Transmitter Span Check and Zero Check

3.3.1 Span Check

Block transmitter at the three valve manifold. As a precaution during this procedure, the technicians should position themselves upwind due to the potential of elevated H_2S concentrations in this stream. Connect the multimeter to the transmitter and observe and note the transmitter output. Unblock the high pressure side manifold valve, vent the low pressure side of the transmitter making sure the vent is pointing away from the technician. The transmitter output should go up scale to 20 + milliamps direct current (madc).

3.3.2 Tap/Lead Line Plugging Check

Close low pressure vent. Open low pressure manifold valve and block in high pressure manifold valve making sure the vent is pointed away from the technician. The transmitter output should go down scale to less than 4.0 madc. Open equalizer valves on manifold. This will allow blowing of the low side lead line to check for any plugging or plugged tap. If it blows satisfactorily, close the low pressure side transmitter vent and manifold equalizing valve. Next open the transmitter high pressure side vent and then the high pressure manifold valve to allow blowing the high pressure lead line to check for any plugging or plugged tap.

3.3.3 Zero Check

Close transmitter high pressure side vent, leave high pressure manifold valve open and open manifold equalizer valve. The transmitter output should go to zero. If no adjustment is required, proceed to place the instrument back into service. If outside a 2% accuracy, follow the steps in Section 4.0 of these procedures for additional accuracy checks.

4.0 FORTY-EIGHT MONTH ACCURACY CHECK

4.1 Scope and Application

This part of the procedure will be conducted at least three months prior to a FCC/CO Boiler turnaround but not more than a 48 months interval, to ensure the accuracy of this meter prior to a known period when the sour water stripper overheads will be incinerated in the main crude heater for an extended period of up to 40 days.

4.2 Meter Information and Field Verification

Follow steps 3.1 and 3.2 to ensure the meter installation has the designed components in place.

4.3 Transmitter Zero and Span Check

Block the transmitter at the root valves and at the three valve manifold. As a precaution during this procedure, the technicians should position themselves upwind due to the potential of elevated H_2S concentrations in this stream. Bleed pressure with the bleeder pointed away from the technician. Remove wiring and tubing, inspect flex and tubing and replace as needed. Remove mounting and equalizer bolts and remove transmitter. Take transmitter to the refinery instrument shop for Bench Check calibration.

Remove body flanges and clean all parts and check for corrosion and other problems that could affect transmitter performance. Repair or replace as needed to ensure an accurate flow measurement. Apply proper pressure to define and calibrate at zero and full scale for the span. Adjust as necessary and check repeatability.

4.4 Field Inspection of Meter Installation

After the meter transmitter is removed, remove the orifice plate and measure its diameter to confirm no change has occurred. Establish if a new plate is required due to corrosion or erosion and obtain for installation. In either case, a new meter factor must be developed consistent with ASME MFC-3M-1989 or equivalent.

Once the orifice plate is removed, visually inspect the process piping. Clean as needed and measure the inside pipe diameter of the up stream and downstream piping to confirm no deterioration has occurred. If more than a 2% increase in orifice or pipe diameter has occurred, a new meter factor must be developed consistent with ASME MFC-3M-1989 or equivalent.

4.5 Field Zero and Span Check to Confirm Proper Installation

Reinstall all parts using new bolts and gaskets. Open root valves, bypass on the equalizer and the low side tap of the equalizer. Close the bleeder. This will give a zero reading. Verify zero reading on the transmitter. When zero checking is complete, check the range utilizing a handheld digital pneumatic meter by pumping up pressure to match the design and installed maximum pressure reading. Verify the maximum span on the transmitter. If there is more than a 2% difference, make necessary adjustments. If within the 2% accuracy, proceed to put the instrument back in service. If transmitter will not operate properly while conducting the zero and span checks, remove from service and take to the refinery instrument shop to conduct another full Bench Check on the transmitter. If unable to achieve a 2% accuracy, repair or replace and follow the above steps on the repaired or replaced instrument until a 2% accuracy is obtained on the field installed instrument. Proceed to recommission as appropriate and in a timely manner check to be sure operations is satisfactory.

5.0 TRACK CHANGES

If any changes to the original equipment, i.e. orifice plate, piping changes, differential pressure or meter factor, place new data into the refinery meter tracking information system and use for future meter calibrations and accuracy checks.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	)	**STIPULATION OF DEPARTMENT AND CENEX HARVEST STATES COOPERATIVES**

The Department of Environmental Quality ("Department"), and Cenex Harvest States Cooperatives ("Cenex"), formerly Cenex, Inc., hereby stipulate to the following paragraphs 1 through 12, including the attachment, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

1. On June 9, 1998, the Department and Cenex executed a document entitled "Stipulation of Department and Cenex Harvest States Cooperatives," which included an Exhibit A and Attachments 1 and 2 (collectively "1998 Cenex Stipulation"). The 1998 Cenex Stipulation contained the sulfur dioxide control plan for Cenex, as part of the state's efforts to revise the State Implementation Plan for the control of sulfur dioxide (SO_2) emissions in the Billings/Laurel area ("Billings/Laurel SIP").

2. On March 4, 1993, the United States Environmental Protection Agency (EPA) notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS"). The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 Cenex Stipulation was to "establish an emission control strategy for Cenex which, together with similar control strategies for the

other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS." (1998 Cenex Stipulation, para. 7). As part of the 1998 Cenex Stipulation, Exhibit A contained emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Attachment 1 addressed performance specifications for stack flow rate monitors, fuel oil flow meters, and fuel oil sulfur analysis, and Attachment 2 addressed analytical methods for analyzing sour water stripper overheads for hydrogen sulfide, and precision and accuracy methods for the sour water stripper flow meter. The 1998 Cenex Stipulation was approved and made enforceable by Board Order, dated June 12, 1998. On July 29, 1998, the 1998 Cenex Stipulation was submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In a letter to the Department dated January 15, 1999, EPA identified a concern with the 1998 Cenex Stipulation. (Letter from Richard Long, to Mark Simonich, dated 1/15/99). Specifically, EPA noted that there were several questions regarding the methodology proposed in Attachment 2, relating to analytical methods for analyzing sour water stripper overheads for hydrogen sulfide. In a letter dated March 24, 1999, Governor Marc Racicot committed the Department to revise the Billings/Laurel SIP to address this concern.

5. The purpose of this Stipulation is to revise Attachment 2 of the 1998 Cenex Stipulation, as necessary to fulfill the Department's commitment to EPA to address the issue described above in paragraph 4. Unless expressly stated otherwise, this document does not in any way supercede or alter the provisions of the 1998 Cenex Stipulation, and except as expressly revised by this document, the 1998 Cenex Stipulation, including Exhibit A and Attachments 1 and 2, remain in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

6. The parties agree that Method #6A of Attachment 2 to the 1998 Cenex Stipulation, entitled "Analytical Method for Analyzing the Sour Water Stripper Overheads (SWSOH) for Hydrogen Sulfide (H_2S)," is superceded in its entirety, and is replaced by the updated Method #6A-1, entitled "Analytical Method for Analyzing the

Sour Water Stripper Feed for Hydrogen Sulfide (H_2S) (October 1999)." The updated Method #6A-1 is attached to this Stipulation.

7. This Stipulation, including the attachment ("Stipulation"), shall become effective immediately upon the issuance of an order by the Board in this proceeding.

8. It is the intent of the parties that this Stipulation, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as revisions to the Cenex control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State Implementation Plan. The revised requirements in this Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Cenex.

9. The 1998 Cenex Stipulation, as revised by this Stipulation, is intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2, but is not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards.

10. This Stipulation may be subject to modification as provided in paragraphs 16 and 17 of the 1998 Cenex Stipulation.

11. Cenex does not waive and expressly reserves its right to contest any Board order or federal action which, without the written consent of Cenex, modifies this Stipulation.

12. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation. Upon adoption in a Board Order, this Stipulation shall be enforceable by the Department.

Cenex Harvest States Cooperatives	Montana Department of Environmental Quality
By Ronald E Oletel	By Mark A. Simonich Mark Simonich Director
Date 12/22/99	Date 2/14/00

(Stipulation of Department and Cenex)
3

Approved as to form:

By David A. [illegible]
Attorney

Date 1/6/2000

Approved as to form:

By [illegible]
Attorney

Date 2/14/00

(Stipulation of Department and Cenex)
4

METHOD #6A-1

ANALYTICAL METHOD FOR ANALYZING THE SOUR WATER STRIPPER FEED FOR HYDROGEN SULFIDE (H_2S)
(October 1999)

1.0 SCOPE AND APPLICATION

This method is applicable to the measurement of total and dissolved sulfides in sour water produced by the refinery. Acid insoluble sulfides are not measured by the use of this test. (Copper sulfide is the only common sulfide in this class).

2.0 SUMMARY OF METHOD

Excess iodine is added to a sample which has been treated with zinc acetate to produce zinc sulfide. The iodine oxidizes the sulfide to sulfur under acidic conditions. The excess iodine is back titrated with sodium thiosulfate.

3.0 COMMENTS

Reduced sulfur compounds, such as sulfite, thiosulfate and hydrosulfite, which decompose in acid may yield erratic results. Also, volatile iodine-consuming substances such as mercaptans will give high results.

The sample source is hot and under pressure.

The volumes of preservative and the normality of the reagents have been modified from the referenced methods. The modifications are to make the method appropriate for the expected high concentrations of sulfide in the samples. The method calculations are also modified to correct for the sample dilution from the preservative.

4.0 APPARATUS

4.1 Ordinary laboratory glassware.

4.2 130 ml HDPE bottles. These bottles are pre-charged with preservative. For the sour water stripper feed inlet the bottle contains 5 ml of zinc acetate and 10 ml of sodium hydroxide.

5.0 REAGENTS

5.1 Hydrochloric acid, HCl, 6 N

5.2 Standard iodine solution, 0.1000 N: Dissolved 20 to 25 g KI in a little water in a liter volumetric and add 12.8 g iodine. Allow to dissolve. Dilute to 1 liter and standardize against 0.1000 N sodium thiosulfate using a starch indicator.

5.3 Sodium thiosulfate 0.1000N: Dissolve 24.82 g $Na_2S_2O_3 \cdot 5H_2O$ in water. Add 1 ml of chloroform and dilute to 1000 ml.

5.4 Starch indicator: Dissolved 10 g soluble starch and 10 mg Hg_2I in hot water and dilute to 4 liters.

5.5 Standardize the sodium thiosulfate against KIO_3. Adjust the concentration to 0.1000 N. Use this sodium thiosulfate to standardize the iodine solution.

5.6 Zinc acetate solution, 2N: Dissolve 220 g $Zn(C_2H_3O_2)_2 \cdot 2H_2O$ in water and dilute to one liter.

5.7 Sodium hydroxide, 6N: Dissolve 240 grams of sodium hydroxide in 800 ml of water, Dilute to one liter. Caution: much heat will be liberated.

6.0 SAMPLING

6.1 The sample bottles (4.2) are pre-charged with zinc acetate and sodium hydroxide preservative and labeled. The sample bottle sample contains 5 ml of preservative and 10 of sodium hydroxide.

6.2 The sample is obtained by carefully filling the appropriate bottle. Fill the bottle slowly to prevent the sample from splashing the preservative out or overflowing the bottle. The bottle should be completely filled with no headspace air. If necessary, the sides of the bottle can be squeezed while screwing on the lid to exclude the remaining air.

6.3 Experience shows that the pH of these samples, taken and preserved as described, are above 9. No further pH adjustment is required.

7.0 PROCEDURE

7.1 Shake the container to suspend all solids and remove the sample. Measure the volume of sample. This is used to correct the results for the dilution due to the preservative. Check the pH of the sample using pH test paper to confirm that it is 9 or higher.

7.2 Place 20 ml of standard iodine solution (5.2) into a 500 ml iodine titration flask.

7.3 Add 15 ml of 6N HCl (5.1).

7.4 Thoroughly mix the sample and quickly take a 25 ml aliquot and place it in the flask.

7.5 If the iodine color disappears, add more iodine until the color remains. Record the total number of milliliters of standard iodine used steps 7.2 and 7.5.

7.6 Titrate with the reducing solution (0.1 N sodium thiosulfate) to a pale straw color. Add the starch indicator and titrate until the blue color disappears. Record the volume used.

8.0 CALCULATIONS

8.1 Sulfide as H_2S, mg/l = $\dfrac{(A - B) \times 17.01 \times 1000}{\text{sample aliquot, ml} \times K}$

Where:

A = Volume of Iodine, ml * Normality of Iodine

B = Volume of Thiosulfate, ml * Normality of Thiosulfate

K = $\dfrac{\text{ml of sample} - \text{ml of preservative}}{\text{ml of sample}}$

This is a correction for the preservative volume. The volume of sample is the total volume in the sample container including the preservative. The volume of preservative is the volume added to the container before the sample was obtained.

9.0 REFERENCES

9.1 Standard Methods for the Examination of Water and Wastewater, 19th Edition, p 4-127, Method 4500-S_2 F, (1995)

EPA Method 376.1

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.24 MARCH 17, 2000 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING CENEX HARVEST STATES COOPERATIVES' PETROLEUM REFINERY, LAUREL MT

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND CENEX HARVEST STATES COOPERATIVES**

The Department of Environmental Quality ("Department") has requested an Order from the Board of Environmental Review ("Board") adopting revisions to the sulfur dioxide control plan for Cenex Harvest States Cooperatives ("Cenex"), formerly Cenex, Inc. As amended by the revisions contained herein, the control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the sulfur dioxide National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel area.

Pursuant to public notice, on March 17, 2000, the Board conducted a hearing in Helena, Montana, on the proposed revisions to the control plan. At the hearing an opportunity for comment was provided to the Department, Cenex, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. On June 9, 1998, the Department and Cenex executed a document entitled "Stipulation of Department and Cenex Harvest States Cooperatives," which included an Exhibit A and Attachments 1 and 2 (collectively "1998 Cenex Stipulation"). The 1998 Cenex Stipulation contained the sulfur dioxide (SO_2) control plan for Cenex, as part of the state's efforts to revise the State Implementation Plan for the control of sulfur dioxide

emissions in the Billings/Laurel area ("Billings/Laurel SIP"). On June 12, 1998, the Board issued its Findings of Fact, Conclusions of Law and Order ("1998 Cenex Order") which expressly adopted and incorporated the 1998 Cenex Stipulation as an enforceable Order of the Board.

2. On March 4, 1993, the United States Environmental Protection Agency ("EPA") notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 NAAQS. The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 Cenex Stipulation was to "establish an emission control strategy for Cenex which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS." (1998 Cenex Stipulation, para. 7). On July 29, 1998, the 1998 Cenex Stipulation was submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In a letter to the Department dated January 15, 1999, EPA identified a concern with the 1998 Cenex Stipulation. (Letter from Richard Long, to Mark Simonich, dated 1/15/99). Specifically, EPA noted that there were several questions regarding the proposed methodology for analyzing sour water for hydrogen sulfide. In a letter dated March 24, 1999, Governor Marc Racicot committed that the Department would revise the Billings/Laurel SIP to address this concern.

5. As part of the current proceeding, the Department and Cenex have submitted to the Board a "Stipulation of Department and Cenex Harvest States Cooperatives," dated February 14, 2000 ("2000 Cenex Stipulation"), that contains the revisions to the 1998 Cenex Stipulation that are necessary to fulfill the Department's commitment to EPA to address the issues described above in paragraph 4. The 2000 Cenex Stipulation will be effective immediately upon the issuance of an Order by the Board in this proceeding.

6. The Board adopts the 2000 Cenex Stipulation, and incorporates that document in its entirety as a part of this Order. Unless expressly stated otherwise in the 2000 Cenex Stipulation, this Order does not in any way supercede or alter the provisions of the 1998

Cenex Order (and the 1998 Cenex Stipulation and exhibit and attachments adopted therein), and the 1998 Cenex Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

7. It is the intent of the Department and Cenex that both the 2000 Cenex Stipulation (after adoption and incorporation by the Board), and this Order, shall be submitted to EPA for review and approval as revisions to the Cenex control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State Implementation Plan. The revised requirements in this Order and the 2000 Cenex Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Cenex.

8. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertising in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR § 51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation of the Department and Cenex Harvest States Cooperatives, dated February 14, 2000, is appropriate to comply with the

March 4, 1993, EPA request to revise the Billings/Laurel SIP, and to address the concerns identified by EPA in its letter to the Department dated January 15, 1999.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The revisions to the sulfur dioxide control plan for Cenex set forth in the attached Stipulation of the Department and Cenex Harvest States Cooperatives, dated February 14, 2000, is adopted by the Board and incorporated herein as part of this Order.
2. This Order shall be enforceable by the Department.
3. Unless expressly stated otherwise in the Stipulation of the Department and Cenex Harvest States Cooperatives, dated February 14, 2000, this Order does not in any way supercede or alter the provisions of the 1998 Cenex Order (and the 1998 Cenex Stipulation and exhibit and attachments adopted therein), and the 1998 Cenex Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.
4. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 17th day of March, 2000.

By: Joe Gerbase
JOE GERBASE
Chair
Board of Environmental Review

**BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA**

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	STIPULATION OF DEPARTMENT AND CONOCO

The Department of Environmental Quality ("Department"), and Conoco, Inc. ("Conoco"), hereby stipulate to the following paragraphs 1-20, including Exhibit A and Attachment #1, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

This Stipulation nullifies and supersedes all Stipulations which were executed by Conoco and the Department in response to the EPA SIP call letter of March 4, 1993.

1. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be exceeded more than once per year. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

3. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

4. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

5. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

6. Utilizing a dispersion modeling analysis, Conoco and the Department have developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. Conoco's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, Conoco does not waive and shall not be precluded from raising any objections it may have including but not limited to those pertaining to the dispersion modeling analysis.

7. The purpose of this Stipulation and the emission limitations and other

limitations contained in Exhibit A and Attachment #1 is to establish an emission control strategy for Conoco which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachment #1 do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

8. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Conoco shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachment #1.

9. The following Attachment is attached to Exhibit A and is incorporated therein and in this Stipulation by reference:

Attachment 1: Performance Specifications for Stack Flow Rate Monitors.

10. Upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

11. Disputes between the parties, during the development of a revised Attachment #1, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. The Board will exercise reasonable diligence in rendering a determination on the disputed matter. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of the final Attachment #1 or of any other provision of this Stipulation or Exhibit A.

12. For the exclusive purpose of implementing the sulfur dioxide emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, ARM

17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

13. The Stipulation, Exhibit A, and Attachment #1 shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachment #1.

14. It is the intent of the parties that this Stipulation, Exhibit A, and Attachment #1, after adoption and incorporation by Board order, shall be submitted to the Environmental Protection Agency for review and approval as the Conoco control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Conoco.

15. The Stipulation, Exhibit A, and Attachment #1 are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachment #1 are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

16. This Stipulation, Exhibit A, or Attachment #1 may be subject to modification upon the occurrence of certain modifying conditions. Such modifying conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by Conoco, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan.

Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that Conoco demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a facility

17. Procedures for modification of this Stipulation, Exhibit A, and Attachment #1 shall be as follows:

<u>Board Approval</u>

a. <u>Stipulation and Exhibit</u>. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. <u>Attachment #1</u>. As provided in Paragraph 10, upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this

Stipulation by reference, without the necessity for a revised Board order.

c. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

EPA Approval for SIP Changes

d. Stipulation, Exhibit, and Attachment #1. Following EPA approval pursuant to paragraph 14, all modifications of the text of this Stipulation, Exhibit A, and Attachment #1 shall require the approval of EPA under either subparagraph 17(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 17(f) or (g).

f. Title I Procedures. Until the issuance of a Title V operating permit for Conoco and the adoption of the enabling state administrative rule described in paragraph 17(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachment #1 described in paragraph 17(d), and all implementation approvals described in subparagraph 17(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 17(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 17(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 17(d) and implementation approvals under subparagraph 17(e), provided that the following two conditions are met:

(i) Conoco has been issued a Title V operating permit and the State has adopted an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 17(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determination shall be made within 45 days from the submittal of the proposed modification or approval to EPA.

18. Conoco does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of Conoco, modifies this stipulation, Exhibit A, or Attachment #1.

19. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachment #1. Except where another effective date is provided in Exhibit A or Attachment #1, upon adoption in a Board Order, the Stipulation, Exhibit A, and Attachment #1 shall be enforceable by the Department.

~~20. Notwithstanding any other provision of this Stipulation, Conoco's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission control strategies resulting from any challenge or appeal of the initial adopted emissions~~

~~control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either Conoco or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Conoco, Inc.	Montana Department of Environmental Quality
By [signature]	By Mark A. Simonich
	Mark Simonich Director
Date 6-2-98	Date 6/9/98
Approved as to form:	Approved as to form:
By Juanita Mehk Attorney	By James M Madden Attorney
Date 5/29/98	Date 6/9/98

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STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.18 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING CONOCO, INC. REFINERY, BILLINGS, MT.

Replace Pages:	Dated:
June 12, 1998	

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND CONOCO

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for Conoco, Inc. (Conoco). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for Conoco is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached emission control plan for Conoco, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

<u>CONCLUSIONS OF LAW</u>

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to

participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for Conoco set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

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56.9.4.2 EXHIBIT A - EMISSION LIMITATIONS AND CONDITIONS - CONOCO, INC., BILLINGS, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

Conoco Inc.
Billings, Montana

SECTION 1 AFFECTED FACILITIES

(A) Plant Location:

The Conoco Refinery is located on the east side of Billings adjacent to the Billings urban area. The Jupiter Sulfur Inc. sulfur recovery facility is located adjacent to the Conoco Refinery. The Conoco Refinery and Jupiter Sulfur are located in Yellowstone County, Township 1 South, Range 26 East, NW ¼ Section 2.

(B) Affected Equipment and Facilities:

(1) Main boiler house
(2) Fluid catalytic cracking unit (FCC)
(3) Process heaters (#1, #2, #4, #5, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, and #24)
(4) Coker heater
(5) Fractionator feed heater
(6) Recycle hydrogen heater
(7) Jupiter Sulfur SRU

(C) Nonaffected Equipment and Facilities:

Any equipment or facilities which have no effect on the nature or quantity of emissions of sulfur-bearing gases including, but not limited to, combustion equipment which is fueled exclusively with natural gas or propane.

SECTION 2 DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors," attached to this Exhibit and incorporated herein by reference.

(3) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(4) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(5) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration, stack gas volumetric flow rate, and fuel gas flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute and each hydrogen sulfide concentration monitor is designed to achieve a temporal sampling resolution of at least one concentration measurement per three minutes. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines sulfur dioxide concentration in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rate, and associated data acquisition equipment; or

(b) a continuous fuel gas monitor which determines hydrogen sulfide (H_2S) concentration in fuel gas, a fuel gas flow rate monitor that determines the combined fuel gas firing rate for all the fuel gas burning units listed in Section 1 (B) (3), (4), (5), and (6), and associated data acquisition equipment.

(6) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions for all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(7) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in

a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas flow rate monitor, hydrogen sulfide concentration monitor, and fuel gas flow rate monitor, shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(8) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of sulfur dioxide emissions from a source (stack or fuel gas system) determined using Hourly Averages and rounded to the nearest tenth of a pound.

(a) For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(i) If the SO_2 concentration is measured on a wet basis, Conoco shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM; and
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(ii) If the SO_2 concentration is measured on a dry basis, Conoco shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. Conoco shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = \frac{K * C_H * Q_H * (100 - \%H_2O)}{100}$$

Where:

E_H =	Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K =	1.663 X 10^{-7} in (pounds/SCF)/PPM;
C_H =	Hourly Average SO_2 concentration in PPM (dry basis);
Q_H =	stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and
$\%H_2O$ =	Hourly Average stack gas moisture content, in percent by volume.

(b) For refinery fuel gas systems:

(i) H_2S concentrations are measured on an actual wet basis in PPM;

(ii) the combustion unit fuel gas firing rates shall be measured on an actual wet basis in standard cubic feet per hour (SCFH); and

(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H =	Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K =	1.688 X 10^{-7} in (pounds/SCF)/PPM;
C_H =	Hourly Average fuel gas H_2S concentration in PPM; and
Q_H =	total actual fuel gas firing rate expressed in SCFH.

(9) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack, except that:

(a) for the FCC stack, start-up and shutting down shall only include time periods when gas-oil feedstock is being delivered to the FCC; and

(b) for the Jupiter Sulfur SRU stack, start-up and shutting down shall only include time periods when sulfur-bearing gases are being delivered to the SRU.

(10) "Quarterly Data Recovery Rate" means the percentage of hours in a calendar quarter when CEMS-derived Hourly SO_2 Emission Rate data are available for a source (stack or fuel gas system) in comparison to the number of corresponding Operating hours for that source.

If Conoco demonstrates, through the CEMS manufacturer's specifications and stack measurements, that stack conditions during certain periods of startup or shutdown in the FCC stack are beyond the design capabilities of the CEMS, then such periods shall not be considered Operating hours for determination of the QDRR.

The Quarterly Data Recovery Rate (QDRR) for a source shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH}{OH} \times 100\%$$

Where:

VH = number of hours of Hourly SO_2 Emission Rate data that are also source Operating hours in a calendar quarter;
OH = total number of source Operating hours in a calendar quarter; and
QDRR = Quarterly Data Recovery Rate.

(11) "Standard Conditions":

(a) means 20.0°C (293.2°K, 527.7°R, or 68.0°F) and 1 atmosphere pressure (29.92" Hg) for stack gas emission calculations using the equation/method in Section 2 (A)(8)(a); and

(b) means 15.6°C (288.7°K, 520.0°R, or 60.3°F) and 1 atmosphere pressure (29.92" Hg) for refinery fuel gas emission calculations using the equation/method in Section 2 (A)(8)(b).

(12) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(13) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3 EMISSION LIMITATIONS

Conoco may have (hourly, daily, and annual) SO_2 emission limits in their operating permit that are more restrictive than those presented here. In those instances where the permit emission limits are more stringent, Conoco shall conform to the permit limitations.

(A) Affected Sources:

(1) Main boiler house stack;

(a) Three Hour Emissions of SO_2 from the main boiler house stack shall not exceed 964.2 pounds per three hour period,

(b) Daily Emissions of SO_2 from the main boiler house stack shall not exceed 7,713.6 pounds per Calendar Day, and

(c) Annual Emissions of SO_2 from the boiler house stack shall not exceed 2,815,464 pounds per calendar year.

(2) Fluid Catalytic Cracking (FCC) stack;

(a) Three Hour Emissions of SO_2 from the FCC stack shall not exceed 986.4 pounds per three hour period,

(b) Daily Emissions of SO_2 from the FCC stack shall not exceed 7,891.2 pounds per Calendar Day, and

(c) Annual Emissions of SO_2 from the FCC stack shall not exceed 2,880,288 pounds per calendar year.

(3) Jupiter Sulfur SRU stack;

(a) Three Hour Emissions of SO_2 from the Jupiter Sulfur SRU stack shall not exceed 75.0 pounds per three hour period,

(b) Daily Emissions of SO_2 from the Jupiter Sulfur SRU stack shall not exceed 600.0 pounds per Calendar Day, and

(c) Annual Emissions of SO_2 from the Jupiter Sulfur SRU stack shall not exceed 219,000 pounds per calendar year.

(4) Process heaters (#1, #2, #4, #5, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #24), coker heater, fractionator feed heater, and recycle hydrogen heater;

(a) combined Three Hour Emissions of SO_2 from the process heaters (#1, #2, #4, #5, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #24), coker heater, fractionator feed heater, and recycle hydrogen heater shall not exceed 87.0 pounds per three hour period,

(b) combined Daily Emissions of SO_2 from the process heaters (#1, #2, #4, #5, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #24), coker heater, fractionator feed heater, and recycle hydrogen heater shall not exceed 696.0 pounds per Calendar Day, and

(c) combined Annual Emissions of SO_2 from the process heaters (#1, #2, #4, #5, #10, #11, #12, #13, #14, #15, #16, #17, #18, #19, #20, #21, #22, #23, #24), coker heater, fractionator feed heater, and recycle hydrogen heater shall not exceed 254,040 pounds per calendar year.

(5) Other Minor Sources;

(a) Conoco shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

(b) Conoco shall use good engineering judgement and appropriate engineering calculations to quantify emissions from activities that are not otherwise addressed by this Stipulation and Exhibit A but are known to contribute to emissions from sources listed in Section 1(B). In addition, Conoco shall account for such emissions in determining compliance with all applicable emission limits contained in Section 3.

SECTION 4 COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations contained in Section 3 (A)(1) through (3) shall be determined using data from the CEMS required by Section 6 (B)(1) and (2) and in accordance with the appropriate equation(s) in Section 2 (A)(1), (6), (8), and (12) except when CEMS data is not available and as provided in Section 2 (A)(12). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Section 5 (A) or 6 (C) and (D) shall also be used to demonstrate compliance.

(B) Compliance with the combined emission limitation for the refinery fuel gas fired units, contained in Section 3 (A)(4), shall be determined by using Hourly Average H_2S concentration and Hourly Average fuel gas flow rate data from the CEMS required by Section 6 (B)(3) and in accordance with the appropriate equation(s) in Section 2 (A)(1), (6), (8), and (12) except when CEMS data is not available and as provided in Section 2 (A)(12).

(C) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6 (A)(2) shall be determined in accordance with Section 2 (A)(10), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether Conoco has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, Conoco shall implement short-term corrective measures, and, if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure; or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rates in pounds per hour for the main boiler stack, FCC stack, and Jupiter Sulfur SRU stack, Conoco shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol ARM 17.8.106. The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C) and (D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) In order to accurately determine the hydrogen sulfide concentration in parts per million for the fuel gas-system, Conoco shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Method 11) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol ARM 17.8.106.

(C) Conoco shall notify the Department in writing of each annual source test a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond Conoco's control, and which could not reasonably have been prevented or mitigated by Conoco. Such circumstances may include but are not limited to earthquakes, power outages, or fire; but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, Conoco initiates the short term corrective measures and the long term corrective measures required by Section 4(C)(3);

(c) within two working days of occurrence, Conoco notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) Conoco demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, Conoco shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, Conoco shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(C)(2):

(i) for the main boiler house stack CEMS, FCC stack CEMS, Jupiter Sulfur SRU stack CEMS, and fuel gas system CEMS, Conoco shall achieve a QDRR for each CEMS of equal to or greater than 90%.

(c) In its evaluation of whether Conoco used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS, including a demonstration made by Conoco (using manufacturer's specifications and stack measurements), that stack conditions during certain periods of startup or shutdown in the FCC stack are beyond the design capabilities of the CEMS; and whether:

(ii) Conoco has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) Conoco has complied with the quality assurance requirements described in Section 6;

(iv) Conoco has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, Conoco shall implement the short term corrective measures, and if necessary, the long term corrective measures-required by Section 4 (C)(3).

(B) Affected Sources

(1) By January 1, 1997, Conoco shall operate and maintain continuous emission monitors to measure SO_2 from the FCC stack, Jupiter Sulfur SRU stack, and main boiler house stack.

(2) By January 1, 1997, Conoco shall operate and maintain continuous stack flow rate monitors to measure the stack gas flow rates from the FCC stack, Jupiter Sulfur SRU stack, and main boiler house stack.

(3) By January 1, 1997, Conoco shall operate and maintain continuous hydrogen sulfide (H_2S) concentration and flow rate monitoring at the fuel gas header.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors and hydrogen sulfide concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specification 2 and 7; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro- optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) Conoco shall notify the Department in writing of each Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department

Method A-1 of Attachment #1; and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) Conoco shall notify the Department in writing of each Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(E) Refinery fuel gas flow rate monitor accuracy determinations shall be required at least once every 48 months or more frequently as routine refinery turn-arounds allow.

SECTION 7. DATA REPORTING

(A) Conoco shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media compatible with the Department's existing data management system. The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the main boiler house stack, FCC stack, and Jupiter Sulfur SRU stack;

(b) Hourly Average stack volumetric flow rates in SCFH from the main boiler house stack, FCC stack, and Jupiter Sulfur SRU stack;

(c) Hourly Average stack gas temperature in °F from the main boiler house stack, FCC stack, and Jupiter Sulfur SRU stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the main boiler house stack, FCC stack, refinery fuel gas system, and Jupiter Sulfur SRU stack;

(e) Hourly Average H_2S concentrations in PPM from the refinery fuel gas system;

(f) Hourly Average refinery fuel gas system flow rate in SCFH; and

(g) daily calibration data from the CEMS required by Section 6(B)(1),(2) and (3).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, Conoco shall also record, organize and archive for at least five years the same data, and upon request by the Department, Conoco shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized CEMS data for, Three Hour Emissions, Daily Emissions, Quarterly Data Recovery Rates and text regarding excess emissions.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emissions of SO_2 in pounds per three hour period from the main boiler house stack, FCC stack, Jupiter Sulfur SRU stack, and combined Three Hour Emissions from the combustion units [listed in Section 1 (B)(3) through (6)];

(b) Daily Emissions of SO_2 in pounds per Calendar Day from the main boiler house stack, FCC stack, Jupiter Sulfur SRU stack, and combined Daily Emissions from the combustion units [listed in Section 1 (B)(3) through (6)];

(c) the Quarterly Data Recovery Rate for each CEMS required by Section 6 (B)(1), (2), and (3) and expressed in percent;

(d) the Operating hours during the calendar quarter for the source or units associated with main boiler house stack, FCC stack, refinery fuel gas system, and Jupiter Sulfur SRU stack;

(e) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(f) the results of the quarterly CGA's or RAA's and flow rate checks, the annual source tests required by Section 5(A) and (B), and the annual RATA's required in Section 6(C) and (D); and

(g) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances,

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of Operation with excess emissions, the Hourly SO_2 Emission Rates, and Three Hour Emissions;

(b) all information regarding reasons for Operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, Conoco shall provide Hourly SO_2 Emission Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for Conoco, while still providing the necessary information. Any revisions shall be made only after consultation with Conoco, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachment #1 shall be construed to alter Conoco's obligation under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, Conoco reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Stipulation, Exhibit A, and Attachment #1, Conoco shall allow the Department representative(s) access to all SO_2 emitting sources at the Conoco facility such that, the Department representative(s) may enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representative(s) shall be allowed to conduct surveys, collect samples, obtain data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all necessary functions related to this control plan.

(B) Enforcement - Any violation of a limitation, condition or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17 Chapter 8, or of Title 75 Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS
(Includes Methods A-1 and B-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The Department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the Department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by

installing straightening vanes. The Department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the Department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the Department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the Department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed $\pm$2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the Department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error .

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and

required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part

60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$\boldsymbol{CE} = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;

R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\text{(Eq. A-2)}\quad \bar{d} = \frac{1}{n}\sum_{i=1}^{n} d_i$$

Where:

n=Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i

d_i = The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - [\frac{(\sum_{i=1}^{n} d_i)^2}{n}]}{n-1}} \qquad \text{(Eq. A-3)}$$

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025}\frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

where:

$t_{0.025}$ = *t value (see Table 2)*

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$\boldsymbol{RA} = \frac{|\bar{d}| + |cc|}{\overline{RM}} x \ 100 \qquad \text{(Eq. A-5)}$$

where:

RM = Arithmetic means of the reference method values.

$|\bar{d}|$ = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

$|cc|$ = The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
			Confidence coefficient	
			Relative accuracy	

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration

error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;

TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses).
The relative accuracy test audit shall be conducted according to the procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations (≤10.0 fps), the flow monitor mean value (if applicable) exceeds ±2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly

flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	STIPULATION OF DEPARTMENT AND EXXON

The Department of Environmental Quality ("Department"), and Exxon Company, U.S.A.. ("Exxon"), hereby stipulate to the following paragraphs 1-22, including Exhibit A and Attachments, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

Except for the parties' Stipulation of February 2, 1996, which is ratified in Paragraph 1, this Stipulation nullifies and supersedes all Stipulations which were executed by Exxon and the Department in response to the EPA SIP call letter of March 4, 1993.

~~1. A contested case was initiated on May 19, 1995 by the Board of Health and Environmental Sciences (predecessor to the Board of Environmental Review) at the request of MSCC to hear MSCC's objections to the Department's proposed sulfur dioxide control plan for MSCC. On October 6, 1995, the Board granted petitions to intervene and postpone hearing filed by Exxon, USA (Exxon) and Yellowstone Energy Limited Partnership (YELP). At the request of the intervenors, the contested case hearing was postponed until February 1, 1996. On or about December 26, 1995, YELP, MSCC, and the Department signed a negotiated stipulation for the withdrawal of YELP from the contested case.~~

~~On February 2, 1996, the Department, MSCC, and Exxon entered into a Stipulation which deferred the contested case hearing and established agreed procedures for developing a sulfur dioxide control plan for MSCC and amending the current sulfur dioxide control plan for Exxon. Exxon entered the February 2, 1996 Stipulation and enters this Stipulation, in part, to preserve Exxon's rights in the apportionment of the airshed resulting from the present SIP revision, and to assist the Department in obtaining a determination that the Billings/Laurel SIP is adequate to attain and maintain national ambient standards. Exxon reserves all issues and objections for all purposes except this settlement and the emission control strategy and rights arising from this settlement. The February 2, 1996 Stipulation is hereby ratified and incorporated herein.~~

2. This Stipulation, together with Exhibit A and Attachments, contains the sulfur dioxide control plan for Exxon that has been developed in accordance with the procedures of the February 2, 1996 Stipulation. The Department has reviewed and approved a fluid modeling demonstration of good engineering practice (GEP) stack height for the FCC CO Boiler stack, performed by Colorado State University, and has determined that such approved fluid modeling demonstrated that a height of 76.7 meters is justified and creditable as good engineering practice height for that stack in accordance with the requirements of 40 CFR Part 51, Subpart F, Section 51.100, including specifically paragraphs (ii), (jj), and (kk)(2) thereof, GEP guidelines, and the corresponding Montana requirements governing GEP. The Department has determined and agrees, for purposes of this Stipulation, Exhibit A, and Attachments, that Exxon shall receive credit for such height in the setting of emission limitations. The Department has further determined that the recognition of an emission limitation for the FCC CO Boiler Stack that is based on the Fresh Feed Rate to the FCC Reactor as contemplated and approved by the parties in this Stipulation is not a prohibited or unlawful dispersion technique for Exxon and the Department agrees that Exxon is entitled to and shall receive emission limitation credit recognizing such technique.

3. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be exceeded more than once per year. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air Act Amendments of 1990 ("Act").

4. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

5. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

6. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

7. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

8. Utilizing a dispersion modeling analysis, Exxon and the Department have

developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. Exxon's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachments. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachments, Exxon does not waive and shall not be precluded from raising any objections it may have including but not limited to those pertaining to the dispersion modeling analysis.

9. The purpose of this Stipulation and the emission limitations and other limitations contained in Exhibit A and Attachments is to establish an emission control strategy for Exxon which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachments do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

10. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Exxon shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachments.

11. The following Attachments are attached to Exhibit A and are incorporated therein and in this Stipulation by reference:

Attachment 1: Performance Specifications for Stack Flow Rate Monitors.

Attachment 2: Analytical Methods for Analyzing Sour Water Stripper Overheads for Hydrogen Sulfide and Precision and Accuracy Methods for the Sour Water Stripper Flow Meter.

12. Upon written certification by the Department that an Attachment has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

13. Disputes between the parties, during the development of a revised Attachment, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. The Board will exercise reasonable diligence in rendering a determination on the disputed matter. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of final Attachments or of any other provision of this Stipulation or Exhibit A.

14. For the exclusive purpose of implementing the sulfur dioxide emission control strategy contained in this Stipulation, Exhibit A, and Attachments, ARM 17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

15. The Stipulation, Exhibit A, and Attachments shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachments.

16. It is the intent of the parties that this Stipulation, Exhibit A, and Attachments, after adoption and incorporation by Board order, shall be submitted to the

Environmental Protection Agency for review and approval as the Exxon control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Exxon.

17. The Stipulation, Exhibit A, and Attachments are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachments are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

18. This Stipulation, Exhibit A, or Attachments may be subject to modification upon the occurrence of certain modifying conditions. Such modifying conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by Exxon, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan.

Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that Exxon demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a facility

19. Procedures for modification of this Stipulation, Exhibit A, and Attachments shall be as follows:

Board Approval

a. Stipulation and Exhibit. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. Attachments. As provided in Paragraph 12, upon written certification by the Department that an Attachment has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, without the necessity for a revised Board order.

c. Implementation Approvals. Where Exhibit A or an Attachment authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

EPA Approval for SIP Changes

d. Stipulation, Exhibit, and Attachments. Following EPA approval pursuant to paragraph 16, all modifications of the text of this Stipulation, Exhibit A, and Attachments shall require the approval of EPA under either subparagraph 19(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. Implementation Approvals. Where Exhibit A or an Attachment authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 19(f) or (g).

f. Title I Procedures. Until the issuance of a Title V operating permit for Exxon and the adoption of the enabling state administrative rule described in paragraph 19(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachments described in paragraph 19(d), and all implementation approvals described in subparagraph 19(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 19(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 19(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 19(d) and implementation approvals under subparagraph 19(e), provided that the following two conditions are met:

(i) Exxon has been issued a Title V operating permit and the State has adopted an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 19(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determinations shall be made within 45 days from the submittal of the proposed modification or approval to EPA.

20. Exxon does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of Exxon, modifies this stipulation, Exhibit A, or Attachments.

21. Accordingly, the parties agree that the Board shall issue an order adopting

the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachments. Except where another effective date is provided in Exhibit A or Attachments, upon adoption in a Board Order, the Stipulation, Exhibit A, and Attachments shall be enforceable by the Department.

~~22. Notwithstanding any other provision of this Stipulation, Exxon's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission control strategies resulting from any challenge or appeal of the initial adopted emissions control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either Exxon or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Exxon Company, U.S.A.	Montana Department of Environmental Quality
By *[signature]*	By *Mark A. Simonich* Mark Simonich Director
Date 6-5-98	Date 6/9/98

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Approved as to form:	Approved as to form:
By [signature] Attorney	By [signature] Attorney
Date 6/3/98	Date 6/9/98

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.19 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING EXXON COMPANY, U.S.A., BILLINGS REFINERY, BILLINGS, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND EXXON

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for Exxon. The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for Exxon is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings. In particular, the Board ratifies and adopts the Department's approval of a fluid modeling demonstration of good engineering practice (GEP) stack height for the FCC CO Boiler stack, performed by Colorado State University, and the Department's determination that such approved fluid modeling demonstrated that a height of 76.7 meters is justified and creditable as good engineering practice height for that stack in accordance with the requirements of 40 CFR Part 51, Subpart F, Section 51.100, including specifically paragraphs (ii), (jj), and (kk)(2) thereof, GEP guidelines, and the corresponding Montana requirements governing GEP. The Board also hereby ratifies and adopts the Department's determination in that Stipulation and attachments that Exxon shall receive credit for such height in the setting of emission limitations. Further, the Board also hereby ratifies and adopts the Department's determination that the recognition of an emission limitation for the FCC CO Boiler Stack that is based on the Fresh Feed Rate to the FCC Reactor as contemplated and approved by the parties in that Stipulation is not a

prohibited or unlawful dispersion technique for Exxon and the Board finds that Exxon is entitled to and shall receive emission limitation credit recognizing such technique.

4. Exhibit A of the attached emission control plan for Exxon contains language that has been lined out and initialed by both parties. The deleted language consists of a compliance determination method for the Coker CO Boiler when Coker Unit flue gases are being burned in the Boiler. According to the Department, data received after public notice in this matter raised a question about the accuracy of the compliance determination method. The parties request that the Board delete the method from the current plan, conditioned upon the parties' proceeding immediately either to remedy the defects in the method or to develop an acceptable substitute. The parties have agreed to appear before this Board at its next meeting with the result of their efforts to develop a compliance determination method for the Coker CO Boiler.

5. EPA has indicated that the Exxon emission control plan is deficient for federal purposes without an accurate compliance determination method for the Coker CO Boiler. EPA indicated that deletion of the method from the attached plan would not, by itself, be a basis for EPA disapproval of the plan if the parties develop an acceptable compliance method for submittal to EPA after the next Board meeting.

6. It is the intent of the parties that the attached emission control plan for Exxon, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area, subject to revision as provided in the preceding paragraph.

7. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following

Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA. Further, under ARM 17.8.401(2)(c), the Department is the agency to determine and approve a fluid model or a field study for the purpose of ensuring that emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, or nearby structures or nearby terrain features. See also 40 CFR §51.100(ii)(3). This Board hereby ratifies and adopts the Department's approval of the fluid model study above referred to in the findings of fact.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for Exxon set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order. The stricken language in the attached Exhibit A pertaining to a

compliance determination method for the Coker CO Boiler shall be deleted from the plan. The parties are directed to appear before this Board at its next meeting with the results of their efforts to develop an acceptable compliance determination method for the Coker CO Boiler. In order for the Board to act on the matter at its next meeting, the public must be given appropriate notice of any proposed compliance determination method.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.4.3 EXHIBIT A - EMISSION LIMITATIONS AND OTHER CONDITIONS - EXXON COMPANY USA, BILLINGS, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND OTHER CONDITIONS

Exxon Company, USA
Billings, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

The Exxon Refinery is located about 3 miles northeast of Billings. The plant is located in Yellowstone County, Township 1 North, Range 26 East, Sections 24 and 25.

(B) Affected Equipment and Facilities:

(1) FCC CO Boiler
(2) F-2 Crude/Vacuum Heater (F-1 Crude Furnace/F-401 Vacuum Heater)
(3) Coker CO Boiler
(4) Minor Fuel Gas Sources: F-3 crude heater, F-3X hydrofiner heater, F-5 hydrofiner heater, F-700 unit, F-201 unit, F-202 unit, F-402 unit, F-551 unit, F-651 unit, and standby boiler house (B-8 boiler).

(C) Nonaffected Equipment and Facilities:

Any equipment or facilities which have no effect on the nature or quantity of emissions of sulfur-bearing gases including, but not limited to, combustion equipment which is fueled exclusively with natural gas or propane.

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors", attached to this Exhibit and incorporated herein by reference.

(3) "Attachment #2"means the "Analytical Methods for Analyzing the Sour Water Stripper Overheads for Hydrogen Sulfide and Precision and Accuracy Methods for the Sour Water Stripper Flow Meter," attached to this Exhibit and incorporated herein by reference.

(4) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(5) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(6) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration, stack gas volumetric flow rate, fuel gas flow rate, and sour water flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute and each hydrogen sulfide concentration monitor is designed to achieve a temporal sampling resolution of at least one concentration measurement per three minutes. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines sulfur dioxide concentration in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rate, and associated data acquisition equipment;

(b) a continuous fuel gas monitor which determines hydrogen sulfide (H_2S) concentration in fuel gas, a fuel gas flow rate monitor which determines total refinery fuel gas flow rate, and associated data acquisition equipment; and

(c) a continuous sour water flow rate monitor which determines the sour water flow rate to the T-23 sour water stripper tower and associated data acquisition equipment.

(7) "Daily Average FCC Fresh Feed Rate" means the average of the continuous twenty four (24) Hourly Average FCC Fresh Feed Rates over the course of a Calendar Day.

(8) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(9) "FCC Fresh Feed Rate" means the rate of material fed to the Fluid Catalytic Cracking (FCC) reactor expressed in thousands of barrels of material per day (kBD) and determined using the continuous flow rate meter required by Section 6(B)(6).

(10) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas flow rate monitor, hydrogen sulfide concentration monitor, fuel gas flow rate monitor, and sour water flow rate monitor shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(11) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of sulfur dioxide emissions from a source (stack, fuel gas, or sour water system) determined using Hourly Averages and rounded to the nearest one tenth of a pound.

(a) For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(i) If the SO_2 concentration is measured on a wet basis, Exxon shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;

K = 1.663 X 10^{-7} in (pounds/SCF)/PPM;

C_H = Hourly Average SO_2 concentration in PPM; and

Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(ii) If the SO_2 concentration is measured on a dry basis, Exxon shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. Exxon shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;

K = 1.663 X 10^{-7} in (pounds/SCF)/PPM;

C_H = Hourly Average SO_2 concentration in PPM (dry basis);

Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and

$\%H_2O$ = Hourly Average stack gas moisture content, in percent by volume.

(b) For refinery fuel gas systems:

(i) H_2S concentrations are measured on an actual wet basis in PPM;

(ii) the fuel gas firing rate for the refinery fuel gas combustion units [listed in Section 1(B)(1), (2), (3) and (4)] shall be measured at the refinery fuel gas header and shall be reported on an actual wet basis in standard cubic feet per hour (SCFH); and:

(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.688×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average fuel gas H_2S concentration in PPM; and
Q_H = actual fuel gas firing rate in SCFH.

(c) For sour water stripper overheads (SWSOH) burning in the F-2 Crude/Vacuum Heater stack or the flare:

(i) the H_2S concentrations in the sour water shall be determined in accordance with Attachment #2 (or another method approved by the Department and EPA) and expressed in milligrams per liter;

(ii) sour water flow rate shall be expressed in gallons per hour; and

(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_H = K * C_H * Q_H$$

Where:
E_H = Hourly SO_2 Emission Rate from burning of the sour water stripper overheads in the F-1 Crude Furnace or the flare in pounds per hour rounded to the nearest tenth of a pound;
K = 1.57×10^{-5} in [(pounds-liters)/(gallons-milligrams)];

C_H = H_2S concentration of the sour water in milligrams per liter; and
Q_H = sour water flow rate to the T-23 sour water stripper tower in gallons per hour.

(d) For Coker CO Boiler:

(i) Coker fresh feed rate shall be expressed in barrels per day (barrels/day); and

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(iii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_C = 0.0817 * Q_H + 213.02$$

Where:
E_C = Hourly SO_2 Emission Rate from firing Coker Unit flue gases in the Coker CO Boiler in pounds per hour and rounded to the nearest tenth of a pound; and
Q_H = Coker fresh feed rate in barrels/day.

(12) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack, except that:

(a) for the FCC CO Boiler stack, start-up and shutting down shall only include time periods when gas-oil feedstock is being delivered to the FCC and

(b) for the purpose of determining the Quarterly Data Recovery Rate for the sour water flow rate CEMS, Operating shall only include those periods when sour water stripper overheads are burned in the flare or in the F-1 Crude Furnace and exhausted up the F-2 Crude/Vacuum Heater stack.

(13) "Quarterly Data Recovery Rate (QDRR)" means the percentage of hours in a calendar quarter when CEMS derived Hourly SO_2 Emission Rate data are available for a source (stack, fuel gas, or sour water system) in comparison to the number of corresponding Operating hours for that source.

If Exxon demonstrates, through the CEMS manufacturer's specifications and stack measurements, that stack conditions during certain periods of startup or shutdown in the FCC CO boiler stack are beyond the design capabilities of the CEMS, then such periods shall not be considered Operating hours for determination of the QDRR.

The (QDRR) for a source shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH}{OH} \times 100\%$$

Where:

VH = Number of hours of Hourly SO_2 Emission Rate data that are also source Operating hours in a calendar quarter;
OH = Total number of source Operating hours in a calendar quarter; and
QDRR = Quarterly Data Recovery Rate.

(14) "Standard Conditions":

(a) means 20.0°C (293.2°K, 527.7°R, or 68.0°F) and 1 atmosphere pressure (29.92" Hg) for stack gas emission calculations using the equation/method in Section 2(A)(11)(a); and

(b) means 15.6°C (288.7°K, 520.0°R, or 60.3°F) and 1 atmosphere pressure (29.92" Hg) for refinery fuel gas emission calculations using the equation/method in Section 2(A)(11)(b).

(15) "Three Hour Average FCC Fresh Feed Rate" means the average of three Hourly Average FCC Fresh Feed Rates in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in thousands of barrels per day.

Where:

$$[\text{Three Hour Average FCC Fresh Feed Rate}] = \frac{\Sigma\ [\text{Hourly Average FCC Fresh Feed Rate}]}{3}$$

Whenever the Hourly Average FCC Fresh Feed Rates are unavailable due to the failure of both the primary and back-up continuous flow rate meters required by Section 6(B)(6), a substituted Hourly Average FCC Fresh Feed Rate shall be used. The substituted Hourly Average FCC Fresh Feed Rate shall be the Hourly Average FCC Fresh Feed Rate determined for the Three Hour Period immediately preceding the Three Hour Period in which the continuous flow rate meter data first became unavailable.

(16) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(17) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS AND FACILITY MODIFICATIONS

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Exxon may be subject to (hourly, daily, and annual) SO_2 emission limits in an air quality permit that are more restrictive than those presented here. In those instances where permit emission limits are more stringent, Exxon shall comply with those permit limitations

(A) The following emission limitations shall apply whenever the Yellowstone Energy Limited Partnership facility is receiving Exxon Coker unit flue gas or whenever the Exxon Coker unit is not operating:

(1) Refinery Fuel Gas Combustion from the following units: Coker CO Boiler, FCC CO Boiler, F-2 Crude/Vacuum Heater, F-3 unit, F-3X unit, F-5 unit, F-700 unit, F-201 unit, F-202 unit, F-402 unit, F-551 unit, F-651 unit, and standby boiler house (B-8 boiler);

(a) Combined Three Hour Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 92.4 pounds per three hour period; and

(b) Combined Daily Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 739.2 pounds per Calendar Day.

(2) F-2 Crude/Vacuum Heater Stack:

(a) Three Hour Emissions of SO_2 from the F-2 Crude/Vacuum Heater stack shall not exceed 271.4 pounds per three hour period; and

(b) Daily Emissions of SO_2 from the F-2 Crude/Vacuum Heater stack shall not exceed 2,171.2 pounds per Calendar Day.

(3) FCC CO Boiler Stack:

(a) Three Hour Emissions of SO_2 from the FCC CO Boiler stack shall not exceed those values set forth in the following Table 1a. The three hour SO_2 emission limitations from the FCC CO Boiler stack shall be determined by the Three Hour Average FCC Fresh Feed Rate, expressed in thousands of barrels per day (kBD), rounded up to the nearest whole barrel; and

Table 1a

Three Hour Average FCC Fresh Feed Rate (kBD)	Three Hour SO_2 Emission Limit (lbs of SO_2 per 3-hours)
less than 12.999	5886.8
13.000 to 13.999	6052.0
14.000 to 14.999	6103.7
15.000 to 15.999	6130.6
16.000 to 16.999	6221.8
greater than 17.000	6280.4

(b) Daily Emissions of SO_2 from the FCC CO Boiler stack shall not exceed those values set forth in the following Table 1b. The daily SO_2 emission limitations from the FCC CO Boiler stack shall be determined by the Daily Average FCC Fresh Feed Rate, expressed in thousands of barrels per day (kBD), rounded up to the nearest whole barrel.

Table 1b

Daily Average FCC Fresh Feed Rate (kBD)	Daily SO_2 Emission Limit (lbs of SO_2 per Calendar Day)
less than 12.999	47,094.3
13.000 to 13.999	48,416.3
14.000 to 14.999	48,829.7
15.000 to 15.999	49,044.9
16.000 to 16.999	49,774.5
greater than 17.000	50,243.1

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(B) The following emission limitations shall apply whenever the Yellowstone Energy Limited Partnership facility is not receiving Exxon Coker unit flue gas and the Exxon Coker unit is operating:

(1) Coker CO Boiler stack (includes process exhaust gases and F-202 heater fuel gas firing emissions);

a. Three Hour Emissions of SO_2 from the Coker CO Boiler stack shall not exceed 2,142.9 pounds per 3-hour period; and
b. Daily Emissions of SO_2 from the Coker CO Boiler stack shall not exceed 17,143.1 pounds per Calendar Day."

(2) Refinery Fuel Gas Combustion from the following units: FCC CO Boiler, F-2 Crude/Vacuum Heater, F-3 unit, F-3X unit, F-5 unit, F-700 unit, F-201 unit, F-402 unit, F-551 unit, F-651 unit, and standby boiler house (B-8 boiler);

(a) Combined Three Hour Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 76.2 pounds per three hour period, and

(b) Combined Daily Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 609.6 pounds per Calendar Day.

(3) F-2 Crude/Vacuum Heater Stack:

(a) Three Hour Emissions of SO_2 from the F-2 Crude/Vacuum Heater stack shall not exceed 271.4 pounds per three hour period; and

(b) Daily Emissions of SO_2 from the F-2 Crude/Vacuum Heater stack shall not exceed 2,171.2 pounds per Calendar Day.

(4) FCC CO Boiler Stack:

(a) Three Hour Emissions of SO_2 from the FCC CO Boiler stack shall not exceed those values set forth in the following Table 2a. The three hour SO_2 emission limitations from the FCC CO Boiler stack shall be determined by the Three Hour Average FCC Fresh Feed Rate expressed in thousands of barrels per day (kBD), rounded up to the nearest whole barrel, and

Table 2a

Three Hour Average FCC Fresh Feed Rate (kBD)	Three Hour SO_2 Emission Limit (lbs of SO_2 per 3-hours)
less than 12.999	5231.5
13.000 to 13.999	5485.3
14.000 to 14.999	5743.7
15.000 to 15.999	5966.6
16.000 to 16.999	6190.4
greater than 17.000	6416.4

(b) Daily Emissions of SO_2 from the FCC CO Boiler stack shall not exceed those values set forth in the following Table 2b. The daily SO_2 emission limitations from the FCC CO Boiler stack shall be determined by the Daily Average FCC Fresh Feed Rate expressed in thousands of barrels per day (kBD), rounded up to the nearest whole barrel.

Table 2b

Daily Average FCC Fresh Feed Rate (kBD)	Daily SO_2 Emission Limit (lbs of SO_2 per Calendar Day)
less than 12.999	41,852.1
13.000 to 13.999	43,882.7
14.000 to 14.999	45,949.5
15.000 to 15.999	47,732.5
16.000 to 16.999	49,523.1
greater than 17.000	51,330.8

(C) If continuous flow rate meter data (used to determine the FCC Fresh Feed Rate) is unavailable, the emission limitation shall be determined using a substitute Hourly Average Fresh Feed Rate determined in accordance with the requirements of Section 2(A)(15).

(D) Other Minor Sources;

(1) Exxon shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

(2) Exxon shall use good engineering judgement and appropriate engineering calculations to quantify emissions from activities that are not otherwise addressed by this Stipulation and Exhibit A but are known to contribute to emissions from sources listed in Section 1(B). In addition, Exxon shall account for such emissions in determining compliance with all applicable emission limits contained in Section 3.

(E) Facility Modifications

(1) By July 1, 1997, Exxon shall modify the FCC CO Boiler stack height to not less than 76.7 meters above ground level. For the purpose of the dispersion model in support of this Stipulation and Exhibit A, the good engineering practice stack height credit for the FCC CO Boiler stack is 76.7 meters.

(2) Exxon shall not restore fuel oil guns to the F-201 unit, F-202 unit, F-402 unit, F-551 unit, F-651 unit, F-700 unit, F-401 unit, F-3X unit, and the Coker CO Boiler. This is consistent with Section 3(B)(2) of Exhibit A of the Stipulation between the Department and Exxon dated April 21, 1995 and adopted by the Board through a Board Order on May 19, 1995 and Section 3 (F)(3) of Exhibit A of the Stipulation

between the Department and Exxon dated July 16, 1996 and adopted by the Board through a Board Order on August 9, 1996.

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(3) Exxon shall not restore the fuel oil guns to the F-2 Crude/Vacuum Heater, F-3 and F-5 units. This is consistent with Section 3(F)(3) of Exhibit A of the Stipulation between the Department and Exxon dated January 28, 1997, and adopted by the Board through Board Order dated February 7, 1997

(4) Beginning January 1, 1998, Exxon shall burn the sour water stripper overheads in the FCC CO Boiler and exhaust those emissions through the FCC CO Boiler stack, except that the sour water stripper overheads may be burned in the F-1 Crude Furnace (and exhausted through the F-2 Crude/Vacuum Heater stack) ~~or in the flare~~ during periods when the FCC CO Boiler is unable to burn the sour water stripper overheads, provided that:

(a) such periods do not exceed 55 days per calendar year and 65 days for any two consecutive calendar years, and
(b) during such periods the sour water stripper system is operating in a two tower configuration.

(5) By January 1, 1998, Exxon shall install an electronic sensor on the valve which supplies sour water stripper overheads to the F-1 Crude Furnace or the flare. The electronic sensor shall be electronically integrated with the Data Acquisition System (DAS) to insure that each time the valve is opened (sour water stripper overheads to the F-1 Crude Furnace or the flare) the DAS automatically records the date and time that the valve is opened and the length of time the SWSOH are directed to the F-1 Crude Furnace or the flare. Whenever the valve is opened, Exxon shall log the date and time and the reasons for such action.

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations contained in Section 3 (A)(3) and (B)(4) shall be determined using data from the CEMS required by Section 6(B)(1) and (2) and in accordance with the appropriate equation(s) in Section 2(A)(1), (8), (11), and (16) except when CEMS data is not available as provided in Section 2(A)(16). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Section 5(A) or Section 6(C and D) shall also be used to demonstrate compliance. Notwithstanding the fact that fuel gas combustion emissions from the FCC CO Boiler are measured by the fuel gas system CEMS and counted against the emission limitations contained in Section 3 (A)(1) and (B)(2), such emissions are also measured by the FCC CO Boiler CEMS and shall be counted against the emission limitations contained in Section 3 (A)(3) and (B)(4).

(B) Compliance with the combined emission limitation for the fuel gas combustion units contained in Section 3(A)(1) and (B)(2) shall be determined by using Hourly Average H_2S concentrations and Hourly Average fuel gas firing rates from the CEMS required by Section 6(B)(3) and (8) and in accordance with the appropriate equation(s) in Section 2(A)(1), (8), (11), and (16) except when CEMS data is not available as provided in Section 2(A)(16).

(C) Unless a CEMS, or CEMS-Equivalent Alternative Monitoring Plan approved by the Department and EPA, is required for compliance as specified in Section 6(B)(4), compliance with the emission limitations contained in Section 3(B)(1) shall be determined in accordance with the equation in Section 2(A)(11)(d). Whenever Coker Unit flue gases are being burned in the Coker CO Boiler, Exxon shall obtain hourly readings from the Coker unit fresh feed rate meter beginning with the first Clock Hour that Coker unit flue gas is burned in the Coker CO Boiler. Exxon shall record those readings in units of barrels per day (barrels/day) and maintain a log of the hourly readings.

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In order to assure the continued reliability of the equation prescribed by Section 2(A)(11)(d) and used to calculate Hourly SO_2 Emission Rates from the Coker CO Boiler, Exxon shall sample the Coker unit reactor feed stream and analyze each of the required samples for sulfur content using ASTM Method 1552-83 or an equivalent method approved by the Department and EPA. The equation prescribed by Section 2(A)(11)(d) shall be considered reliable for predicting SO_2 emissions from the Coker CO Boiler when reactor feed sulfur content is determined to be less than or equal to 5.11 percent by weight. Exxon shall conduct the required sampling in accordance with the following schedule and procedure.

Exxon shall collect one sample of Coker unit reactor feed for each Calendar quarter during any part of which Coker unit flue gases are burned in the Coker CO Boiler. Exxon shall collect the required quarterly sample within four hours of the time the Coker unit flue gas stream is first routed to the Coker CO Boiler during each Calendar quarter. Exxon shall analyze that sample for sulfur content as soon as possible but no later than 5 business days from the time the sample was collected. Exxon is not required to collect a reactor feed sample for any Calendar quarter during which no Coker unit flue gas is burned in the Coker CO Boiler.

If the results of the required sampling and analysis indicate that the sulfur content of the reactor feed is in excess of 5.11 percent by weight, Exxon shall notify the Department of those results by the next business day following its receipt of the results. Exxon shall then work with the Department and, as appropriate, EPA to determine what additional actions, if any, may be necessary to provide assurance that the Coker CO boiler emissions remain within the limitations set forth in Section 3."

(D) If a CEMS or CEMS-Equivalent Alternative Monitoring Plan approved by the Department and EPA is required, compliance shall be determined using data from the:

(1) CEMS and in accordance with the appropriate equation(s) in Section 2(A)(1), (8), (11), and (16) except when CEMS data is not available as provided in Section 2(A)(16); or

(2) CEMS-Equivalent Alternative Monitoring Plan approved by the Department and EPA and in accordance with the equations in Section 2(A)(1), (8), and (16).

(E) Whenever sour water stripper overheads are being burned in the F-1 Crude Furnace (and exhausted through the F-2 Crude/Vacuum Heater stack) ~~or in the flare~~, compliance with the emission limitations contained in Section 3 (A)(2) and (B)(3) shall be determined using flow rate monitoring data from the CEMS required by Section 6(B)(9) and from sampling and analysis of the sour water feed to the T-23 sour water stripper tower. Except for the first two hours after sour water stripper overheads are directed to the F-1 Crude Furnace ~~or the flare~~, Exxon shall collect at least one sample from the sour water feed to the T-23 sour water stripper tower for each of the eight nonoverlapping three hour periods in a Calendar Day. In addition, the time elapsed before collection of the first sample shall not exceed four hours. Exxon shall analyze the sample for H_2S in accordance with the procedures contained in Attachment #2 (or another method approved by the Department and EPA) and Exxon shall use the results to calculate the Hourly SO_2 Emission Rate for each of the hours in the three hour period in accordance with the equations in Section 2 (A) (1), (8), (11), and (16). Notwithstanding the fact that fuel gas combustion emissions from the F-2 Crude/Vacuum Heater are measured by the fuel gas system CEMS and counted against the emission limitations contained in Section 3 (A)(1) and (B)(2), such emission are also counted against the emission limitations contained in Section 3 (A)(2) and (B)(3) if for any reason source testing is conducted on the F-2 Crude/Vacuum Heater stack.

(F) By January 1, 1998, Exxon shall certify for the Department that the facility modifications described in Section 3(E) have been completed and are permanent in nature.

(G) Compliance with the facility modifications contained in Section 3(E) shall be determined by inspection by the Department once a year or whenever as necessary.

(H) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6(A)(2) shall be determined in accordance with Section 2(A)(13), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether Exxon has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, Exxon shall implement short term corrective measures, and if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure, or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rates in pounds per hour for the FCC CO boiler stack and the Coker CO boiler stack [if a CEMS or CEMS-Equivalent Alternative Monitoring Plan are required by Section 6(B)(4)], Exxon shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6c as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C and D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) In order to accurately determine the hydrogen sulfide concentration in parts per million for the fuel gas system, Exxon shall perform annual source testing using EPA-approved methods (40 CFR Part 60, Appendix A, Method 11) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106).

(C) Exxon shall notify the Department in writing of each annual source test a minimum of 25 working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond Exxon's control, and which could not reasonably have been prevented or mitigated by Exxon. Such circumstances may include but are not limited to earthquakes, power outages, or fire, but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, Exxon initiates the short term corrective measures and the long term corrective measures required by Section 4(H)(3);

(c) within two working days of occurrence, Exxon notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) Exxon demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, Exxon shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible,

(b) At a minimum, Exxon shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(H)(2):

(i) for the FCC CO Boiler stack CEMS, refinery fuel gas system CEMS, and Coker CO Boiler stack CEMS [if required by Section 6(B)(4)(a)], Exxon shall achieve a QDRR for each CEMS of equal to or greater than 90%; and

(ii) for the sour water system CEMS (measures sour water flow rate to the T-23 sour water stripper tower), Exxon shall achieve a QDRR of equal to or greater than 90%.

(c) In its evaluation of whether Exxon used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS, including a demonstration made by Exxon (using manufacturer's specifications and stack measurements) that stack conditions during certain periods of startup or shutdown in the FCC CO Boiler stack are beyond the design capabilities of the CEMS; and whether:

(ii) Exxon has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) Exxon has complied with the quality assurance requirements described in Section 6;

(iv) Exxon has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6(A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, Exxon shall implement the short term corrective measures, and if necessary, the long term corrective measures required by Section 4(H)(3).

(B) Affected Sources

(1) By December 1, 1997, Exxon shall install, operate and maintain a continuous emission monitor to measure sulfur dioxide concentrations from the FCC CO Boiler stack.

(2) By December 1, 1997, Exxon shall install, operate and maintain a continuous stack flow rate monitor to measure the stack gas flow rates from the FCC CO Boiler stack.

(3) By December 1, 1997, Exxon shall install, operate and maintain hydrogen sulfide (H_2S) concentration monitoring at the refinery fuel gas header. By August 1, 1998, Exxon shall insure that the hydrogen sulfide (H_2S) concentration monitoring at the refinery fuel gas header is capable of measuring H_2S concentrations in fuel gas in the range of 0-1200 ppmv.

(4) After January 1, 1998, if Exxon exhausts Coker unit flue gas through the Coker CO Boiler stack more than 336 hours in a calendar quarter, Exxon shall within 180 days after the end of the calendar quarter:

(a) install and certify in accordance with 40 CFR Part 60, Appendix B and Method A-1 of Attachment #1 a portable continuous sulfur dioxide concentration monitor and a portable continuous stack flow rate monitor on the Coker CO Boiler stack; or

(b) implement a CEMS-Equivalent Alternative Monitoring Plan which has been approved by the Department and EPA.

(5) After installation and certification of the portable monitors (unless Exxon chooses to implement a CEMS-Equivalent Alternative Monitoring Plan) required by Section 6(B)(4)(a), Exxon may remove the monitors from the Coker CO Boiler stack whenever Coker unit flue gas is not being exhausted through the stack. However, at any time after initial installation and certification of the monitors Exxon exhausts Coker unit flue gas through the Coker CO Boiler stack, Exxon shall within 48 hours:

(a) reinstall the portable monitors at the same location on the Coker CO Boiler stack (including probe position in the stack);

(b) perform a Cylinder Gas Audit (CGA) or Relative Accuracy Audit (RAA) which meets the requirements and specifications of 40 CFR Part 60, Appendix F; and

(c) operate the monitors in accordance with the quality assurance requirements of Section 6 as long as Coker unit flue gas continues to be exhausted through the Coker CO Boiler stack.

(6) Exxon shall operate and maintain a continuous flow rate meter to determine the Fresh Feed Rate to the FCC reactor. In addition, Exxon shall maintain a spare parts inventory (at a minimum, a spare

transducer) that together with the FCC-specific Process Logic Control (PCL) module is capable of functioning as a back-up continuous flow rate meter to measure the Fresh Feed Rate to the FCC reactor. The back-up continuous flow rate meter shall be a completely redundant system capable of obtaining flow rate data in the event of the failure of the primary continuous flow rate meter required by this section. However, the back-up system may rely upon the in-pipe orifice plate and associated mechanical connections that are components of the primary continuous flow rate meter up to, but not including, the transducer.

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(7) Exxon shall operate and maintain a continuous flow rate meter to determine the fresh feed rate to the Coker Unit.

(8) Exxon shall operate and maintain a continuous flow rate monitor on the refinery fuel gas header.

(9) Exxon shall operate and maintain a continuous flow rate monitor to determine the sour water flow rate to the T-23 sour water stripper tower.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors and hydrogen sulfide concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specifications 2 and 7; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro- optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) Exxon shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department Method A-1 of Attachment #1; and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) Exxon shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(E) Accuracy determinations for refinery fuel gas flow rate monitor and the FCC Fresh Feed Rate Meter shall be required at least once every 48 months or more frequently as routine refinery turn-arounds allow. Accuracy determinations for the sour water flow rate monitor shall be required at least once every 48 months and within three month prior to any scheduled shutdown of the FCC CO Boiler and shall be conducted in accordance with Attachment #2 (or another method approved by the Department and EPA).

SECTION 7. DATA REPORTING REQUIREMENTS

(A) Exxon shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the FCC CO Boiler stack, and Coker CO Boiler stack (if a CEMS is required by Section 6(B)(4) and YELP is not receiving Coker unit flue gas);

(b) Hourly Average stack volumetric flow rates in SCFH from the FCC CO Boiler stack and Coker CO Boiler stack (if a CEMS is required by Section 6(B)(4) and YELP is not receiving Coker unit flue gas);

(c) Hourly Average stack gas temperature in °F from the FCC CO Boiler stack and Coker CO Boiler stack (if a CEMS is required by Section 6(B)(4) and YELP is not receiving Coker unit flue gas);

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(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being burned in the F-1 Crude Furnace), FCC CO Boiler stack, refinery fuel gas system, and Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating);

(e) Hourly Average H_2S concentrations in PPM from the refinery fuel gas system;

(f) Hourly Average refinery fuel gas combustion units actual fuel gas firing rate (Q_H) as defined in Section 2(A)(11)(b) in SCFH;

(g) daily calibration data from the CEMS required by Section 6(B)(1, 2, 3, and 4);

(h) the Hourly Average FCC Fresh Feed Rate; and

(i) the Hourly Average sour water flow rate to the T-23 sour water stripper tower whenever sour water stripper overheads are being burned in the F-1 Crude Furnace or the flare.

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(j) the Hourly Average fresh feed rate to the Coker Unit.

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, Exxon shall also record, organize and archive for at least five years the same data, and upon request by the Department, Exxon shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized CEMS or CEMS-Equivalent Alternative Monitoring Plan data for Daily Emissions, Three Hour Emissions, Quarterly Data Recovery Rates, and text regarding excess emissions. The quarterly written report shall identify each time period when the sour water stripper overheads were burned in the F-1 Crude Furnace (and exhausted through the F-2 Crude/Vacuum Heater stack) or in the refinery flare and the number of sour water stripper towers in service at the time.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emission Limitations for SO_2 from the FCC CO boiler stack;

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(b) Three Hour Emissions of SO_2 in pounds per three hour period from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being burned in the F-1 Crude Furnace), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and combined Three Hour Emissions from the fuel gas combustion units (listed in Section 3 (A)(1) and

(B)(2), as appropriate);

(c) Daily Emission Limitations for SO_2 from the FCC CO Boiler stack;

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(d) Daily Emissions of SO_2 in pounds per Calendar Day from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being incinerated in the F-1 Crude Furnace), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and combined Daily Emissions from the fuel gas combustion units [listed in Section 3 (A)(1) and (B)(2), as appropriate];

(e) the Quarterly Data Recovery Rate for each CEMS required by Section 6(B)(1), (2), (3), (4), (8) and (9) expressed in percent;

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(f) the Operating hours during the calendar quarter for the sources or units associated with the F-2 Crude/Vacuum stack or the flare (when sour water stripper overheads are being burned in the F-1 Crude Furnace or the flare), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and refinery fuel gas system;

(g) the dates and times identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(h) the results of the quarterly CGA's or RAA's and flow rate checks, the annual RATAs required in Section 6(C and D), and the annual source tests required by Section 5(A and B);

(i) the results of any quarterly or annual quality assurance tests or checks associated with and required by a CEMS-Equivalent Alternative Monitoring Plan;

(j) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances; and

(k) the dates and times that sour water stripper overheads are diverted from the FCC CO Boiler to the F-1 Crude Furnace or the flare, the reasons for the diversions, and corrective actions taken, as appropriate, to avoid future recurrence.

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(l) the results of the sampling of Coker reactor feed and analyses for sulfur content required by Section 4(C).

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of operation with excess emissions, the Hourly SO_2 Emission Rates, and Three Hour

Emissions;

(b) all information regarding reasons for operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, Exxon shall provide Hourly SO_2 Emissions Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for Exxon while still providing the necessary information. Any revisions shall be made only after consultation with Exxon, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachments shall be construed to alter Exxon's obligations under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, Exxon reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Exhibit A and Attachments, Exxon shall, pursuant to 75-2-403, MCA, allow the Department representative(s) access to all SO_2 emitting sources at the Exxon facility such that, the Department representative(s) may, pursuant to 75-2-403, MCA, enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain emissions data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all other necessary functions related to this control plan.

As provided in Section 75-2-105, MCA, Exxon may seek a court order declaring certain trade secret information as confidential and not a matter of public record. If Exxon claims that certain information is entitled to trade secret protection, the Department shall maintain such information as confidential pending issuance of a court order under Section 75-2-105, MCA, provided that Exxon initiate such court action within

14 days of delivering the information to the Department.

(B) Enforcement - Any violation of a limitation, condition or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS
(Includes Methods A-1 and B-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The Department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the Department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by

installing straightening vanes. The Department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the Department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the Department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the Department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed ± 2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the Department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error .

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and

required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part

60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$\boldsymbol{CE} = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;

R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\text{(Eq. A-2)} \quad \bar{d} = \frac{1}{n} \sum_{i=1}^{n} d_i$$

Where:

n=Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i

d_i = The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - [\frac{(\sum_{i=1}^{n} d_i)^2}{n}]}{n-1}} \quad \text{(Eq. A-3)}$$

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025} \frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

where:

$t_{0.025}$ = t value (see Table 2)

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$RA = \frac{|\bar{d}| + |cc|}{\overline{RM}} x\ 100 \qquad \text{(Eq. A-5)}$$

where:

RM = Arithmetic means of the reference method values.

$|\bar{d}|$ = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

$|cc|$ = The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
			Confidence coefficient	
			Relative accuracy	

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration

error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;

TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses). The relative accuracy test audit shall be conducted according to the procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations (≤10.0 fps), the flow monitor mean value (if applicable) exceeds ±2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly

flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

ATTACHMENT # 2

ANALYTICAL METHODS FOR ANALYZING THE SOUR WATER STRIPPER OVERHEADS FOR HYDROGEN SULFIDE AND PRECISION AND ACCURACY METHODS FOR THE SOUR WATER STRIPPER FLOW METER

METHOD #6A-1

ANALYTICAL METHOD FOR ANALYZING THE SOUR WATER STRIPPER FEED FOR HYDROGEN SULFIDE (H_2S)
(October 1999)

1.0 SCOPE AND APPLICATION

This method is applicable to the measurement of total and dissolved sulfides in sour water produced by the refinery. Acid insoluble sulfides are not measured by the use of this test. (Copper sulfide is the only common sulfide in this class).

2.0 SUMMARY OF METHOD

Excess iodine is added to a sample which has been treated with zinc acetate to produce zinc sulfide. The iodine oxidizes the sulfide to sulfur under acidic conditions. The excess iodine is back titrated with sodium thiosulfate.

3.0 COMMENTS

Reduced sulfur compounds, such as sulfite, thiosulfate and hydrosulfite, which decompose in acid may yield erratic results. Also, volatile iodine-consuming substances such as mercaptans will give high results.

The sample source is hot and under pressure.

The volumes of preservative and the normality of the reagents have been modified from the referenced methods. The modifications are to make the method appropriate for the expected high concentrations of sulfide in the samples. The method calculations are also modified to correct for the sample dilution from the preservative.

4.0 APPARATUS

4.1 Ordinary laboratory glassware.

4.2 130 ml HDPE bottles. These bottles are pre-charged with preservative. For the sour water stripper feed inlet the bottle contains 5 ml of zinc acetate and 10 ml of sodium hydroxide.

5.0 REAGENTS

5.1 Hydrochloric acid, HCl, 6 N

5.2 Standard iodine solution, 0.1000 N: Dissolved 20 to 25 g KI in a little water in a liter volumetric and add 12.8 g iodine. Allow to dissolve. Dilute to 1 liter and standardize against 0.1000 N sodium thiosulfate using a starch indicator.

5.3 Sodium thiosulfate 0.1000N: Dissolve 24.82 g $Na_2S_2O_3 \bullet 5H_2O$ in water. Add 1 ml of chloroform and dilute to 1000 ml.

5.4 Starch indicator: Dissolved 10 g soluble starch and 10 mg Hg_2I in hot water and dilute to 4 liters.

5.5 Standardize the sodium thiosulfate against KIO_3. Adjust the concentration to 0.1000 N. Use this sodium thiosulfate to standardize the iodine solution.

5.6 Zinc acetate solution, 2N: Dissolve 220 g $Zn(C_2H_3O_2)_2 \bullet 2H_2O$ in water and dilute to one liter.

5.7 Sodium hydroxide, 6N: Dissolve 240 grams of sodium hydroxide in 800 ml of water, Dilute to one liter. Caution: much heat will be liberated.

6.0 SAMPLING

6.1 The sample bottles (4.2) are pre-charged with zinc acetate and sodium hydroxide preservative and labeled. The sample bottle sample contains 5 ml of preservative and 10 of sodium hydroxide.

6.2 The sample is obtained by carefully filling the appropriate bottle. Fill the bottle slowly to prevent the sample from splashing the preservative out or overflowing the bottle. The bottle should be completely filled with no headspace air. If necessary, the sides of the bottle can be squeezed while screwing on the lid to exclude the remaining air.

6.3 Experience shows that the pH of these samples, taken and preserved as described, are above 9. No further pH adjustment is required.

7.0 PROCEDURE

7.1 Shake the container to suspend all solids and remove the sample. Measure the volume of sample. This is used to correct the results for the dilution due to the preservative. Check the pH of the sample using pH test paper to confirm that it is 9 or higher.

7.2 Place 20 ml of standard iodine solution (5.2) into a 500 ml iodine titration flask.

7.3 Add 15 ml of 6N HCl (5.1).

7.4 Thoroughly mix the sample and quickly take a 25 ml aliquot and place it in the flask.

7.5 If the iodine color disappears, add more iodine until the color remains. Record the total number of milliliters of standard iodine used steps 7.2 and 7.5.

7.6 Titrate with the reducing solution (0.1 N sodium thiosulfate) to a pale straw color. Add the starch indicator and titrate until the blue color disappears. Record the volume used.

8.0 CALCULATIONS

8.1 Sulfide as H_2S, mg/l = $\frac{(A - B) \times 17.01 \times 1000}{\text{sample aliquot, ml} \times K}$

Where:

A = Volume of Iodine, ml * Normality of Iodine

B = Volume of Thiosulfate, ml * Normality of Thiosulfate

K = $\frac{\text{ml of sample - ml of preservative}}{\text{ml of sample}}$

This is a correction for the preservative volume. The volume of sample is the total volume in the sample container including the preservative. The volume of preservative is the volume added to the container before the sample was obtained.

9.0 REFERENCES

9.1 Standard Methods for the Examination of Water and Wastewater, 19^{th} Edition, p 4-127, Method 4500-S_2 F, (1995)

EPA Method 376.1

METHOD #6B
PRECISION AND ACCURACY METHOD FOR THE SOUR WATER STRIPPER FLOW METER TO T-23

1.0 SCOPE AND APPLICATION

This method is applicable to any typical orifice type flow meter that is installed consistent with ASME code procedures found under ASME MFC-3M-1989 (Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi). Such a designed and installed flow meter will, if maintained consistent with these procedures, have an accuracy of 2 percent of the upper range.

2.0 SUMMARY OF METHOD

The calibration is to ensure installation parameters are maintained and the flow measurement components maintain their integrity during the period of operation so that the output can be relied upon as representative of a 2 percent accurate flow.

3.0 PROCEDURE FOR ANNUAL CALIBRATION

3.1 Meter Information

Obtain the sour water feed meter installation information for the meter to the second tower of the Sour Water Strippers. This information should be verified as consistent with the designed system and as installed in the field.

3.2 Field Verification

Verify the field orifice meter actually installed is that which was installed originally by checking the orifice plate tab at the meter between the orifice flanges. Verify the transmitter differential pressure range is the same as required in the design and originally set.

3.3 Transmitter Span Check and Zero Check

3.3.1 Span Check

Block transmitter at the three valve manifold. As a precaution during this procedure, the technicians should position themselves upwind due to the potential of elevated H_2S concentrations in this stream. Connect the multimeter to the transmitter and observe and note the transmitter output. Unblock the high pressure side manifold valve, vent the low pressure side of the transmitter making sure the vent is pointing away from the technician. The transmitter output should go up scale to 20 + milliamps direct current (madc).

3.3.2 Tap/Lead Line Plugging Check

Close low pressure vent. Open low pressure manifold valve and block in high pressure manifold valve making sure the vent is pointed away from the technician. The transmitter output should go down scale to less than 4.0 madc. Open equalizer valves on manifold. This will allow blowing of the low side lead line to check for any plugging or plugged tap. If it blows satisfactorily, close the low pressure side transmitter vent and manifold equalizing valve. Next open the transmitter high pressure side vent and then the high pressure manifold valve to allow blowing the high pressure lead line to check for any plugging or plugged tap.

3.3.3 Zero Check

Close transmitter high pressure side vent, leave high pressure manifold valve open and open manifold equalizer valve. The transmitter output should go to zero. If no adjustment is required, proceed to place the instrument back into service. If outside a 2% accuracy, follow the steps in Section 4.0 of these procedures for additional accuracy checks.

4.0 FORTY-EIGHT MONTH ACCURACY CHECK

4.1 Scope and Application

This part of the procedure will be conducted at least three months prior to a FCC/CO Boiler turnaround but not more than a 48 months interval, to ensure the accuracy of this meter prior to a know period when the sour water stripper overheads will be incinerated in the Crude Furnace for an extended period of up to 40 days.

4.2 Meter Information and Field Verification

Follow steps 3.1 and 3.2 to ensure the meter installation has the designed components in place.

4.3 Transmitter Zero and Span Check

Block the transmitter at the root valves and at the three valve manifold. As a precaution during this procedure, the technicians should position themselves upwind due to the potential of elevated H_2S concentrations in this stream. Bleed pressure with the bleeder pointed away from the technician. Remove wiring and tubing, inspect flex and tubing and replace as needed. Remove mounting and equalizer bolts and remove transmitter. Take transmitter to the Refinery Instrument Shop for Bench Check calibration.

Remove body flanges and clean all parts and check for corrosion and other problems that could affect transmitter performance. Repair or replace as needed to ensure an accurate flow measurement. Apply proper pressure to define and calibrate at zero and full scale for the span. Adjust as necessary and check repeatability.

4.4 Field Inspection of Meter Installation

After the meter transmitter is removed, remove the orifice plate and measure its diameter to confirm no change has occurred. Establish if a new plate is required due to corrosion or erosion and obtain for installation. In either case, a new meter factor must be developed consistent with ASME MFC-3M-1989 or equivalent (Exxon has incorporated these requirements into a rigorous computer design tool used for this purpose).

Once the orifice plate is removed, visually inspect the process piping. Clean as needed and measure the inside pipe diameter of the up stream and downstream piping to confirm no deterioration has occurred. If more than a 2% increase in orifice or pipe diameter has occurred, a new meter factor must be developed consistent with ASME MFC-3M-1989 or equivalent (Exxon has incorporated these requirements into a rigorous computer design tool used for this purpose).

4.5 Field Zero and Span Check to Confirm Proper Installation

Reinstall all parts using new bolts and gaskets. Open root valves, bypass on the equalizer and the low side tap of the equalizer. Close the bleeder. This will give a zero reading. Verify zero reading on the transmitter. When zero checking is complete, check the range utilizing a handheld digital pneumatic meter by pumping up pressure to match the design and installed maximum pressure reading. Verify the maximum span on the transmitter. If there is more than a 2% difference, make necessary adjustments. If within the 2% accuracy, proceed to put the instrument back in service. If transmitter will not operate properly while conducting the zero and span checks, remove from service and take to the Refinery Instrument Shop to conduct another full Bench Check on the transmitter. If unable to achieve a 2% accuracy, repair or replace and follow the above steps on the repaired or replaced instrument until a 2% accuracy is obtained on the field installed instrument. Proceed to recommission as appropriate and in a timely manner check to be sure operations is satisfactory.

5.0 TRACK CHANGES

If any changes to the original equipment, i.e. orifice plate, piping changes, differential pressure or meter factor, place new data into the refinery meter tracking information system and use for future meter calibrations and accuracy checks.

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.25 MARCH 17, 2000 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING EXXON MOBIL CORPORATION, PETROLEUM REFINERY, BILLINGS, MT

Replace Pages:	Dated:

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	)	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND EXXON MOBIL CORPORATION**

The Department of Environmental Quality ("Department") has requested an Order from the Board of Environmental Review ("Board") adopting revisions to the sulfur dioxide control plan for the Exxon Mobil Corporation ("Exxon"), formerly Exxon Company, U.S.A. As amended by the revisions contained herein, the control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the sulfur dioxide National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel area.

Pursuant to public notice, on March 17, 2000, the Board conducted a hearing in Helena, Montana, on the proposed revisions to the control plan. At the hearing an opportunity for comment was provided to the Department, Exxon, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. On June 9, 1998, the Department and Exxon executed a document entitled "Stipulation of Department and Exxon," which included an Exhibit A and Attachments 1 and 2 (collectively "1998 Exxon Stipulation"). The 1998 Exxon Stipulation contained the sulfur dioxide (SO_2) control plan for Exxon, as part of the state's efforts to revise the State Implementation Plan for the control of sulfur dioxide emissions in the Billings/Laurel area

("Billings/Laurel SIP"). On June 12, 1998, the Board issued its Findings of Fact, Conclusions of Law and Order ("1998 Exxon Order") which expressly adopted and incorporated the 1998 Exxon Stipulation as an enforceable Order of the Board.

2. On March 4, 1993, the United States Environmental Protection Agency ("EPA") notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 NAAQS. The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 Exxon Stipulation was to "establish an emission control strategy for Exxon which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS." (1998 Exxon Stipulation, para. 9). On July 29, 1998, the 1998 Exxon Stipulation and 1998 Exxon Order were submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In a letter to the Department dated January 15, 1999, EPA identified several concerns with the 1998 Exxon Stipulation. (Letter from Richard Long, to Mark Simonich, dated 1/15/99). Among the concerns noted by EPA were the following: there was not a method to monitor compliance by the Coker CO Boiler with the applicable emission limitations; and, there were several questions regarding the proposed methodology for analyzing sour water for hydrogen sulfide. In a letter dated March 24, 1999, Governor Marc Racicot committed that the Department would revise the Billings/Laurel SIP to address these concerns.

5. As part of the current proceeding, the Department and Exxon have submitted to the Board a "Stipulation of Department and Exxon Mobil Corporation," dated February 14, 2000 ("2000 Exxon Stipulation"), that contains the revisions to the 1998 Exxon Stipulation that are necessary to fulfill the Department's commitment to EPA to address the issues described above in paragraph 4. The 2000 Exxon Stipulation will be effective immediately upon the issuance of an Order by the Board in this proceeding.

6. The Board adopts the 2000 Exxon Stipulation, and incorporates that document in its entirety as a part of this Order. Unless expressly stated otherwise in the 2000 Exxon

Stipulation, this Order does not in any way supercede or alter the provisions of the 1998 Exxon Order (and the 1998 Exxon Stipulation and exhibit and attachments adopted therein), and the 1998 Exxon Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

7. It is the intent of the Department and Exxon that both the 2000 Exxon Stipulation (after adoption and incorporation by the Board), and this Order, shall be submitted to EPA for review and approval as revisions to the Exxon control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State Implementation Plan. The revised requirements in this Order and the 2000 Exxon Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Exxon.

8. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertising in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR § 51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation of the Department and Exxon Mobil Corporation, dated February 14, 2000, is appropriate to comply with the March

4, 1993, EPA request to revise the Billings/Laurel SIP, and to address the concerns identified by EPA in its letter to the Department dated January 15, 1999.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The revisions to the sulfur dioxide control plan for Exxon set forth in the attached Stipulation of the Department and Exxon Mobil Corporation, dated February 14, 2000, is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Unless expressly stated otherwise in the Stipulation of the Department and Exxon Mobil Corporation, dated 2/14/2000, this Order does not in any way supercede or alter the provisions of the 1998 Exxon Order (and the 1998 Exxon Stipulation and exhibit and attachments adopted therein), and the 1998 Exxon Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

4. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 22 day of March, 2000.

By: Joe Gerbase
JOE GERBASE
Chair
Board of Environmental Review

(Findings of Fact, Conclusions of Law and Order)
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BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	**STIPULATION OF DEPARTMENT AND EXXON MOBIL CORPORATION**

The Department of Environmental Quality ("Department"), and Exxon Mobil Corporation. ("Exxon") formerly Exxon Company, U.S.A, hereby stipulate to the following paragraphs 1 through 13, including the attachment, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

1. On June 9, 1998, the Department and Exxon executed a document entitled "Stipulation of Department and Exxon," which included an Exhibit A and Attachments 1 and 2 (collectively "1998 Exxon Stipulation"). The 1998 Exxon Stipulation contained the sulfur dioxide control plan for Exxon, as part of the state's efforts to revise the State Implementation Plan for the control of sulfur dioxide (SO_2) emissions in the Billings/Laurel area ("Billings/Laurel SIP").

2. On March 4, 1993, the United States Environmental Protection Agency (EPA) notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS"). The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 Exxon Stipulation was to "establish an emission control strategy for Exxon which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance" of the primary and secondary NAAQS for SO_2. (1998 Exxon Stipulation, para. 9). As part of the 1998 Exxon Stipulation, Exhibit A contained emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Attachment 1 addressed performance specifications for stack flow rate monitors, and Attachment 2 addressed analytical methods for analyzing sour water stripper overheads for hydrogen sulfide, and precision and accuracy methods for the sour water stripper flow meter. The 1998 Exxon Stipulation was approved and made enforceable by Board Order, dated June 12, 1998. On July 29, 1998, the 1998 Exxon Stipulation was submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In letters to the Department dated January 15 and March 2, 1999, EPA identified several concerns with the 1998 Exxon Stipulation. (Letters from Richard Long, to Mark Simonich, dated 1/15/99 and 3/2/99). Among the concerns noted by EPA were the following: there was not a method to monitor compliance by the Coker CO Boiler with the applicable emission limitations; and there were several questions regarding the methodology proposed in Attachment 2, relating to the analytical method for analyzing sour water stripper overheads for hydrogen sulfide. In a letter dated March 24, 1999, Governor Marc Racicot committed the Department to revise the Billings/Laurel SIP to address these concerns.

5. The purpose of this Stipulation is to revise Exhibit A and Attachment 2 of the 1998 Exxon Stipulation, as necessary to fulfill the Department's commitment to EPA to address the issues described above in paragraph 4. Unless expressly stated otherwise, this document does not in any way supercede or alter the provisions of the 1998 Exxon Stipulation, and except as expressly revised by this document, the 1998 Exxon Stipulation, including Exhibit A and Attachments 1 and 2, remain in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

6. The parties agree that Exhibit A to the 1998 Exxon Stipulation is revised as follows:

Section 2(A)(11)(d) was stricken by the parties from the 1998 Exxon Stipulation. The following language is now added as Section 2(A)(11)(d):

"For Coker CO Boiler:
(i) Coker fresh feed rate shall be expressed in barrels per day (barrels/day); and
(ii) the Hourly SO_2 Emission Rate shall be calculated using the following equation:

$$E_C = 0.0817 * Q_H + 213.02$$

Where:
E_C = Hourly SO_2 Emission Rate from firing Coker Unit flue gases in the Coker CO Boiler in pounds per hour and rounded to the nearest tenth of a pound; and
Q_H = Coker fresh feed rate in barrels/day."

Section 3 is revised to add the following introductory text after the section title "Emissions Limitations and Facility Modifications," and before the Section 3(A) text:

"Exxon may be subject to (hourly, daily, and annual) SO_2 emission limits in an air quality permit that are more restrictive than those presented here. In those instances where permit emission limits are more stringent, Exxon shall comply with those permit limitations."

Section 3(A) is revised to read:

"The following emission limitations shall apply whenever the Yellowstone Energy Limited Partnership facility is receiving Exxon Coker unit flue gas or whenever the Exxon Coker unit is not operating:"

Section 3(A)(1) is revised to read:

"Refinery Fuel Gas Combustion from the following units: Coker CO Boiler, FCC CO Boiler, F-2 Crude/Vacuum Heater, F-3 unit, F-3X unit, F-5 unit, F-700 unit, F-201 unit, F-202 unit, F-402 unit, F-551 unit, F-651 unit, and standby boiler house (B-8 boiler);

a. Combined Three Hour Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 92.4 pounds per three hour period; and
b. Combined Daily Emissions of SO_2 from the Refinery Fuel Gas Combustion Units shall not exceed 739.2 pounds per Calendar Day."

Section 3(B) is revised to read:

"The following emission limitations shall apply whenever the Yellowstone Energy Limited Partnership facility is not receiving Exxon Coker unit flue gas and the Exxon Coker unit is operating:"

Section 3(B)(1) is revised to read:

"Coker CO Boiler stack (includes process exhaust gases and F-202 heater fuel gas firing emissions);

a. Three Hour Emissions of SO_2 from the Coker CO Boiler stack shall not exceed 2,142.9 pounds per 3-hour period; and
b. Daily Emissions of SO_2 from the Coker CO Boiler stack shall not exceed 17,143.1 pounds per Calendar Day."

Section 3(E)(3) is revised to read:

"Exxon shall not restore the fuel oil guns to the F-2 Crude/Vacuum Heater, F-3 and F-5 units. This is consistent with Section 3(F)(3) of Exhibit A of the Stipulation between the Department and Exxon dated January 28, 1997, and adopted by the Board through Board Order dated February 7, 1997."

Section 4(C) was stricken by the parties from the 1998 Exxon Stipulation. The following language is now added as Section 4(C):

"Unless a CEMS, or CEMS-Equivalent Alternative Monitoring Plan approved by the Department and EPA, is required for compliance as specified in Section 6(B)(4), compliance with the emission limitations contained in Section 3(B)(1) shall be determined in accordance with the equation in Section 2(A)(11)(d). Whenever Coker Unit flue gases are being burned in the Coker CO Boiler, Exxon shall obtain hourly readings from the Coker unit fresh feed rate meter beginning with the first Clock Hour that Coker unit flue gas is burned in the Coker CO Boiler. Exxon shall record those readings in units of barrels per day (barrels/day) and maintain a log of the hourly readings.

In order to assure the continued reliability of the equation prescribed by Section 2(A)(11)(d) and used to calculate Hourly SO_2 Emission Rates from the Coker CO Boiler, Exxon shall sample the Coker unit reactor feed stream and analyze each of the required samples for sulfur content using ASTM Method 1552-83 or an equivalent method approved by the Department and EPA. The equation prescribed by Section 2(A)(11)(d)

(Stipulation of Department and Exxon)
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shall be considered reliable for predicting SO_2 emissions from the Coker CO Boiler when reactor feed sulfur content is determined to be less than or equal to 5.11 percent by weight. Exxon shall conduct the required sampling in accordance with the following schedule and procedure.

Exxon shall collect one sample of Coker unit reactor feed for each Calendar quarter during any part of which Coker unit flue gases are burned in the Coker CO Boiler. Exxon shall collect the required quarterly sample within four hours of the time the Coker unit flue gas stream is first routed to the Coker CO Boiler during each Calendar quarter. Exxon shall analyze that sample for sulfur content as soon as possible but no later than 5 business days from the time the sample was collected. Exxon is not required to collect a reactor feed sample for any Calendar quarter during which no Coker unit flue gas is burned in the Coker CO Boiler.

If the results of the required sampling and analysis indicate that the sulfur content of the reactor feed is in excess of 5.11 percent by weight, Exxon shall notify the Department of those results by the next business day following its receipt of the results. Exxon shall then work with the Department and, as appropriate, EPA to determine what additional actions, if any, may be necessary to provide assurance that the Coker CO boiler emissions remain within the limitations set forth in Section 3."

Section 6(B)(7) is revised to read:

"Exxon shall operate and maintain a continuous flow rate meter to determine the fresh feed rate to the Coker Unit."

Section 7(B)(1)(d) is revised to read:

"Hourly SO_2 Emission Rates in pounds per Clock Hour from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being burned in the F-1 Crude Furnace), FCC CO Boiler stack, refinery fuel gas system, and Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating);"

Section 7(B)(1) is revised to add paragraph (i) which reads:

"the Hourly Average fresh feed rate to the Coker Unit."

Section 7(C)(1)(b) is revised to read:

"Three Hour Emissions of SO_2 in pounds per three hour period from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being burned in the F-1 Crude Furnace), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and combined Three Hour Emissions from the fuel gas combustion units (listed in Section 3 (A)(1) and (B)(2), as appropriate);"

Section 7(C)(1)(d) is revised to read:

"Daily Emissions of SO_2 in pounds per Calendar Day from the F-2 Crude/Vacuum Heater stack (when sour water stripper overheads are being incinerated in the F-1 Crude Furnace), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and combined Daily Emissions from the fuel gas combustion units [listed in Section 3 (A)(1) and (B)(2), as appropriate];"

Section 7(C)(1)(f) is revised to read:

"the Operating hours during the calendar quarter for the sources or units associated with the F-2 Crude/Vacuum stack or the flare (when sour water stripper overheads are being burned in the F-1 Crude Furnace or the flare), FCC CO Boiler stack, Coker CO Boiler stack (when YELP is not receiving Coker unit flue gas and the Coker Unit is operating), and refinery fuel gas system;"

Section 7(C)(1) is revised to add paragraph (l) which reads:

"the results of the sampling of Coker ~~fresh~~ reactor feed and analyses for sulfur content required by Section 4(C)."

7. The parties agree that Method #6A of Attachment 2 to the 1998 Exxon Stipulation, entitled "Analytical Method for Analyzing the Sour Water Stripper Overheads (SWSOH) for Hydrogen Sulfide (H_2S)," is superceded in its entirety, and is replaced by the updated Method #6A-1, entitled "Analytical Method for Analyzing the Sour Water Stripper Feed for Hydrogen Sulfide (H_2S) (October 1999)." The updated Method #6A-1 is the attachment to this Stipulation.

8. This Stipulation, including the attachment ("Stipulation"), shall become effective immediately upon the issuance of an order by the Board in this proceeding.

9. It is the intent of the parties that this Stipulation, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as revisions to the Exxon control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State Implementation Plan. The revised requirements in this Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Exxon.

10. The 1998 Exxon Stipulation, as revised by this Stipulation, is intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2, but is not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards.

11. This Stipulation may be subject to modification as provided in paragraphs 18 and 19 of the 1998 Exxon Stipulation.

12. Exxon does not waive and expressly reserves its right to contest any Board order or federal action which, without the written consent of Exxon, modifies this Stipulation.

13. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation. Upon adoption in a Board Order, this Stipulation shall be enforceable by the Department.

Exxon Mobil Corporation, formerly
Exxon Company, U.S.A.

By DWD Steve R Cope

Date 2/8/00 2/8/00

Approved as to form:

By
Attorney

Date 2/04/00

Montana Department of
Environmental Quality

By Mark A. Simonich
Mark Simonich
Director

Date 2/14/00

Approved as to form:

By
Attorney

Date 2/14/00

(Stipulation of Department and Exxon)
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METHOD #6A-1

ANALYTICAL METHOD FOR ANALYZING THE SOUR WATER STRIPPER FEED FOR HYDROGEN SULFIDE (H_2S)
(October 1999)

1.0 SCOPE AND APPLICATION

This method is applicable to the measurement of total and dissolved sulfides in sour water produced by the refinery. Acid insoluble sulfides are not measured by the use of this test. (Copper sulfide is the only common sulfide in this class).

2.0 SUMMARY OF METHOD

Excess iodine is added to a sample which has been treated with zinc acetate to produce zinc sulfide. The iodine oxidizes the sulfide to sulfur under acidic conditions. The excess iodine is back titrated with sodium thiosulfate.

3.0 COMMENTS

Reduced sulfur compounds, such as sulfite, thiosulfate and hydrosulfite, which decompose in acid may yield erratic results. Also, volatile iodine-consuming substances such as mercaptans will give high results.

The sample source is hot and under pressure.

The volumes of preservative and the normality of the reagents have been modified from the referenced methods. The modifications are to make the method appropriate for the expected high concentrations of sulfide in the samples. The method calculations are also modified to correct for the sample dilution from the preservative.

4.0 APPARATUS

4.1 Ordinary laboratory glassware.

4.2 130 ml HDPE bottles. These bottles are pre-charged with preservative. For the sour water stripper feed inlet the bottle contains 5 ml of zinc acetate and 10 ml of sodium hydroxide.

5.0 REAGENTS

5.1 Hydrochloric acid, HCl, 6 N

5.2 Standard iodine solution, 0.1000 N: Dissolved 20 to 25 g KI in a little water in a liter volumetric and add 12.8 g iodine. Allow to dissolve. Dilute to 1 liter and standardize against 0.1000 N sodium thiosulfate using a starch indicator.

5.3 Sodium thiosulfate 0.1000N: Dissolve 24.82 g $Na_2S_2O_3 \cdot 5H_2O$ in water. Add 1 ml of chloroform and dilute to 1000 ml.

5.4 Starch indicator: Dissolved 10 g soluble starch and 10 mg Hg_2I in hot water and dilute to 4 liters.

5.5 Standardize the sodium thiosulfate against KIO_3. Adjust the concentration to 0.1000 N. Use this sodium thiosulfate to standardize the iodine solution.

5.6 Zinc acetate solution, 2N: Dissolve 220 g $Zn(C_2H_3O_2)_2 \cdot 2H_2O$ in water and dilute to one liter.

5.7 Sodium hydroxide, 6N: Dissolve 240 grams of sodium hydroxide in 800 ml of water, Dilute to one liter. Caution: much heat will be liberated.

6.0 SAMPLING

6.1 The sample bottles (4.2) are pre-charged with zinc acetate and sodium hydroxide preservative and labeled. The sample bottle sample contains 5 ml of preservative and 10 of sodium hydroxide.

6.2 The sample is obtained by carefully filling the appropriate bottle. Fill the bottle slowly to prevent the sample from splashing the preservative out or overflowing the bottle. The bottle should be completely filled with no headspace air. If necessary, the sides of the bottle can be squeezed while screwing on the lid to exclude the remaining air.

6.3 Experience shows that the pH of these samples, taken and preserved as described, are above 9. No further pH adjustment is required.

7.0 PROCEDURE

7.1 Shake the container to suspend all solids and remove the sample. Measure the volume of sample. This is used to correct the results for the dilution due to the preservative. Check the pH of the sample using pH test paper to confirm that it is 9 or higher.

7.2 Place 20 ml of standard iodine solution (5.2) into a 500 ml iodine titration flask.

7.3 Add 15 ml of 6N HCl (5.1).

7.4 Thoroughly mix the sample and quickly take a 25 ml aliquot and place it in the flask.

7.5 If the iodine color disappears, add more iodine until the color remains. Record the total number of milliliters of standard iodine used steps 7.2 and 7.5.

7.6 Titrate with the reducing solution (0.1 N sodium thiosulfate) to a pale straw color. Add the starch indicator and titrate until the blue color disappears. Record the volume used.

8.0 CALCULATIONS

8.1 Sulfide as H_2S, mg/l = $\frac{(A - B) \times 17.01 \times 1000}{\text{sample aliquot, ml} \times K}$

Where: A = Volume of Iodine, ml * Normality of Iodine

B = Volume of Thiosulfate, ml * Normality of Thiosulfate

K = $\frac{\text{ml of sample} - \text{ml of preservative}}{\text{ml of sample}}$

This is a correction for the preservative volume. The volume of sample is the total volume in the sample container including the preservative. The volume of preservative is the volume added to the container before the sample was obtained.

9.0 REFERENCES

9.1 Standard Methods for the Examination of Water and Wastewater, 19th Edition, p 4-127, Method 4500-S_2 F, (1995)

EPA Method 376.1

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	STIPULATION OF DEPARTMENT AND MONTANA POWER COMPANY

The Department of Environmental Quality ("Department"), and Montana Power Company, J.E. Corette & F. Bird Plant, Billings, Montana ("MPC"), hereby stipulate to the following paragraphs 1-20, including Exhibit A and Attachment #1, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

This Stipulation nullifies and supersedes all Stipulations which were executed by MPC and the Department in this matter and which were adopted by the Board prior to June 12, 1998.

1. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be

exceeded more than once per year. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

3. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

4. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

5. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

6. Utilizing a dispersion modeling analysis, MPC and the Department have developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. MPC's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, MPC does not waive and shall not be precluded from raising any objec-

tions it may have including but not limited to those pertaining to the dispersion modeling analysis.

7. The purpose of this Stipulation and the emission limitations and other limitations contained in Exhibit A and Attachment #1 is to establish an emission control strategy for MPC which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachment #1 do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

8. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. MPC shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachment #1.

9. The following Attachment is attached to Exhibit A and is incorporated therein and in this Stipulation by reference:

Attachment 1: Additional Performance Specification for Stack Flow Rate Monitors.

10. Upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

11. Disputes between the parties, during the development of a revised Attachment #1, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of the final Attachment #1 or of any other provision of this Stipulation or

Exhibit A.

12. For the exclusive purpose of implementing the sulfur dioxide emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, ARM 17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

13. The Stipulation, Exhibit A, and Attachment #1 shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachment #1.

14. It is the intent of the parties that this Stipulation, Exhibit A, and Attachment #1, after adoption and incorporation by Board order, shall be submitted to the Environmental Protection Agency for review and approval as the MPC control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to MPC.

15. The Stipulation, Exhibit A, and Attachment #1 are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachment #1 are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

16. This Stipulation, Exhibit A, or Attachment #1 may be subject to modification upon the occurrence of certain modifying conditions. Such modifying

conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by MPC, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan.

Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that MPC demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a facility

17. Procedures for modification of this Stipulation, Exhibit A, and Attachment #1 shall be as follows:

<u>Board Approval</u>

a. <u>Stipulation and Exhibit</u>. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. Attachment #1. As provided in Paragraph 10, upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, without the necessity for a revised Board order.

c. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

EPA Approval for SIP Changes

d. Stipulation, Exhibit, and Attachment #1. Following EPA approval pursuant to paragraph 14, all modifications of the text of this Stipulation, Exhibit A, and Attachment #1 shall require the approval of EPA under either subparagraph 17(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 17(f) or (g).

f. Title I Procedures. Until the issuance of a Title V operating permit for MPC and the adoption of the enabling state administrative rule described in paragraph 17(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachment #1 described in paragraph 17(d), and all implementation approvals described in subparagraph 17(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 17(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 17(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 17(d) and implementation approvals under subparagraph 17(e), provided that the following two conditions are met:

(i) MPC has been issued a Title V operating permit and the State has adopted an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 17(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determination shall be made within 45 days from the submittal of the proposed modification or approval to EPA.

18. MPC does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of MPC, modifies this stipulation, Exhibit A, or Attachment #1.

19. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachment #1. Except where another effective date is provided in Exhibit A or Attachment #1, upon adoption in a Board Order, the Stipulation, Exhibit A, and Attachment #1 shall be enforceable by the Department.

~~20. Notwithstanding any other provision of this Stipulation, MPC's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This~~

~~condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission control strategies resulting from any challenge or appeal of the initial adopted emissions control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either MPC or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Montana Power Company	Montana Department of Environmental Quality
By ______ EXEC. V.P.	By ______ Mark Simonich, Director
Date 5/22/98	Date 6/9/98
Approved as to form:	Approved as to form:
By ______ Attorney	By ______ Attorney
Date 5/20/98	Date 6/9/98

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STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.20 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING MONTANA POWER COMPANY J.E. CORETTE AND F. BIRD PLANTS, BILLINGS, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND MONTANA POWER COMPANY

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for Montana Power Company (MPC). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for MPC is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached emission control plan for MPC, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to

participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for MPC set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

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EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

Montana Power Company, J.E. Corette Plant & F. Bird Plant
Billings, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

The J.E. Corette and F. Bird Plants are located ½ mile east of Billings adjacent to the Yellowstone River. The plants are located in Yellowstone County, Township 1 South, Range 26 East, center of Section 2.

(B) Affected Equipment and Facilities:

(1) Main boiler - J.E. Corette Plant
(2) F. Bird Plant

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means "Additional Performance Specifications For Stack Flow Rate Monitors" attached to this Exhibit and incorporated herein by reference.

(3) "Buoyancy Flux" (Hourly Buoyancy Flux) means a stack plume rise parameter, to be determined on an hourly basis, and defined by the following equation:

$$F = \frac{2.45\ VD^2\ (T_S - T)}{T_S}$$

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.4.4 EXHIBIT A - EMISSION LIMITATIONS AND CONDITIONS - MONTANA POWER COMPANY, J.E. CORETTE & F. BIRD PLANT, BILLINGS, MONTANA

Where:

$F =$	Hourly Buoyancy Flux in m^4/sec^3;
$V =$	Hourly Average stack gas exit velocity in meters per second at actual conditions obtained from either the primary (CEMS) or backup temperature and flowrate monitoring system;
$D =$	inside stack-top diameter in meters (3.51 meters);
$T_S =$	Hourly Average stack gas temperature in degrees Kelvin obtained from either the primary (CEMS) or backup temperature and flowrate monitoring system; and
$T =$	ambient air temperature in degrees Kelvin.

The ambient air temperature used in all Buoyancy Flux calculations required by this control plan shall be 8.0°C (281.2°K), the Billings annual average ambient temperature.

MPC shall maintain an Hourly Buoyancy Flux of:

$F_{MIN} = 144.6\ m^4/sec^3 \le F \le 448.57\ m^4/sec^3 = F_{MAX}$

During plant startup, shutdown, or during any malfunction as defined in ARM 17.8.106, MPC may operate with a Buoyancy Flux less than the minimum of 144.6 m^4/sec^3 provided the requirements of ARM 17.8.106 are met and the actual Buoyancy Flux is used to determine the appropriate emission limitation.

The stack parameters associated with the minimum and maximum F are:

$T_{MIN} = 339.67$ °K & $V_{MIN} = 27.74$ meters/second
$T_{MAX} = 449.67$ °K & $V_{MAX} = 39.62$ meters/second.

Whenever the CEMS-derived stack parameters "V" and/or "T_S" are unavailable to determine a Buoyancy Flux "F", a substituted Hourly Buoyancy Flux shall be used. The substituted Hourly Buoyancy Flux shall be determined from data derived from the backup temperature and flowrate monitoring system required by Section 6(B)(3) which:

(a) by itself meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(8) and is designed to achieve a temporal sampling resolution of at least one temperature and flowrate measurement per minute; or

(b) in combination with the primary CEMS meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(6 and 8).

The backup temperature and flowrate monitoring system equipment is only required to operate when the primary temperature and flowrate monitoring system equipment (those components of the CEMS required by Section 6(B)(2)) has failed and is determined to be unable to obtain and record Hourly Average temperature and flow rate data.

In the absence of such data a substitute Hourly Buoyancy Flux "F" shall be the average "F" determined for a period immediately prior to the loss of the stack parameters "V" and/or "T_S" that is equal in length to the time period over which stack parameters "V" and/or "T_S" are unavailable. That time period, called the "look-back" period, is measured in increments of Calendar Days.

Specifically, the substituted Hourly Buoyancy Flux "F" shall be the hourly average Buoyancy Flux "F" determined for the applicable "look-back" period. The applicable "look-back" period is a period, measured in Calendar Day increments, which is equal to the number of consecutive Calendar Days during which one or more hours of the stack parameters "V" and/or"Ts" are unavailable. The applicable "look-back" period begins with the Calendar Day immediately preceding the Calendar Day in which the stack parameters "V"and/or "T_S" first became unavailable and continues backward in time for the number of Calendar Days equal to the number of Calendar Days during which one or more hours of the stack parameters "V"and/or "T_S" are unavailable.

For example, if stack parameters "V"and/or "T_S" are unavailable for a period beginning at 10:59 p.m. on January 3rd and ending at 1:01 a.m. January 5th, the applicable look-back periods would be:

- for the 24th hour of Calendar Day January 3rd, the look-back period would be one Calendar Day - in this case January 2nd;
- for each hour of Calendar Day January 4th, the look-back period would be two Calendar Days - in this case January 1st and January 2nd;
- for the 1st hour of Calendar Day, January 5th. the look-back period would be three Calendar Days - in this case December 31st, January 1st and January 2nd.

Substituted values for Buoyancy Flux may not be used to satisfy MPC's Quarterly Data Recovery Rate unless the data is derived from the backup temperature and flowrate monitoring system required by Section 6(B)(3) or by backup equipment that by itself or in combination with the primary CEMS meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(6 and 8).

The Buoyancy Flux for any three hour period, "F_3", shall be determined by averaging the Hourly Buoyancy Fluxes for the three hour period.

$$F_3 = \frac{\Sigma \text{ Hourly Buoyancy Fluxes (F) for the Three Hour Period}}{3}$$

When an Hourly Buoyancy Flux value is unavailable due to failure of both the primary (CEMS) and backup temperature and flowrate monitoring systems, MPC shall use the substitution procedure for "F" defined above.

(4) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(5) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(6) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration and stack gas volumetric flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute. Such equipment includes a continuous emission monitor (CEM) which determines sulfur dioxide concentrations in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rates, and associated data acquisition equipment.

(7) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day and rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(8) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas temperature monitor, and stack gas flow rate monitor shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(9) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of SO_2 emissions from a stack determined using Hourly Averages and rounded to the nearest one tenth of a pound.

For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(a) If the SO_2 concentration is measured on a wet basis, MPC shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM; and
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(b) If the SO_2 concentration is measured on a dry basis, MPC shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. MPC shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;

K =	1.663×10^{-7} in (pounds/SCF)/PPM;
C_H =	Hourly Average SO_2 concentration in PPM (dry basis);
Q_H =	stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and
$\%H_2O$ =	Hourly Average stack gas moisture content, in percent by volume.

(10) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack.

(11) "Quarterly Data Recovery Rate" means the percentage of hours in a calendar quarter when CEMS derived Hourly SO_2 Emission Rate data are available for a stack in comparison to the number of corresponding Operating hours for that stack.

The Quarterly Data Recovery Rate (QDRR) for a stack shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH \times 100\%}{OH}$$

Where:

VH =	number of hours of Hourly SO_2 Emission Rate data that are also stack Operating hours in a calendar quarter;
OH =	total number of stack Operating hours in a calendar quarter; and
QDRR =	Quarterly Data Recovery Rate.

(12) "Standard Conditions" means 20.0°C (293.2°K) at 1 atmosphere (760.0mm Hg) or 68.0°F (527.7°R) at 1 atmosphere (29.92" Hg).

(13) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(14) "Valid" means data that is obtained from a monitor or meter serving as a component of the CEMS which meets the applicable specifications, operating requirements and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS AND FACILITY MODIFICATIONS

(A) Emission Limitations

(1) Affected Sources:

(a) Main Boiler Stack;

(i) the Three Hour Emission Limitation (E_L) for SO_2 from the main boiler stack is dependent upon, and varies in accordance with, the Three Hour Average Buoyancy Flux (F_3) of the exhaust gas that is emitted from the main boiler stack (J.E. Corette).

(ii) Three Hour Emissions of SO_2 in pounds of SO_2 per three hours from the main boiler shall not exceed the value of the Three Hour Emission Limitation, E_L, as determined by the following equations:

For $F_3 < 250.3$; $E_L = (4.882 * F_3) + 1202.4$
For $F_3 \geq 250.3$; $E_L = (8.763 * F_3) + 230.9$

Where:

$F_3 =$ Three Hour Average Buoyancy Flux in m^4/sec^3; and
$E_L =$ Three Hour Emission Limitation for SO_2 in pounds of SO_2 per three hours.

(iii) Daily Emissions of SO_2 from the main boiler stack shall not exceed the sum of all of the Three Hour Emission Limitations, ΣE_L, for the eight non-overlapping three hour periods in a Calendar Day.

(iv) Annual Emissions of SO_2 from the main boiler stack shall not exceed 9,999,000 pounds per calendar year.

(v) Except as provided in Section 2(A)(3), Buoyancy Flux shall not be less than 144.6 m^4/sec^3. Buoyancy Flux shall not exceed 448.57 m^4/sec^3 at any time.

(b) Other Minor Sources;

(i) MPC shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

(B) Facility Modifications

(1) By January 1, 1997, fuel oil burning capability shall be removed from the F. Bird Plant as follows:

(a) MPC shall remove the oil line that connects the fuel oil storage tank to the unloading station; and

(b) MPC shall fill the fuel oil delivery pipe that connects the loading station to the F. Bird Plant with concrete.

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations contained in Section 3(A)(1)(a) for the main boiler stack shall be determined by using data from the CEMS required by Section 6 (B)(1) and (2), and in accordance with the appropriate equation(s) in Section 2(A)(1), (3), (7), (9), and (13), except when CEMS data is not available as provided in Sections 2 (A)(3) and (13). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Sections 5(A) or 6(C) and (D) shall also be used to demonstrate compliance.

(B) In a letter dated October 7, 1994, MPC certified that the modifications required by Section 3(B) were complete. Compliance with the facility modification requirements contained in Section 3(B) shall be verified by the Department during the next annual inspection and whenever necessary, thereafter.

(C) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6(A)(2) shall be determined in accordance with Section 2 (A)(11), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether MPC has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section

6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, MPC shall implement short term corrective measures, and if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure; or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rate in pounds per hour for the main boiler stack, MPC shall perform annual source testing using EPA approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual or semiannual Relative Accuracy Test Audits (RATAs) required by Sections 6 (C) and (D) may be substituted for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) MPC shall notify the Department in writing of each annual source test a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond MPC's control, and which could not reasonably have been prevented or mitigated by MPC. Such circumstances may include but are not limited to earthquakes, power outages, or fire; but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, MPC initiates the short term corrective measures and, as necessary, the long term corrective measures required by Section 4(C)(3);

(c) within two working days of occurrence, MPC notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) MPC demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, MPC shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, MPC shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(C)(2):

(i) for the main boiler stack CEMS, MPC shall achieve a QDRR of equal to or greater than 90%. Valid data obtained from backup temperature and flow rate monitoring system equipment in combination with data from the primary sulfur dioxide continuous emission monitor shall count towards meeting this requirement.

(c) In its evaluation of whether MPC used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS, and whether:

(ii) MPC has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) MPC has complied with the quality assurance requirements described in Section 6;

(iv) MPC has taken timely and appropriate action to correct a failure in the CEMS;

and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(B) Affected Sources

(1) By July 1, 1997, MPC shall operate and maintain a continuous emission monitor to measure sulfur dioxide concentrations from the main boiler stack.

(2) By July 1, 1997, MPC shall operate and maintain a continuous stack flow rate monitor and temperature monitor (at a minimum, a thermocouple) to measure the stack gas flow rates from the main boiler stack.

(3) By January 1, 1999, or a date 6 months after EPA approval of the Buoyancy Flux monitoring requirements contained in this document (whichever date is later), MPC shall install and maintain a backup temperature and flowrate monitoring system for the main boiler stack. The back-up temperature and flowrate monitoring system shall be capable of obtaining and recording stack parameters to determine "V" and/or "T_S" in the event of the failure of the primary temperature and flowrate monitoring system which is a component of the CEMS required by Section 6(B)(2) and shall meet the performance specifications contained in Section 2(A)(3). However, the back-up system may rely upon the in-stack pitot tube and associated mechanical connections that are components of the primary temperature and flowrate monitoring system up to, but not including, the transducer.

For purposes of compliance with this requirement, the backup monitoring equipment shall include as a minimum a differential pressure transducer, a thermocouple, and either:

(a) chart recorder(s) capable of recording "T_S" and pitot tube differential pressure, or

(b) a data logger capable of recording "T_S" and the calculated "V", the calculated flowrate, or the pitot tube differential pressure necessary to calculate "V" and flowrate.

Upon installation, MPC shall operate the backup temperature and flowrate monitoring system whenever the primary (CEMS) temperature and flowrate monitoring system is determined to have failed.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors required by this control plan shall:

(a) be installed, certified, operated, and maintained in accordance with the performance standards in 40 CFR Part 75, Appendices A and B; and

(b) be subject to and meet the quality assurance (QA) and quality control (QC) procedures in 40 CFR Part 75, Appendices A and B, except that at least one of the daily zero/spans per calendar week must be conducted using certified calibration gas.

(2) MPC shall notify the Department in writing of each Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified, operated and maintained in accordance with 40 CFR Part 75, Appendices A and B; and

(b) be subject to and meet the quality assurance and quality control requirements of 40 CFR Part 75, Appendices A and B and the additional requirements of Department Method B-1 of Attachment 1.

SECTION 7. DATA REPORTING REQUIREMENTS

(A) MPC shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the main boiler stack;

(b) Hourly Average stack volumetric flow rates in SCFH from the main boiler stack;

(c) Hourly Average stack gas temperature in °F from the main boiler stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the main boiler stack;

(e) Hourly Buoyancy Flux ,F, in m^4/sec^3 and Three Hour Buoyancy Fluxes, F_3, in m^4/sec^3; and

(f) daily calibration data from the CEMS required by Section 6(B)(1) and (2), or, if applicable, Section 6(B)(3).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, MPC shall also record, organize and archive for at least five years the same data, and upon request by the Department, MPC shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report for the J.E. Corette Plant shall consist of summarized CEMS data for Daily Emissions, Three Hour Emission Limitations for SO_2 (as determined by the Buoyancy Flux F_3), Three Hour Emissions, Quarterly Data Recovery Rates and text regarding excess emissions.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emission Limitations for SO_2 from the main boiler stack;

(b) Three Hour Emissions of SO_2 from the main boiler stack;

(c) Daily Emissions of SO_2 in pounds per Calendar Day from the main boiler stack;

(d) Daily Emission Limitations for SO_2 from the main boiler stack;

(e) the Quarterly Data Recovery Rate for the CEMS expressed in percent (Valid data obtained from backup temperature and flowrate monitors in combination with data from the primary sulfur dioxide continuous monitor shall count towards meeting the QDRR requirements.);

(f) the Operating hours during the calendar quarter for the source or units associated with the main boiler stack;

(g) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(h) the results of the quarterly CGA's or RAA's and flow rate checks, the annual or semiannual RATA's required in Sections 6(C) and (D), and the annual source tests required by Section 5(A); and

(i) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances.

(2) For each Calendar Day on which any emission limitation(s) were exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of Operation with excess emissions, the Hourly SO_2 Emission Rates, the Three Hour Emissions, the Three Hour Emission Limitations for SO_2, the Daily Emission Limitations for SO_2, and the Daily Emissions;

(b) all information regarding reasons for operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, MPC shall provide Hourly SO_2 Emissions Rate data for any prior day not covered by the latest quarterly report from the main boiler stack.

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for MPC while still providing the necessary information. Any revisions shall be made only after consultation with MPC, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachment #1 shall be construed to alter MPC's obligation under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, MPC reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Stipulation, Exhibit A, and Attachment #1, MPC shall, pursuant to 75-2-403, MCA, allow the Department representative(s) access to all SO_2 emitting sources at the MPC facility such that, the Department representative(s) may, pursuant to 75-2-403, MCA, enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain emissions data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all other necessary functions related to this control plan.

As provided in Section 75-2-105, MCA, MPC may seek a court order declaring certain trade secret information as confidential and not a matter of public record. If MPC claims that certain information is entitled to trade secret protection, the Department shall maintain such information as confidential pending issuance of a court order under Section 75-2-105, MCA, provided that MPC initiate such court action within 14 days of delivering the information to the Department.

(B) Enforcement - Any violation of a limitation, condition, or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
ADDITIONAL PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS

METHOD B-1
ADDITIONAL ONGOING QUALITY ASSURANCE AND QUALITY CONTROL REQUIREMENTS FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

The requirements of this method are in additon to the requirements of 40 CFR Part 75. A summary chart showing each additional quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the annubar system. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified. The semiannual or annual Relative Accuracy Test Audits may substitute for the quarterly single velocity traverse checks.

1.1.1 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with 40 CFR Part 75, Appendix A, Section 6.0 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 15 percent (10% after January 1, 2000) as determined by equation B-1. If the single velocity traverse fails to meet the 15% (10% after January 1, 2000) difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with 40 CFR Part 60, Appendix A, Section 6.0 in order to demonstrate compliance with the 15% (10% after January 1, 2000) difference or 15% (10 % after January 1, 2000) relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;
TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest semiannual or annual Relative Accuracy Test Audit (RATA) conducted pursuant to 40 CFR Part 60, Appendix B, Section 2.3 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.1.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 15% or 10% after January 1, 2000) or the visual inspection of the annubar system indicates a damaged or improperly operating annubar flow measuring device. The out-of-control period begins with the hour of the failed flow rate check or visual inspection and ends with the hour of a satisfactory flow rate check, RATA, or correction of the damage or improperly operating annubar flow measuring device. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1- ADDITIONAL FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	Weekly	Quarterly
Flow Check (single velocity traverse)		x[1]
Visual Inspection of Annubar System		x

[1] The owner/operator has an option to perform a RATA if the quarterly flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	STIPULATION OF DEPARTMENT AND MONTANA SULPHUR & CHEMICAL COMPANY

The Department of Environmental Quality ("Department"), and Montana Sulphur & Chemical Company ("MSCC"), hereby stipulate to the following paragraphs 1-22, including Exhibit A and Attachment #1, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

Except for the parties' Stipulation of February 2, 1996, which is ratified in Paragraph 1, this Stipulation nullifies and supersedes all Stipulations which were executed by MSCC and the Department in response to the EPA SIP call letter of March 4, 1993.

~~1. A contested case was initiated on May 19, 1995 by the Board of Health and Environmental Sciences (predecessor to the Board of Environmental Review) at the request of MSCC to hear MSCC's objections to the Department's proposed sulfur dioxide control plan for MSCC. On October 6, 1995, the Board granted petitions to intervene and postpone hearing filed by Exxon, USA (Exxon) and Yellowstone Energy Limited Partnership (YELP). At the request of the intervenors, the contested case hearing was postponed until February 1, 1996. On or about December 26, 1995, YELP, MSCC, and the Department signed a negotiated stipulation for the withdrawal of YELP from the contested case.~~

~~On February 2, 1996, the Department, MSCC, and Exxon entered into a Stipulation which deferred the contested case hearing and established agreed procedures for developing a sulfur dioxide control plan for MSCC and amending the current sulfur dioxide control plan for Exxon. MSCC entered the February 2, 1996 Stipulation and enters this Stipulation, in part, to preserve MSCC's rights in the apportionment of the airshed resulting from the present SIP revision, and to assist the Department in obtaining a determination that the Billings/Laurel SIP is adequate to attain and maintain national ambient standards. MSCC reserves all issues and objections for all purposes except this settlement and the emission control strategy and rights arising from this settlement. The February 2, 1996 Stipulation is hereby ratified and incorporated herein.~~

2. ~~This Stipulation, together with Exhibit A and Attachment #1, contains the sulfur dioxide control plan for MSCC that has been developed in accordance with the procedures of the February 2, 1996 Stipulation. The Department has reviewed and approved a fluid modeling demonstration of good engineering practice (GEP) stack height for the MSCC 100 meter SRU stack, performed by CPP, Inc. of Fort Collins, Colorado, and has determined that such approved fluid modeling demonstrated that a height of 97.5 meters is justified and creditable as good engineering practice height for that stack in accordance with the requirements of 40 CFR Part 51, Subpart F, Section 51.100, including specifically paragraphs (ii), (jj), and (kk)(1) thereof, GEP guidelines, and the corresponding Montana requirements governing GEP. The Department has determined and agrees, for purposes of this Stipulation, Exhibit A, and Attachment #1, that MSCC shall receive credit for such height in the setting of emission limitations. The Department has further determined that the recognition of variable buoyancy flux and/or the emissions shifting in setting emission limits as contemplated and approved by the parties in this Stipulation is not a prohibited or unlawful dispersion technique for MSCC and the Department agrees that MSCC is entitled to and shall receive emission limitation credit recognizing such techniques.~~

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3. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be exceeded more than once per year. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air Act Amendments of 1990 ("Act").

4. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

5. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

6. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

7. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

8. Utilizing a dispersion modeling analysis, MSCC and the Department have

developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. MSCC's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, MSCC does not waive and shall not be precluded from raising any objections it may have including but not limited to those pertaining to the dispersion modeling analysis.

9. The purpose of this Stipulation and the emission limitations and other limitations contained in Exhibit A and Attachment #1 is to establish an emission control strategy for MSCC which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachment #1 do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

10. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. MSCC shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachment #1.

11. The following Attachment is attached to Exhibit A and is incorporated therein and in this Stipulation by reference:

Attachment #1 : Performance Specifications for Stack Flow Rate Monitors.

12. Upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed

incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

13. Disputes between the parties, during the development of a revised Attachment #1, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. The Board will exercise reasonable diligence in rendering a determination on the disputed matter. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of the final Attachment or of any other provision of this Stipulation or Exhibit A.

14. For the exclusive purpose of implementing the sulfur dioxide emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, ARM 17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

15. The Stipulation, Exhibit A, and Attachment #1 shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachment #1.

16. It is the intent of the parties that this Stipulation, Exhibit A, and Attachment #1, after adoption and incorporation by Board order, shall be submitted to the Environmental Protection Agency for review and approval as the MSCC control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation

Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to MSCC.

17. The Stipulation, Exhibit A, and Attachment #1 are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachment #1 are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

18. This Stipulation, Exhibit A, or Attachment #1 may be subject to modification upon the occurrence of certain modifying conditions. Such modifying conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by MSCC, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan.

Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that MSCC demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a

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facility

19. Procedures for modification of this Stipulation, Exhibit A, and Attachment #1 shall be as follows:

<u>Board Approval</u>

a. <u>Stipulation and Exhibit</u>. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. <u>Attachment #1</u>. As provided in Paragraph 12, upon written certification by the Department that an Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, without the necessity for a revised Board order.

c. <u>Implementation Approvals</u>. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

<u>EPA Approval for SIP Changes</u>

d. <u>Stipulation, Exhibit, and Attachment #1</u>. Following EPA approval pursuant to paragraph 16, all modifications of the text of this Stipulation, Exhibit A, and Attachment #1 shall require the approval of EPA under either subparagraph 19(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. <u>Implementation Approvals</u>. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 19(f) or (g).

f. <u>Title I Procedures.</u> Until the issuance of a Title V operating permit for MSCC and the adoption of the enabling state administrative rule described in paragraph 19(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachment

#1 described in paragraph 19(d), and all implementation approvals described in subparagraph 19(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 19(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 19(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 19(d) and implementation approvals under subparagraph 19(e), provided that the following two conditions are met:

(i) MSCC has been issued a Title V operating permit and the State has adopted an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 19(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determination shall be made within 45 days from the submittal of the proposed modification or approval to EPA.

20. MSCC does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of MSCC, modifies this stipulation, Exhibit A, or Attachment #1.

21. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachment #1. Except where another effective date is provided in Exhibit A or Attachment #1, upon adoption in a Board Order, the Stipulation,

Exhibit A, and Attachment #1 shall be enforceable by the Department.

~~22. Notwithstanding any other provision of this Stipulation, MSCC's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission control strategies resulting from any challenge or appeal of the initial adopted emissions control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either MSCC or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Montana Sulphur and Chemical Company	Montana Department of Environmental Quality
By *[signature]*, V.P.	By *[signature]* Mark Simonich Director
Date May 28, 1998	Date 6/9/98
Approved as to form:	Approved as to form:
By ____________ Attorney	By *[signature]* Attorney
Date ____________	Date 6/9/98

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56.9.3.21 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING MONTANA SULPHUR & CHEMICAL COMPANY, BILLINGS, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND MONTANA SULPHUR AND CHEMICAL COMPANY

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for Montana Sulphur and Chemical Company (MSCC). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for MSCC is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings. In particular, the Board ratifies and adopts the Department's approval of a fluid modeling demonstration of good engineering practice (GEP) stack height for the MSCC 100-meter SRU stack, performed by CPP, Inc. of Fort Collins, Colorado, and the Department's determination that such approved fluid modeling demonstrated that a height of 97.5 meters is justified and creditable as good engineering practice height for that stack in accordance with the requirements of 40 CFR Part 51, Subpart F, Section 51.100, including specifically paragraphs (ii), (jj), and (kk)(1) thereof, GEP guidelines, and the corresponding Montana requirements governing GEP. The Board also hereby ratifies and adopts the Department's determination in that Stipulation and attachments that MSCC shall receive credit for such height in the setting of emission limitations. Further, the Board also hereby ratifies and adopts the Department's determination that the recognition of variable buoyancy flux and/or the emissions shifting in setting emission limits as contemplated and approved by parties in that Stipulation is not

a prohibited or unlawful dispersion technique for MSCC and the Board finds that MSCC is entitled to and shall receive emission limitation credit recognizing such techniques.

4. It is the intent of the parties that the attached emission control plan for MSCC, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA. Further, under ARM 17.8.401(2)(c), the Department is the agency to determine and approve a fluid model or a field study for the purpose of ensuring that emissions from a stack do not result in excessive concentrations of any air pollutant as a result of atmospheric downwash, wakes, or eddy effects created by the source itself, or nearby structures or nearby terrain features. See also 40 CFR §51.100(ii)(3). This Board hereby ratifies and adopts the Department's approval of the fluid model study above referred to in the findings of fact.

3. The Board has authority to issue orders necessary to effectuate the purposes

of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for MSCC set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

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56.9.4.5 EXHIBIT A - EMISSION LIMITATIONS AND OTHER CONDITIONS - MONTANA SULPHUR & CHEMICAL COMPANY, BILLINGS, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

Montana Sulphur & Chemical Company
Billings, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

Montana Sulphur is located near the Exxon Refinery complex and is about three miles northeast of Billings. The plant is located in Yellowstone County, Township 1 North, Range 26 East, Section 24 and contiguous sections.

(B) Affected Equipment and Facilities:

(1) SRU 100 meter stack
(2) Railroad Boiler stack, H-1 unit stack, H1-A unit stack, H1-1 unit stack, H1-2 unit stack
(3) SRU 30 meter stack (old SRU stack)

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Exhibit A.

(1) "Annual Emissions" means the amount of sulfur dioxide (SO_2) emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors", attached to this Exhibit and incorporated herein by reference.

(3) "Buoyancy Flux" means a stack plume rise parameter defined by the following equation:

$$F = \frac{2.45\, VD^2\, (T_s - T)}{T_s}$$

Where:

F =	Buoyancy Flux in m^4/sec^3;
V =	stack gas exit velocity in meters per second at actual conditions obtained from either the primary (CEMS) or backup temperature and flowrate monitoring system;
D =	inside stack-top diameter in meters (1.07 meters);
T_s =	stack gas temperature in degrees Kelvin obtained from either the primary (CEMS) or backup temperature and flowrate monitoring system; and
T =	ambient air temperature in degrees Kelvin.

The ambient air temperature used in all Buoyancy Flux calculations required by this control plan shall be 8.0°C (281.2°K), the Billings annual average ambient temperature.

Whenever the CEMS-derived stack parameters "V" and/or "T_S" are unavailable to determine a Buoyancy Flux "F", a substituted Hourly Buoyancy Flux shall be used. The substituted Hourly Buoyancy Flux shall be determined from data derived from the backup temperature and flowrate monitoring system required by Section 6(B)(3) which:

(a) by itself meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(8) and is designed to achieve a temporal sampling resolution of at least one temperature and flowrate measurement per minute; or

(b) in combination with the primary CEMS meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(6 and 8).

The backup temperature and flowrate monitoring system equipment is only required to operate when the primary temperature and flowrate monitoring system equipment (those components of the CEMS required by Section 6(B)(2)) has failed and is determined to be unable to obtain and record Hourly Average temperature and flowrate data.

In the absence of such data a substitute Hourly Buoyancy Flux "F" shall be the average "F" determined for a period immediately prior to the loss of the stack parameters "V" and/or "T_S" that is equal in length to the time period over which stack parameters "V" and/or "T_S" are unavailable. That time period, called the "look-back" period, is measured in increments of Calendar Days.

Specifically, the substituted Hourly Buoyancy Flux "F" shall be the hourly average Buoyancy Flux "F" determined for the applicable "look-back" period. The applicable "look-back" period is a period, measured in Calendar Day increments, which is equal to the number of consecutive

Calendar Days during which one or more hours of the stack parameters "V" and/or "Ts" are unavailable. The applicable "look-back" period begins with the Calendar Day immediately preceding the Calendar Day in which the stack parameters "V" and/or "T_S" first became unavailable and continues backward in time for the number of Calendar Days equal to the number of Calendar Days during which one or more hours of the stack parameters "V" and/or "T_S" are unavailable.

For example, if stack parameters "V" and/or "T_S" are unavailable for a period beginning at 10:59 p.m. on January 3rd and ending at 1:01 a.m. January 5th, the applicable look-back periods would be:

- for the 24th hour of Calendar Day January 3rd, the look-back period would be one Calendar Day - in this case January 2nd;
- for each hour of Calendar Day January 4th, the look-back period would be two Calendar Days - in this case January 1st and January 2nd;
- for the 1st hour of Calendar Day, January 5th, the look-back period would be three Calendar Days - in this case December 31st, January 1st and January 2nd.

Substituted values for Buoyancy Flux may not be used to satisfy Montana Sulphur's Quarterly Data Recovery Rate unless the data is derived from the backup temperature and flowrate monitoring system required by Section 6(B)(3) or by backup equipment that by itself or in combination with the primary CEMS meets the specifications, operating requirements, and quality assurance and control requirements of Section 6 and Section 2(A)(6 and 8).

The Buoyancy Flux for any three hour period, "F_3", shall be determined by averaging the Hourly Buoyancy Fluxes for the three hour period.

$$F_3 = \frac{\Sigma \text{ Hourly Buoyancy Fluxes (F) for the Three Hour Period}}{3}$$

When an Hourly Buoyancy Flux value is unavailable due to failure of both the primary (CEMS) and backup temperature and flowrate monitoring systems, Montana Sulphur shall use the substitution procedure for "F" defined above.

(4) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(5) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard

60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(6) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration and stack gas volumetric flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines SO_2 concentrations in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rate, and associated data acquisition equipment.

(7) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(8) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas temperature monitor, and stack gas flow rate monitor shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(9) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of sulfur dioxide emissions from a stack determined using Hourly Averages and rounded to the nearest one tenth of a pound.

(a) For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(i) If the SO_2 concentration is measured on a wet basis, Montana Sulphur shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM; and
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(ii) If the SO_2 concentration is measured on a dry basis, Montana Sulphur shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. Montana Sulphur shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:
E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM (dry basis);
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and
$\%H_2O$= Hourly Average stack gas moisture content, in percent by volume.

(10) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack, except that for the SRU starting up and shutting down shall only include time periods when sulfur-bearing gases are being delivered to the

SRU.

(11) "Quarterly Data Recovery Rate" means the percentage of hours in a calendar quarter when CEMS derived Hourly SO_2 Emission Rate data are available for a source (stack) in comparison to the number of corresponding Operating hours for that source.

The Quarterly Data Recovery Rate (QDRR) for a source shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH * 100\%}{OH}$$

Where:

VH =	number of hours of Hourly SO_2 Emission Rate data that are also source Operating hours in a calendar quarter;
OH =	total number of source Operating hours in a calendar quarter; and
QDRR =	Quarterly Data Recovery Rate.

(12) "Standard Conditions" means 20.0°C (527.7°R, 68.0°F, or 293.2°K) and 1 atmosphere pressure (29.92" Hg).

(13) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(14) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS

~~(A) Emission Limitations~~

~~(1) SRU 100 meter Stack~~

~~(a) The following SO_2 emission limitations shall apply to the SRU 100 meter stack except when SO_2 emissions from the Railroad Boiler, the H-1 Unit, the H1-A Unit, the H1-1 Unit or the H1-2 Unit are exhausting through the SRU 30 meter stack:~~

~~(i) the Three Hour Emission Limitation (E_L) for SO_2 from the SRU 100 meter stack is dependent upon, and varies in accordance with, the Three Hour Average Buoyancy Flux (F_3) of the exhaust gas that is emitted from the SRU 100 meter stack.~~

~~(ii) Three Hour Emissions of SO_2 in pounds of SO_2 per three hours from the SRU 100 meter stack shall not exceed the value of the Three Hour Emission Limitation, E_L, as determined by the following equations:~~

~~For $F_3 < 20.58\ m^4/s^3$~~
$\cancel{E_L = 0.2665*(F_3)^3 - 8.6096*(F_3)^2 + 138.100*F_3 + 2694.86}$

~~For $20.58 \le F_3 \le 129.8\ m^4/s^3$~~
$\cancel{E_L = 0.0019*(F_3)^3 - 0.5168*(F_3)^2 + 86.327*F_3 + 2639.10}$

~~For $F_3 > 129.8\ m^4/s^3$~~
$\cancel{E_L = 9291.86}$

~~Where:~~

~~F_3 = Three Hour Average Buoyancy Flux in m^4/sec^3; and~~
~~E_L = Three Hour Emission Limitation for SO_2 in pounds of SO_2 per three hours.~~

~~(iii) Daily Emissions of SO_2 from the SRU 100 meter stack shall not exceed the sum of all of the Three Hour Emission Limitations, ΣE_L, for the eight non-overlapping three hour periods in a Calendar Day.~~

~~(iv) Annual Emissions of SO_2 from the SRU 100 meter stack shall not exceed 9,088,000 pounds per calendar year.~~

~~(b) The following SO_2 emission limitations shall apply to the SRU 100 meter stack whenever SO_2 emissions from either the Railroad Boiler, the H-1 Unit, the H1-A Unit, the H1-1 Unit, or the H1-2 Unit are exhausting through the SRU 30 meter stack:~~

(i) ~~Three Hour Emissions of SO_2 from the SRU 100 meter stack shall not exceed 3,577.4 pounds per three hour period.~~

(ii) ~~Daily Emissions of SO_2 from the SRU 100 meter stack shall not exceed 28,618.9 pounds per Calendar Day.~~

(iii) ~~Annual Emissions of SO_2 from the SRU 100 meter stack shall not exceed 9,088,000 pounds per calendar year~~

(2) SRU 30 meter Stack;

(a) Three Hour Emissions of SO_2 from the SRU 30 meter stack shall not exceed 12.0 pounds per three hour period.

(b) Daily Emissions of SO_2 from the SRU 30 meter stack shall not exceed 96.0 pounds per Calendar Day.

(c) Annual Emissions of SO_2 from the SRU 30 meter stack shall not exceed 35,040 pounds per calendar year.

(d) Montana Sulphur shall burn only low sulfur fuel gas or natural gas in any unit being exhausted through the SRU 30 meter stack. Except as provided in (e) below, the following units are the only SO_2 emitting units that are allowed to be exhausted through the 30-meter stack:

(i) the Railroad Boiler,
(ii) the H-1 Unit,
(iii) the H1-A Unit,
(iv) the H1-1 Unit, and
(v) the H1-2 Unit.

(e) Montana Sulphur may vent other units through the 30-meter stack if such venting is the result of a "like-kind" replacement for any unit listed in (i) through (v) above or otherwise simply replaces fuel-burning potential for such listed units. Montana Sulphur may also vent other units through the 30-meter stack provided that:

(i) Montana Sulphur first obtains an air quality permit from the Department for the additional unit or obtains the Department's concurrence that no permit is required, and the additional unit is a combustion source that is fired exclusively on pipeline quality natural gas or LP gas or their equivalents in pounds of sulfur per BTU, or

(ii) the SO_2 emissions from the 30-meter stack are being monitored by parametric methods approved by the Department and EPA or a CEMS that meets the requirements of Section 6.

~~(3) If, for any 3-hour period during the course of a Calendar Day, the conditions for Section 3(A)(1)(a) and Section 3(A)(1)(b) both apply, then the resulting three hour emission limitation for the SRU 100 meter stack shall be determined by prorating, on an hourly basis, the emission limits contained in Section 3(A)(1)(a and b).~~

~~(4) The combined SO_2 emissions from the auxiliary vent stacks associated with the Railroad Boiler, the H-1 Unit, the H1-A unit, the H1-1 unit, and the H1-2 unit shall be limited to 12 lbs/3-hour period.~~

(5) Other Minor Sources;

Montana Sulphur shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Exhibit A.

(B) Facility Modifications

(1) By March 4, 1998, Montana Sulphur shall provide additional ducting to allow direct merging of fuel combustion exhaust gases from the Railroad Boiler, the H-1 Unit, the H1-A unit, the H1-1 unit, and the H1-2 unit to the emissions stream flowing through the SRU 100 meter stack.

(2) Montana Sulphur may design and implement connections to allow the diversion of fuel combustion exhaust gases from the Railroad Boiler, the H-1 Unit, the H1-A unit, the H1-1 unit, and/or the H1-2 unit to the SRU 30 meter stack.

(3) By March 4, 1998, Montana Sulphur shall vent emissions from the Railroad Boiler, the H-1 unit, the H1-A unit, the H1-1 unit, and the H1-2 unit from either the individual vents associated with each of those emission units, the SRU 30 meter stack, or the SRU 100 meter stack, except as provided for in Section 3(A)(5).

(4) MSCC may relocate the west flare to the SRU 100 meter stack support cylinder or raise it to 65.0 meters and/or raise the east flare to 65.0 meters without requirements for further dispersion modeling during the permit process.

(5) Montana Sulphur may install and operate emission limiting equipment (ELE) at their Lockwood Facility. Installation and operation of ELE is subject to any applicable permit requirements, except that as part of the permit application process additional dispersion modeling will not be necessary for

demonstrating compliance with the National Ambient Air Quality Standards for sulfur dioxide, if the emissions from these units are vented to the SRU 100 meter stack and construction of the ELE commences by August 9, 1998. Nothing herein shall be construed to require or waive additional dispersion modeling or prohibit the installation or operation of ELE upon which construction begins after August 9, 1998. Such construction or operation is to be governed by then-existing requirements as they may be applicable to the specific project. For the purposes of this document, "Emission Limiting Equipment" means one or more of the following facilities or modifications installed and operated for the purpose of reducing emissions:

(a) Catalytic Equipment which may consist of additional Claus Reactor equipment, CBA/Sub-dewpoint Reactor equipment, or SuperClaus(TM) equipment; or

(b) alkali Wet-Scrubbing Equipment with or without sulfur dioxide/hydrogen sulfide (SO_2/H_2S) regeneration (e.g.-ATS/ABS systems).

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations for the SRU 100 meter stack shall be determined using data from the CEMS required by Section 6(B)(1 and 2) and in accordance with the appropriate equation(s) in Section 2(A)(1), (3), (7), (9), and (13) except when CEMS data is not available and as provided in Section 2(A)(3) and (13). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Sections 5(A) or Sections 6(C and D) shall also be used to demonstrate compliance.

(B) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6(A)(2) shall be determined in accordance with Section 2(A)(11), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether Montana Sulphur has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, Montana Sulphur shall implement short term corrective measures, and if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure; or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rates in pounds per hour for the SRU 100 meter stack, Montana Sulphur shall perform annual source testing using EPA approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C and D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) Montana Sulphur shall notify the Department in writing of each annual source test a minimum of 25 working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond Montana Sulphur's control, and which could not reasonably have been prevented or mitigated by Montana Sulphur. Such circumstances may include but are not limited to earthquakes, power outages, or fire; but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, Montana Sulphur initiates the short term corrective measures and, if necessary, the long term corrective measures required by Section 4(B);

(c) within two working days of occurrence, Montana Sulphur notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) Montana Sulphur demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating Montana Sulphur shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, Montana Sulphur shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(B)(2):

(i) for the SRU 100 meter stack CEMS, Montana Sulphur shall achieve a QDRR of equal to or greater than 90%. Valid data obtained from backup temperature and flow rate monitoring system equipment in combination with data from the primary sulfur dioxide continuous monitor shall count towards meeting this requirement.

(c) In its evaluation of whether Montana Sulphur used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS; and whether:

(ii) Montana Sulphur has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) Montana Sulphur has complied with the quality assurance requirements described in Section 6;

(iv) Montana Sulphur has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, Montana Sulphur shall implement the short term corrective measures, and if necessary, the long term corrective measures required by Section 4(B).

(B) Affected Sources

(1) By July 1, 1997, Montana Sulphur shall install, operate, and maintain a continuous emission monitor to measure sulfur dioxide concentrations from the SRU 100 meter stack.

(2) By July 1, 1997, Montana Sulphur shall install, operate, and maintain a continuous stack flow rate monitor and temperature monitor (at a minimum, a thermocouple) to measure the stack gas flow rates from the SRU 100 meter stack.

~~(3) By January 1, 1999, or a date 6 months after EPA approval of the Buoyancy Flux monitoring requirements contained in this document (whichever date is later), Montana Sulphur shall install and maintain a backup temperature and flowrate monitoring system to measure and record the stack gas temperature and flow rate from the SRU 100 meter stack. The back-up temperature and flowrate monitoring system shall be capable of obtaining and recording stack parameters to determine "V" and/or "T_S" in the event of the failure of the primary temperature and flowrate monitoring system which is a component of the CEMS required by Section 6(B)(2) and shall meet the performance specifications contained in Section 2(A)(3). However, the back-up system may rely upon the in-stack pitot tube and associated mechanical connections that are components of the primary temperature and flowrate monitoring system up to, but not including, the transducer.~~

~~For purposes of compliance with this requirement, the backup monitoring equipment must include as a minimum a differential pressure transducer, a thermocouple, and either:~~

~~(a) chart recorder(s) capable of recording "T_S" and pitot tube differential pressure, or~~
~~(b) a data logger capable of recording "T_S" and the calculated "V", the calculated flowrate, or the pitot tube differential pressure necessary to calculate "V" and flowrate.~~

~~Upon installation, Montana Sulphur shall operate the backup temperature and flowrate monitoring system whenever the primary (CEMS) temperature and flowrate monitoring system is determined to have failed.~~

(4) By July 1, 1997, Montana Sulphur shall install, operate, and maintain a temperature monitor (at a minimum, a thermocouple) to measure the stack gas temperature of the SRU 30 meter stack.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specifications 2; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro - optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) Montana Sulphur shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department Method A-1 of Attachment #1; and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) Montana Sulphur shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 7. DATA REPORTING REQUIREMENTS

(A) Montana Sulphur shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the SRU 100 meter stack;

(b) Hourly Average stack volumetric flow rates in SCFH from the SRU 100 meter stack;

(c) Hourly Average stack gas temperatures in °F from the SRU 30 meter stack and the SRU 100 meter stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the SRU 100 meter stack;

(e) Hourly Buoyancy Flux, F, in m^4/s^3 and Three Hour Buoyancy Fluxes, F_3, in m^4/s^3; and

(f) daily calibration data from the CEMS required by Section 6(B)(1) and (2) or, if applicable, Section 6(B)(3).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, Montana Sulphur shall also record, organize and archive for at least five years the same data, and upon request by the Department, Montana Sulphur shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized CEMS data for Daily Emissions, Three Hour Emissions, Three Hour Average Buoyancy Flux, Quarterly Data Recovery Rates, and text regarding excess emissions. The quarterly written report shall also list the date and time periods that emissions are exhausted through the SRU 30 meter stack and the unit-specific auxiliary vent stacks, the operating units whose emissions are exhausted from the SRU 30 meter stack, and include engineering estimate of the Three Hour Emissions and Daily Emissions from the SRU 30 meter stack and the unit-specific auxiliary vent stacks.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emission Limitations for SO_2 from the SRU 100 meter stack;

(b) Three Hour Emissions of SO_2 from the SRU 100 meter stack;

(c) Three Hour Average Buoyancy Flux for the exhaust gases from the SRU 100 meter stack;

(d) Daily Emissions of SO_2 in pounds per Calendar Day from the SRU 100 meter stack;

(e) Daily Emission Limitations for SO_2 from the SRU 100 meter stack;

(f) the Quarterly Data Recovery Rate for the CEMS required by Section 6(B)(1) and (2) expressed in percent (Valid data obtained from backup temperature and flow rate monitoring system equipment in combination with data from the primary sulfur dioxide continuous monitor shall count towards meeting the QDRR requirements.);

(g) the Operating hours during the calendar quarter for the source or units associated with the SRU 100 meter stack;

(h) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(i) the results of the quarterly CGA's or RAA's and flow rate checks, the annual or semiannual RATA's required in Sections 6(C and D), and the annual source tests required by Section 5(A);

(j) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances;

(k) the date and time periods that emissions are exhausted through the SRU 30 meter stack, the operating units whose emissions are exhausted from the SRU 30 meter stack, and include engineering estimates of the Three Hour Emissions and Daily Emissions from the SRU 30 meter stack; and

(l) the date and time periods that emissions are exhausted through the auxiliary vent stacks associated with each of the Railroad Boiler, the H-1 Unit, the H1-A Unit, the H1-1 Unit, and the H1-2 Unit and include engineering estimates of the combined Three Hour Emissions and Daily Emissions from those stacks.

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of Operation with excess emissions, the Hourly SO_2 Emission Rates, the Three Hour Emissions, the Three Hour Emission Limitations for SO_2, the Daily Emission Limitations for SO_2 and the Daily Emissions;

(b) all information regarding reasons for Operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, Montana Sulphur shall provide Hourly SO_2 Emissions Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for Montana Sulphur while still providing the necessary information. Any revisions shall be made only after consultation with Montana Sulphur, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Exhibit A or Attachment #1 shall be construed to alter Montana Sulphur's obligation under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, Montana Sulphur reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Exhibit A and Attachment #1, Montana Sulphur shall, pursuant to 75-2-403, MCA, allow the Department representative(s) access to all SO_2 emitting sources at the Montana Sulphur facility such that, the Department representative(s) may, pursuant to 75-2-403, MCA, enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain emissions data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all other necessary functions related to this control plan.

As provided in Section 75-2-105, MCA, Montana Sulphur may seek a court order declaring certain trade secret information as confidential and not a matter of public record. If Montana Sulphur claims that certain information is entitled to trade secret protection, the Department shall maintain such information as confidential pending issuance of a court order under Section 75-2-105, MCA, provided that Montana Sulphur initiate such court action within 14 days of delivering the information to the Department.

(B) Enforcement - Any violation of a limitation, condition, or other requirement contained herein constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the requirement contained herein as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS
(Includes Methods A-1 and B-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The Department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the Department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by

installing straightening vanes. The Department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the Department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the Department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the Department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed ±2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the Department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error .

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part 60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$CE = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;
R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\text{(Eq. A-2)}\ \bar{d} = \frac{1}{n}\sum_{i=1}^{n} d_i$$

Where:

n=Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i

d_i = The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[\frac{\left(\sum_{i=1}^{n} d_i\right)^2}{n}\right]}{n-1}}$$

(Eq. A-3)

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025}\frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

where:

$t_{0.025}$ = *t value (see Table* 2)

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$RA = \frac{|\bar{d}| + |cc|}{\overline{RM}} x\ 100 \qquad \text{(Eq. A-5)}$$

where:

RM = Arithmetic means of the reference method values.

$|\bar{d}|$ = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

$|cc|$ = The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
		Confidence coefficient		
		Relative accuracy		

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration

error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;
TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses).
The relative accuracy test audit shall be conducted according to the

procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations (≤10.0 fps), the flow monitor mean value (if applicable) exceeds ±2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	STIPULATION OF DEPARTMENT AND WESTERN SUGAR COMPANY

The Department of Environmental Quality ("Department"), and Western Sugar Company ("Western Sugar"), hereby stipulate to the following paragraphs 1-20, including Exhibit A and Attachment #1, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

This Stipulation nullifies and supersedes all Stipulations which were executed by Western Sugar and the Department in this matter and which were adopted by the Board prior to June 12, 1998.

1. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be exceeded more than once per year. These standards were promulgated by EPA pursuant to Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air

Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

3. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

4. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

5. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

6. Utilizing a dispersion modeling analysis, Western Sugar and the Department have developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. Western Sugar's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, Western Sugar does not waive and shall not be precluded from raising any objections it may have including but not limited to those pertaining to the dispersion modeling analysis.

7. The purpose of this Stipulation and the emission limitations and other limitations contained in Exhibit A and Attachment #1 is to establish an emission control strategy for Western Sugar which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachment #1 do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

8. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Western Sugar shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachment #1.

9. The following Attachment is attached to Exhibit A and is incorporated therein and in this Stipulation by reference:

Attachment 1: Performance Specifications for Stack Flow Rate Monitors, Fuel Oil Flow Meters, and Fuel Oil Sulfur Analysis.

10. Upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

11. Disputes between the parties, during the development of a revised Attachment #1, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. The Board will exercise reasonable diligence in rendering a determination on the disputed matter. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of the final Attachment #1 or of any other provision of this

Stipulation or Exhibit A.

12. For the exclusive purpose of implementing the sulfur dioxide emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, ARM 17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

13. The Stipulation, Exhibit A, and Attachment #1 shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachment #1.

14. It is the intent of the parties that this Stipulation, Exhibit A, and Attachment #1, after adoption and incorporation by Board order, shall be submitted to the Environmental Protection Agency for review and approval as the Western Sugar control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to Western Sugar.

15. The Stipulation, Exhibit A, and Attachment #1 are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachment #1 are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

16. This Stipulation, Exhibit A, or Attachment #1 may be subject to modification upon the occurrence of certain modifying conditions. Such modifying

conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by Western Sugar, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan.

Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that Western Sugar demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a facility

17. Procedures for modification of this Stipulation, Exhibit A, and Attachment #1 shall be as follows:

Board Approval

a. Stipulation and Exhibit. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. Attachment #1. As provided in Paragraph 10, upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, without the necessity for a revised Board order.

c. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

EPA Approval for SIP Changes

d. Stipulation, Exhibit, and Attachment #1. Following EPA approval pursuant to paragraph 14, all modifications of the text of this Stipulation, Exhibit A, and Attachment #1 shall require the approval of EPA under either subparagraph 17(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 17(f) or (g).

f. Title I Procedures. Until the issuance of a Title V operating permit for Western Sugar and the adoption of the enabling state administrative rule described in paragraph 17(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachment #1 described in paragraph 17(d), and all implementation approvals described in subparagraph 17(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 17(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 17(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 17(d) and implementation approvals under subparagraph 17(e), provided that the following two conditions are met:

(i) Western Sugar has been issued a Title V operating permit and the State has adopted an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 17(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determinations shall be made within 45 days from the submittal of the proposed modification or approval to EPA..

18. Western Sugar does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of Western Sugar, modifies this stipulation, Exhibit A, or Attachment #1.

19. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachment #1. Except where another effective date is provided in Exhibit A or Attachment #1, upon adoption in a Board Order, the Stipulation, Exhibit A, and Attachment #1 shall be enforceable by the Department.

~~20. Notwithstanding any other provision of this Stipulation, Western Sugar's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in~~

~~response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission control strategies resulting from any challenge or appeal of the initial adopted emissions control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either Western Sugar or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Western Sugar Company	Montana Department of Environmental Quality
By Raymond Bode	By Mark A. Simonich Mark Simonich, Director
Date 5/29/98	Date 6/9/98
Approved as to form:	Approved as to form:
By ____________ Attorney	By James M. Madden Attorney
Date ____________	Date 6/9/98

8

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.22 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING THE WESTERN SUGAR COMPANY, BILLINGS, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND WESTERN SUGAR COMPANY

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for The Western Sugar Company (Western Sugar). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for Western Sugar is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached emission control plan for Western Sugar, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to

participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for Western Sugar set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

3

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.4.6 EXHIBIT A - EMISSION LIMITATIONS AND CONDITIONS - THE WESTERN SUGAR COMPANY, BILLINGS, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

The Western Sugar Company
Billings, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

Western Sugar is located in southeast Billings. The plant is located in Yellowstone County, Township 1 South, Range 26 East, NE ¼ Section 10.

(B) Affected Equipment and Facilities:

(1) Boiler house (#2, #3, and #4 Riley Coal boilers)
(2) Erie City boiler
(3) Clever Brooks boiler
(4) East dryer unit
(5) West dryer unit

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors, Fuel Oil Flow Meters, and Fuel Oil Sulfur Analysis", attached to this Exhibit and incorporated herein by reference.

(3) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight,

24 hours later.

(4) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(5) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration, stack gas volumetric flow rate and fuel oil flowmeter is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines SO_2 concentrations in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rates, and associated data acquisition equipment; or

(b) a pair of fuel oil flowmeters which in combination measure the combined fuel oil firing rate for the fuel oil combustion units, and associated data acquisition equipment.

(6) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(7) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor, stack gas flow rate monitor, and fuel oil flow meter shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(8) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of SO_2 emissions from a stack or fuel oil system determined using Hourly Averages and rounded to the nearest one tenth of a pound.

(a) For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(i) If the SO_2 concentration is measured on a wet basis, Western Sugar shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM; and
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(ii) If the SO_2 concentration is measured on a dry basis, Western Sugar shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. Western Sugar shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM (dry basis);
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported

in standard cubic feet per hour (SCFH); and

$\%H_2O$ = Hourly Average stack gas moisture content, in percent by volume.

(b) For fuel oil combustion with mass flow metering at the beet pulp dryers the following equation shall be used to calculate the Hourly SO_2 Emission Rate in pounds per hour.

$$M_s = 2.0 * [(M_o * \%S_o/100) + (M_b * \%S_b/100)] * (1 - CE)$$

Where:

M_s = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
2.0 = ratio of pounds of SO_2 per pound of sulfur;
M_o = mass of fuel oil consumed per hour in pounds per hour;
$\%S_o$ = percentage of sulfur by weight measured in the fuel oil;
M_b = mass of beet pulp feed to the dryers in pounds per hour;
$\%S_b$ = percentage of sulfur by weight in the beet pulp; and
CE = control efficiency of the water curtain scrubber, mist eliminator, and the beet pulp, expressed as a decimal.

To determine the percentage of sulfur by weight in the beet pulp, Western Sugar shall implement a program to sample the feed of beet pulp to the dryers on a weekly basis and analyze the samples for percent sulfur [unless the Department and EPA approve the use of a constant for sulfur content as provided in Section 6 (E)(9)]. The percent sulfur (S_b) for a particular week shall be the percent sulfur for the most recent sample.

The control efficiency of the water curtain scrubber, mist eliminator, and the beet pulp shall be determined once during each campaign (and applied for the entire campaign) using the results of the source testing required by Section 5 (B) and the results of concurrent sampling and analysis of the beet pulp processed and fuel oil burned to determine the sulfur input to the dryer being tested. The control efficiency shall be calculated in accordance with the following equation:

$$CE = [(2.0 * S_i) - (S_t)] \div (2.0 * S_i)$$

Where:

CE = control efficiency expressed as a decimal;
2.0 = ratio of pounds of SO_2 per pound of sulfur;

S_i = sulfur input to the beet pulp dryer expressed in pounds per hour and determined in accordance with the following equation:

$(M_o * \%S_o/100) + (M_b * \%S_b/100)$; and

S_t = SO_2 emission rate in pounds per hour rounded to the nearest tenth of a pound as determined by source testing.

(9) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack.

(10) "Quarterly Data Recovery Rate" means the percentage of hours in a calendar quarter when CEMS derived Hourly SO_2 Emission Rate data are available for a source (stack or fuel oil system) in comparison to the number of corresponding Operating hours for that source.

The Quarterly Data Recovery Rate (QDRR) for a source shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH}{OH} \times 100\%$$

Where:

VH = number of hours of Hourly SO_2 Emission Rate data that are also source Operating hours in a calendar quarter;
OH = total number of source Operating hours in a calendar quarter; and
QDRR = Quarterly Data Recovery Rate.

(11) "Standard Conditions" means 20.0°C (527.7°R, 68.0°F, or 293.2°K) and 1 atmosphere pressure (29.92" Hg).

(12) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(13) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS, CAMPAIGN LENGTH, AND FACILITY MODIFICATIONS

(A) Emission Limitations

(1) Affected Sources:

(a) Boiler house stack;

(i) Three Hour Emissions of SO_2 from the boiler house stack shall not exceed 856.2 pounds per three hour period,

(ii) Daily Emissions of SO_2 from the boiler house stack shall not exceed 6,849.6 pounds per Calendar Day, and

(iii) Annual Emissions of SO_2 from the boiler house stack shall not exceed 1,438,416 pounds per calendar year.

(b) East dryer stack and West dryer stack;

(i) Combined Three Hour Emissions of SO_2 from the East dryer stack and West dryer stack shall not exceed 88.5 pounds per three hour period,

(ii) Combined Daily Emissions of SO_2 from the East dryer stack and West dryer stack shall not exceed 708.0 pounds per Calendar Day, and

(iii) Combined Annual Emissions of SO_2 from the East dryer stack and West dryer stack shall not exceed 148,680 pounds per calendar year.

(c) Other Minor Sources;

(i) Western Sugar shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

(ii) Western Sugar shall use good engineering judgement and appropriate engineering calculations to quantify emissions from activities that are not otherwise addressed by this Stipulation and Exhibit A but are known to contribute to emissions from sources listed in Section 1(B). In addition, Western Sugar shall account for such emissions in determining compliance with all applicable emission limits contained in Section 3.

(B) Facility Modifications

(1) By October 1, 1996, Western Sugar shall modify the existing boiler house stack or construct a new stack which exhausts at a height of at least 54.9 meters above ground level.

(2) By October 1, 1996, Western Sugar shall remove the fuel oil guns from the Erie City boiler and Clever Brooks boiler and install a blind insert in the fuel oil header to each unit.

(C) The length of any campaign (normally September through the following February) shall not exceed 190 days.

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations contained in Section 3 (A)(1)(a) shall be determined using data from the CEMS required by Section 6 (B)(1) and (2) and in accordance with the appropriate equation(s) in Section 2 (A)(1), (6), (8) and (12) except when CEMS data is not available as provided in Section 2 (A)(12). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Sections 5(A) or 6(C) and (D) shall also be used to demonstrate compliance.

(B) Compliance with the emission limitations contained in Section 3 (A)(1)(b) shall be determined by using total hourly mass of fuel oil consumed from the fuel oil flowmeters required by Section 6 (B)(3), daily fuel oil sulfur analysis as required by Section 6 (E)(3), the hourly mass of beet pulp feed to the dryers, the weekly beet sulfur analysis as required by Section 2 (A)(8)(b), and the control efficiency determined in accordance with Section 2 (A)(8)(b), and in accordance with the appropriate equation(s) in Section 2 (A)(1), (6), (8) and (12) except when CEMS data is not available as provided in Section 2 (A)(12). Although the CEMS data and above procedures (beet feed rate and sulfur content and scrubber control efficiency) is the method of demonstrating compliance on a continuous basis, the data from the testing required by Section 5 (B) shall also be used to demonstrate compliance.

(C) By October 1, 1996, Western Sugar shall certify to the Department that the facility modifications described in Section 3(B) have been completed and are permanent in nature.

(D) Compliance with the facility modifications contained in Section 3(B) shall be determined by inspection by the Department.

(E) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6 (A)(2) shall be determined in accordance with Section 2 (A)(10), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether Western Sugar has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, Western Sugar shall implement short term corrective measures and if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure, or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rate in pounds per hour for the boiler stack, Western Sugar shall perform annual source testing using EPA approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C) and (D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) In order to accurately determine the sulfur dioxide emission rate in pounds per hour for the beet pulp dryer stacks and the control efficiency of the water curtain scrubbers, mist eliminators, and the beet pulp, Western Sugar shall perform annual source testing on the beet dryer stack that is expected to emit the most sulfur dioxide during the campaign. In determining the projected sulfur dioxide emissions for each stack, Western Sugar shall consider expected beet production and fuel oil consumption. The annual source testing shall be conducted within 30 days after the start of a campaign and use EPA-approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106)

(C) Western Sugar shall notify the Department in writing of each annual source test a minimum of 25 working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING AND FUEL OIL FLOWMETERING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond Western Sugar's control, and which could not reasonably have been prevented or mitigated by Western Sugar. Such circumstances may include but are not limited to earthquakes, power outages, or fire; but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, Western Sugar initiates the short term corrective measures and the long term corrective measures required by Section 4(E);

(c) within two working days of occurrence, Western Sugar notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) Western Sugar demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, Western Sugar shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, Western Sugar shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in Section 4(E)(2):

(i) for the boiler house stack CEMS and the fuel oil system CEMS, Western Sugar shall achieve a QDRR for each CEMS of equal to or greater than 90%.

(c) In its evaluation of whether Western Sugar used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS; and whether:

(ii) Western Sugar has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) Western Sugar has complied with the quality assurance requirements described in Section 6;

(iv) Western Sugar has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, Western Sugar shall implement the short term corrective measures and if necessary, the long term corrective measures required by Section 4(E)(3).

(B) Affected Sources

(1) By July 1, 1997, Western Sugar shall install, operate, and maintain a continuous emission monitor to measure SO_2 concentrations from the boiler house stack.

(2) By July 1, 1997, Western Sugar shall install, operate, and maintain a continuous stack flow rate monitor to measure the stack gas flow rates from the boiler house stack.

(3) By October 1, 1996, Western Sugar shall install, operate, and maintain two in-line fuel oil flowmeters on the fuel oil loop, one immediately upstream from the East dryer furnace and one downstream from the West dryer furnace.

(4) All continuous emission monitors required by this control plan shall be required to operate only

when Western Sugar is Operating.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specifications 2; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro- optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) Western Sugar shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department Method A-1 of Attachment #1, and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) Western Sugar shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(E) Fuel Oil Flowmetering and Fuel Oil and Beet Analysis Specifications

(1) Western Sugar shall operate and maintain all fuel oil flowmeters required by this control plan in accordance with Method C-1 of Attachment #1.

(2) Western Sugar shall conduct daily fuel oil sampling in accordance with Method C-1 of Attachment #1.

(3) Western Sugar shall analyze all fuel oil samples collected, as required by Section 6 (E)(2), for sulfur content in accordance with Method C-1 of Attachment #1.

(4) Each fuel oil flowmeter required by this control plan shall demonstrate a flowmeter accuracy of 2.0 percent of the upper range value (i.e. maximum calibrated oil flow rate) as measured under laboratory conditions by the manufacturer or by the owner or operator, and pursuant to the calibration procedures as specified by Method C-1 of Attachment #1.

(5) Western Sugar shall archive a split (at least 200 cc) of each fuel oil sample collected, as required by Section 6 (E)(2), in accordance with Method C-1 of Attachment #1.

(6) Western Sugar shall collect weekly grab samples of the beet pulp feed to the dryers.

(7) Western Sugar shall prepare and analyze the beet pulp samples in accordance with the following Association of Official Analytical Chemists methods: 22.008 "Preparation of Sample Procedures" and 22.050 "Total Sulfur (23) Official First Action". Western Sugar may also perform the sample preparation and sulfur analysis by alternative methods. Prior to implementing an alternative sample preparation or analytical method, Western Sugar shall first seek and acquire approval from the Department and EPA.

(8) Western Sugar shall archive and maintain in a frozen state a split (at least 600 grams) of the beet pulp feed sample for at least 150 days after the submittal of the quarterly report for the quarter in which the sample was collected.

(9) Upon completion of two campaigns for which weekly beet pulp sulfur content data is available, Western Sugar may make a demonstration to the Department that the beet sulfur content is relatively constant and comprises a minor portion of the total sulfur input to the beet pulp dryers. If the Department and EPA determines that Western Sugar's demonstration is credible, the Department and EPA may approve of the use of a constant value for beet pulp sulfur content (a conservative value based upon the sulfur content data) and the discontinuation of weekly sampling and analysis for beet pulp sulfur content.

SECTION 7. DATA REPORTING REQUIREMENTS

(A) Western Sugar shall submit quarterly reports on a calendar year basis for the quarters that Western Sugar is operating, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter, except that the first quarterly report of a campaign shall be submitted within 30 days after the annual source testing on the beet pulp dryers. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the boiler house stack;

(b) Hourly Average stack volumetric flow rates in SCFH from the boiler house stack;

(c) Hourly Average stack gas temperature in °F from the boiler house stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the boiler house stack;

(e) total hourly mass of fuel oil consumed in pounds per hour;

(f) total hourly feed of beet pulp to the dryers in pounds per hour;

(g) combined Hourly SO_2 Emission Rate in pounds per Clock Hour from the East and West dryer stacks; and

(h) daily calibration data from CEMS required by Section 6(B).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, Western Sugar shall also record, organize and archive for at least five years the same data, and upon request by the Department, Western Sugar shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized CEMS data for Daily Emissions, Three Hour Emissions, fuel oil and beet pulp sulfur content data, Quarterly Data Recovery Rates and text regarding excess emissions.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emissions of SO_2 in pounds per three hour period from the boiler house stack and combined Three Hour Emissions from the East dryer stack and West dryer stack;

(b) Daily Emissions of SO_2 in pounds per Calendar Day from the boiler house stack and combined Daily Emissions from the East and West dryer stacks;

(c) the Quarterly Data Recovery Rate for each CEMS required by Section 6 (B)(1), (2), and (3) expressed in percent;

(d) the Operating hours during the calendar quarter for the source or units associated with boiler house stack and fuel oil system;

(e) daily fuel oil sulfur content in percent sulfur by weight;

(f) weekly beet pulp sulfur content in percent sulfur by weight;

(g) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(h) the results of the quarterly CGA's or RAA's and flow rate checks, the annual RATAs required in Section 6 (C) and (D), and the annual source tests required by Section 5 (A) and (B); and

(i) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances.

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of operation with excess emissions, the Hourly SO_2 Emission Rates, and

Three Hour Emissions;

(b) all information regarding reasons for Operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department, EPA or Yellowstone County Air Pollution Control, Western Sugar shall provide Hourly SO_2 Emission Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for Western Sugar while still providing the necessary information. Any revisions shall be made only after consultation with Western Sugar, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachment #1 shall be construed to alter Western Sugar's obligation under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, Western Sugar reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For purposes of ensuring compliance with this Stipulation, Exhibit A, and Attachment #1, Western Sugar shall, pursuant to 75-2-403, MCA, allow the Department representative(s) access to all SO_2 emitting sources at the Western Sugar facility such that, the Department representative(s) may, pursuant to 75-2-403, MCA, enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representatives shall be allowed to conduct surveys, collect samples, obtain emissions data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all other necessary functions related to this control plan.

As provided in Section 75-2-105, MCA, Western Sugar may seek a court order declaring certain trade secret information as confidential and not a matter of public record. If Western Sugar claims that certain information is entitled to trade secret protection, the Department shall maintain such information as confidential pending issuance of a court order under Section 75-2-105, MCA, provided that Western Sugar initiate such court action within 14 days of delivering the information to the Department.

(B) Enforcement - Any violation of a limitation, condition, or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS,
FUEL OIL FLOWMETERS, AND FUEL OIL SULFUR ANALYSIS
(Includes Methods A-1, B-1, & C-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by installing straightening vanes. The department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed ±2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error.

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this

Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part 60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$CE = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;
R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\bar{d} = \frac{1}{n} \sum_{i=1}^{n} d_i \quad \text{(Eq. A-2)}$$

Where:

$n =$ Number of data points

$\sum_{i=1}^{n} d_i =$ Algebraic sum of the individual differences d_i

$d_i =$ The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - \left[\frac{(\sum_{i=1}^{n} d_i)^2}{n}\right]}{n-1}} \quad \text{(Eq. A-3)}$$

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025} \frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

Where:

$t_{0.025}$ = *t value (see Table 2)*

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$RA = \frac{|\bar{d}| + |cc|}{\overline{RM}} x\ 100 \qquad \text{(Eq. A-5)}$$

Where:

RM = Arithmetic means of the reference method values.

$|\bar{d}|$ = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

$|cc|$ = The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
			Confidence coefficient	
			Relative accuracy	

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;
TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses). The relative accuracy test audit shall be conducted according to the procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations ($\leq$10.0 fps), the flow monitor mean value (if applicable) exceeds $\pm$2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

METHOD C-1
FUEL OIL FLOWMETERING AND ANALYSIS SPECIFICATIONS

1.0 FLOWMETER SPECIFICATIONS

Western Sugar shall measure and record the fuel oil consumption rate within the fuel oil loop on an hourly basis. Western Sugar shall measure the flow of fuel oil with in-line fuel oil flowmeters, as required by Section 6 (B)(3) of Exhibit A.

1.1 Initial Calibration and Certification

Design and equip each fuel oil flowmeter used to demonstrate a flowmeter accuracy of 2.0 percent of the upper range value (i.e, maximum calibrated oil flow rate) as measured under laboratory conditions by the manufacturer or by the owner or operator. Use the procedures in the following ASME codes for flow measurement for use in the laboratory, as appropriate to the type of flowmeter: ASME MFC-3M-1989 with September 1990 Errata (Measurement of Fluid Flow in Pipes Using Orifice, Nozzle, and Venturi), ASME MFC-5M-1985 (Measurement of Liquid Flow in Closed Conduits Using Transit-Time Ultrasonic Flowmeters), ASME MFC-6M-1987 with June 1987 Errata (Measurement of Fluid Flow in Pipes Using Vortex Flow Meters), or ASME MFC-9M-1988 with December 1989 Errata (Measurement of Liquid Flow in Closed Conduits by Weighing Method) for all other flowmeter types. More current ASME or NIST (National Institute of Standards and Technology) procedures or other ASME or NIST procedures which are appropriate to flowmeter construction may, upon Department approval, be substituted. If the flowmeter accuracy exceeds 2 percent of the upper range value, the flowmeter does not qualify for certification.

1.2 Annual Calibration

Recalibrate each fuel oil flowmeter to a flowmeter accuracy of 2.0 percent of the upper range value at least annually, or more frequently if required by manufacturer specifications using the same ASME procedures required for initial calibration and certification.

1.2.1 Alternative Annual Calibration Method

Alternatively, the fuel oil flowmeter may be recalibrated to a flowmeter accuracy of 2.0 percent of the upper range value at least annually by comparing the measured flow of a flowmeter to the measured flow from another flowmeter which has been calibrated or recalibrated during the previous 365 days using the procedures in ASME MFC-9M-1988 with December 1989 Errata, "Measurement of Liquid Flow in Closed Conduits by Weighing Method", or which has been recalibrated by the manufacturer. Perform the comparison over a period of no more than seven consecutive facility operating days. Compare the average of three fuel oil flow readings for each meter at three different flow levels: (1) a frequently used low operating level selected within the range between the minimum safe and stable operating level and 50% of maximum operating level; (2) a frequently used high operating level selected within the range between 80% of maximum operating level and maximum operating level; and (3) normal operating level. Calculate the flowmeter accuracy using the following equation:

$$ACC = \frac{|R - A|}{URV} \times 100 \qquad \text{(Eq. C-1)}$$

Where:

- ACC = Flow meter accuracy as a percentage of the upper range value.
- R = Average of the three low-, mid-, or high-level flow measurements of the reference flowmeter.
- A = Average of the three measurements of the flowmeter being tested.
- URV = Upper range value of fuel flowmeter being tested (i.e. maximum measurable flow).

If the flowmeter accuracy exceeds 2% of the upper range value, either recalibrate the flowmeter until the accuracy is within the performance specification, or replace the flowmeter with another one that is within the performance specification.

2.0 FUEL OIL SAMPLING AND ANALYSIS

Western Sugar shall perform sampling and analysis of as-fired fuel oil from the fuel oil loop to determine the percentage of sulfur by weight in the fuel oil.

2.1 Sampling Frequency and Methods

Western Sugar shall perform daily fuel oil sampling using either the flow proportional method described in Section 2.2 or the daily manual method described in Section 2.3.

2.2 Flow Proportional Sampling Method

Western Sugar shall conduct flow proportional fuel oil sampling or continuous drip fuel oil sampling in accordance with ASTM D4177-82 (Reapproved 1990), "Standard Practice for Automatic Sampling of Petroleum and Petroleum Products", every day the facility is combusting fuel oil within the fuel oil loop. Extract fuel oil at least once every hour and blend into a daily composite sample. The sample compositing period may not exceed 24 hours.

2.3 Daily Manual Sampling Method

Representative as-fired fuel oil samples may be taken manually every 24 hours according to ASTM D4057-88, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products", provided that the highest fuel oil sulfur content recorded at that facility from the most recent 30 daily samples is used for the purposes of calculating SO_2 emissions.

2.4 Sample Archiving

Split and label each daily fuel oil sample. Maintain a portion (at least 200 cc) of each daily sample for not less than 150 calendar days after the submittal to the Department of the quarterly data report for the calendar quarter during which the sample was collected. Analyze fuel oil samples for percent sulfur content by weight in accordance with ASTM D129-91, "Standard Test Method for Sulfur in Petroleum Products (General Bomb Method)," ASTM D1552-90, "Standard Test Method for Sulfur in Petroleum Products (High Temperature Method)," ASTM D2622-92, "Standard Test Method for Sulfur in Petroleum Products by X-Ray Spectrometry," or ASTM D4294-90, "Standard Test Method for Sulfur in Petroleum Products by Energy-Dispersive X-Ray Fluorescence Spectroscopy".

3.0 VOLUMETRIC FLOW MEASUREMENT

3.1 Fuel Oil Density

Where the flowmeter records volumetric flow rather than mass flow, analyze daily fuel oil samples to determine the density or specific gravity of the fuel oil (not required where the flowmeter records mass flow). Determine the density or specific gravity of the fuel oil sample in accordance with ASTM D941-88, "Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Lipkin Bicapillary Pycnometer," ASTM D1217-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Liquids by Bingham Pycnometer," ASTM D1481-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Lipkin Bicapillary," ASTM D1480-91, "Standard Test Method for Density and Relative Density (Specific Gravity) of Viscous Materials by Bingham Pycnometer," ASTM D1298-85 (Reapproved 1990), "Standard Practice for Density, Relative Density (Specific Gravity) or API Gravity of Crude Petroleum and Liquid Petroleum Products by Hydrometer Method," or ASTM D4052-91, "Standard Test Method for Density and Relative Density of Liquids by Digital Density Meter".

3.2 Calculation Of Mass Flow From Volumetric Flow

Where the flowmeter records volumetric flow rather than mass flow, calculate and record the fuel oil mass for each hourly period using hourly fuel oil flow measurements and the density or specific gravity of the daily oil sample.

Convert density, specific gravity, or API gravity of the fuel oil sample to density of the fuel oil sample at the sampling location's temperature using ASTM D1250-80 (Reapproved 1990), "Standard Guide for Petroleum Measurement Tables".

Where density of the fuel oil is determined by the applicable ASTM procedures from Section 3.1 of Department Method C-1, use the following equation to calculate the mass of fuel oil consumed (in lb/hr).

$$M_{oil} = V_{oil} \times D_{oil} \qquad \text{(Eq. C-2)}$$

Where:

M_{oil} = Mass of oil consumed per hr, lb/hr.
V_{oil} = Volume of oil consumed per hr, measured in scf, gal, barrels, or m^3.
D_{oil} = Density of oil, measured in lb/scf, lb/gal, lb/barrel, or lb/m^3.

When the mass of fuel oil consumed is determined, in accordance with Section 3.0 of Department Method C-1, such data can be used in the equation in Section 2 (A)(12)(b) of Exhibit A to determine SO_2 emissions from fuel oil combustion.

MAY 26 1998

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur & Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.)	STIPULATION OF DEPARTMENT AND YELP

The Department of Environmental Quality ("Department"), and Yellowstone Energy Limited Partnership ("YELP"), hereby stipulate to the following paragraphs 1-20, including Exhibit A and Attachment #1, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

This Stipulation nullifies and supersedes all Stipulations which were executed by YELP and the Department in this matter and which were adopted by the Board prior to June 12, 1998.

1. On April 30, 1971, the United States Environmental Protection Agency ("EPA") promulgated national ambient air quality standards ("NAAQS") for Sulfur Oxides (measured as sulfur dioxide "SO_2"). The primary annual standard is 80 micrograms per cubic meter (annual arithmetic mean) or 0.03 parts per million (PPM); the primary 24-hour standard is 365 micrograms per cubic meter (24-hour maximum concentration) or 0.14 parts per million (PPM), not to be exceeded more than once per year. A secondary standard for SO_2 was also promulgated by EPA. The secondary standard is 1300 micrograms per cubic meter (maximum 3-hour concentration) or 0.5 PPM of SO_2 not to be exceeded more than once per year. These standards were promulgated by EPA pursuant to

Section 109 of the Federal Clean Air Act, 42 U.S.C. 7401, as amended by the Clean Air Act Amendments of 1990 ("Act").

2. Section 110 of the Act requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since a national standard has been promulgated for sulfur oxides, the State of Montana is required to submit to EPA an implementation plan for SO_2.

3. In April, 1979, the Department submitted an addendum to the State Implementation Plan for the Billings/Laurel area designed to achieve compliance with the NAAQS for SO_2 (hereafter "Billings/Laurel Plan"). EPA approved the Billings/Laurel Plan in September, 1979.

4. In a March 4, 1993, letter to the Governor of Montana, EPA stated that it had determined the Billings/Laurel Plan to be substantially inadequate to attain and maintain the SO_2 NAAQS and EPA stated that the Plan must be revised. The letter called for a SIP revision for the Billings/Laurel area to assure attainment and maintenance of the SO_2 NAAQS.

5. The EPA letter of March 4, 1993, established September 4, 1994, as the deadline to submit to EPA a revised or new SO_2 plan for the Billings/Laurel area.

6. Utilizing a dispersion modeling analysis, YELP and the Department have developed an emission control strategy that, together with similar control strategies for other Billings/Laurel industries, is intended to assure attainment and maintenance of the primary and secondary SO_2 NAAQS. YELP's acceptance of this Stipulation and of the assumptions and results of the dispersion modeling analysis conducted in this case is for the sole and exclusive purpose of implementing the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1. In the event of future revisions to the SO_2 emission control strategy contained in this Stipulation, Exhibit A, and Attachment #1, YELP does not waive and shall not be precluded from raising any objections it may have including but not limited to those pertaining to the dispersion modeling

analysis.

7. The purpose of this Stipulation and the emission limitations and other limitations contained in Exhibit A and Attachment #1 is to establish an emission control strategy for YELP which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS. The Stipulation, Exhibit A, and Attachment #1 do not address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

8. Exhibit A, which is attached to this Stipulation and incorporated herein by reference, contains emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. YELP shall comply with the terms of this Stipulation, the emission limitations and other conditions set forth in Exhibit A and Attachment #1.

9. The following Attachment is attached to Exhibit A and is incorporated therein and in this Stipulation by reference:

Attachment #1: Performance Specifications for Stack Flow Rate Monitors.

10. Upon written certification by the Department that Attachment #1 has been revised in accordance with the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, and shall be enforceable from the date of the Department certification.

11. Disputes between the parties, during the development of a revised Attachment #1, as to whether a draft revision is in accordance with the requirements of Exhibit A must be submitted to the Board prior to judicial review of the dispute. This paragraph shall not be construed to preclude the Department from directly seeking judicial enforcement of final Attachment #1 or of any other provision of this Stipulation or Exhibit A.

12. For the exclusive purpose of implementing the sulfur dioxide emission

control strategy contained in this Stipulation, Exhibit A, and Attachment #1, ARM 17.8.322 shall be interpreted to mean that no person shall burn solid, liquid, or gaseous fuels such that the aggregate sulfur content of all fuels burned within a plant during any day exceeds one pound of sulfur per million BTU fired. The rule shall be interpreted to allow for a daily deviation of 0.1 pound of sulfur per million BTU fired. The rule shall be interpreted to allow the blending of all fuels burned in a plant during a given time period in determining the aggregate sulfur content for purposes of the rule, and it shall not be construed to require blending or physical mixing of fuels at any given furnace or heater within the plant complex.

13. The Stipulation, Exhibit A, and Attachment #1 shall become effective immediately upon the issuance of an order by the Board in this proceeding, except where another effective date is specified in Exhibit A or Attachment #1.

14. It is the intent of the parties that this Stipulation, Exhibit A, and Attachment #1, after adoption and incorporation by Board order, shall be submitted to the Environmental Protection Agency for review and approval as the YELP control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in Yellowstone County, as part of the State Implementation Plan. The Stipulation Requirements shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to YELP.

15. The Stipulation, Exhibit A, and Attachment #1 are intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2. The Stipulation, Exhibit A, and Attachment #1 are not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards (MAAQS).

16. This Stipulation, Exhibit A, or Attachment #1 may be subject to modification upon the occurrence of certain modifying conditions. Such modifying conditions include, but are not limited to, the following:

(a) an EPA determination that the submitted plan is incomplete;

(b) an EPA disapproval, either partial or complete, of the submitted plan;

(c) an EPA conditional approval of the submitted plan;

(d) a determination by EPA that this plan has failed to achieve or maintain the NAAQS; or

(e) a demonstration by YELP, utilizing Department and EPA approved dispersion modeling techniques (provided for in Appendix W of 40 CFR Part 51. These approved dispersion modeling techniques include, but are not limited to CTDMplus and ISC.), that the NAAQS can be achieved and maintained by implementing an alternative control plan. Such alternative control plans, include but are not limited to:

(i) plans based upon a single emission limitation for several sources or stacks (emission bubbling or trading);

(ii) a stack height of 65 meters; or a taller stack height that YELP demonstrates, through a fluid model or field study approved by the Department and EPA, is Good Engineering Practice;

(iii) an emission limitation that varies in accordance with the buoyancy flux of the plume; or

(iv) the realignment of emission limitations among the emission points within a facility

17. Procedures for modification of this Stipulation, Exhibit A, and Attachment #1 shall be as follows:

<u>Board Approval</u>

a. <u>Stipulation and Exhibit</u>. All modifications of the text of this Stipulation and Exhibit A shall require issuance of a revised Board order. Minor and clerical corrections may be made to this Stipulation and Exhibit A by mutual agreement of the parties, without the necessity for a revised Board order.

b. <u>Attachment #1</u>. As provided in Paragraph 10, upon written certification by the Department that Attachment #1 has been revised in accordance with the

the requirements of Exhibit A, the revision shall be deemed incorporated in Exhibit A and this Stipulation by reference, without the necessity for a revised Board order.

c. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, the implementation of such approval shall not require issuance of a revised Board order.

EPA Approval for SIP Changes

d. Stipulation, Exhibit, and Attachment #1. Following EPA approval pursuant to paragraph 14, all modifications of the text of this Stipulation, Exhibit A, and Attachment #1 shall require the approval of EPA under either subparagraph 17(f) or (g). To the extent allowed under federal requirements, minor and clerical corrections may be made by mutual agreement of the parties, without the necessity for formal approval by EPA.

e. Implementation Approvals. Where Exhibit A or Attachment #1 authorizes the Department and EPA to approve an alternative requirement or methodology, such EPA approval shall be obtained under either subparagraph 17(f) or (g).

f. Title I Procedures. Until the issuance of a Title V operating permit for YELP and the adoption of the enabling state administrative rule described in paragraph 17(g), all nonclerical modifications to the text of this Stipulation, Exhibit A, or Attachment #1 described in paragraph 17(d), and all implementation approvals described in subparagraph 17(e), shall be submitted to EPA under Title I of the federal Clean Air Act. The SIP revision procedures contained in 40 CFR Part 51 Subpart F shall not apply to modifications and approvals under subparagraphs 17(d) and (e) that constitute "minor modifications" as determined pursuant to subparagraph 17(h).

g. Title V Procedures. Title V operating permit revision procedures may be used to modify the SIP to include textual modifications under subparagraph 17(d) and implementation approvals under subparagraph 17(e), provided that the following two conditions are met:

(i) YELP has been issued a Title V operating permit and the State has adopted

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an enabling administrative rule that complies with the federal requirements for modification of SIP requirements through the Title V process; and

(ii) the particular modification of the plan or implementation approval pertains to testing, monitoring, recordkeeping, calculation, reporting, or operating requirements or methodologies.

h. Minor Modifications. When a modification or approval under subparagraph 17(d) or (e) is proposed the Department shall consult with EPA to determine whether the modification or approval is a "major" or "minor" modification. Such determination shall be made within 45 days from the submittal of the proposed modification or approval to EPA.

18. YELP does not waive and expressly reserves its right to contest any Board order or Department or federal action which, without the written consent of YELP, modifies this Stipulation, Exhibit A, or Attachment #1.

19. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation, including the emission limitations and other conditions contained in Exhibit A and Attachment #1. Except where another effective date is provided in Exhibit A or Attachment #1, upon adoption in a Board Order, the Stipulation, Exhibit A, and Attachment #1 shall be enforceable by the Department.

~~20. Notwithstanding any other provision of this Stipulation, YELP's and the Department's consent to be bound by the terms of this Stipulation is conditioned upon the adoption of SO_2 emission control strategies, for all the affected industries in this matter, which are in their common terms substantially similar to one another. This condition of substantial similarity extends only to the initial control strategies, adopted by the Board or by the U.S. EPA as a Federal Implementation Plan, and which are adopted in response to the EPA letter of March 4, 1993 calling for revision of the Billings/Laurel SO_2 SIP. This condition of substantial similarity does not extend to subsequent revisions of such initial emissions control strategies, but does extend to and include any revisions of such emission~~

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

~~control strategies resulting from any challenge or appeal of the initial adopted emissions control strategies. In the event that an initial control strategy is finally adopted by the Board or EPA, for any of the affected industries in this matter, which is not substantially similar in its common terms to this Stipulation or Exhibit A, either YELP or the Department may, in a writing delivered to the other party and to the other affected industries in this matter within 60 days of receiving written notice of the adoption, withdraw its consent to this Stipulation.~~

Yellowstone Energy Limited Partnership	Montana Department of Environmental Quality
By [signature] Owen K. Orndorff, President of Billings Generation, Inc. General Partner	By Mark A. Simonich Mark Simonich Director
Date 5/28/98	Date 6/9/98
Approved as to form:	Approved as to form:
By__________ Attorney	By James M. Madden Attorney
Date__________	Date 6/9/98

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56.9.3.23 JUNE 12, 1998 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING YELLOWSTONE ENERGY LIMITED PARTNERSHIP, BILLINGS, MT.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company, (J.E. Corette and F. Bird Plants); Montana Sulphur and Chemical Company; The Western Sugar Company; and Yellowstone Energy Limited Partnership.	FINDINGS OF FACT CONCLUSIONS OF LAW AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND YELP

The Department of Environmental Quality (Department) has requested an Order from the Board of Environmental Review (Board) adopting a sulfur dioxide control plan for Yellowstone Energy Limited Partnership (YELP). The control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel Area.

Pursuant to public notice, and on June 12, 1998, the Board conducted a hearing in Helena, Montana on the proposed revisions to the control plans. At the hearing an opportunity for comment was provided to the Department, the affected industries, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. The above-captioned matter was initiated in 1994 by a petition of the Department of Health and Environmental Sciences. The petition requested an Order from the Board of Health and Environmental Sciences adopting sulfur dioxide control plans for the seven named Billings/Laurel industries. The sulfur dioxide control plans were developed in response to a March 4, 1993, letter from the U.S. Environmental Protection Agency (EPA) calling for revisions to Montana's sulfur dioxide State Implementation Plan (SIP). The Board of Health and Environmental Sciences approved six of the control plans

in May of 1995. This Board approved the seventh plan (with corresponding revisions to the other plans) in August of 1996. On August 27, 1996, Montana submitted the plans to EPA as a SIP revision. Prior to EPA action on the plans, minor adjustments to the Exxon plan were approved by this Board in February of 1997.

2. In February and June of 1997, without issuing a formal approval or disapproval of the initial control plans, EPA notified the Department of several areas in which EPA had questions about the approvability of the SIP. After discussions with EPA and the affected industries, the Department, in January of 1998, committed to make revisions to the plans to address most of EPA's concerns. Negotiations between the Department and the affected Billings/Laurel industries have resulted in the set of revised control plans currently before this Board.

3. The sulfur dioxide control plan for YELP is contained in the Stipulation, Exhibit A, and Attachment(s) that are attached to this Order and are incorporated herein by reference. The Board has examined the Findings of the Stipulation and hereby ratifies and adopts them as the Board's Findings.

4. It is the intent of the parties that the attached emission control plan for YELP, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as part of the revised SO_2 SIP for the Billings/Laurel area.

5. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertisement in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to

participate in this matter. Title 2, chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR §51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation, Exhibit A, and Attachment(s) is necessary to comply with the March 4, 1993, EPA request that the Billings/Laurel SIP be revised.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The sulfur dioxide control plan for YELP set forth in the attached Stipulation, Exhibit A, and Attachment(s) is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 12th day of June, 1998

By: Cindy E. Younkin
CINDY E. YOUNKIN
Chairperson
Board of Environmental Review

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.4.7 EXHIBIT A - EMISSION LIMITATIONS AND CONDITIONS - YELLOWSTONE ENERGY LIMITED PARTNERSHIP, BILLINGS, MONTANA

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

Yellowstone Energy Limited Partnership
Billings, Montana

SECTION 1. AFFECTED FACILITIES

(A) Plant Location:

YELP is located three miles northeast of Billings adjacent to the Exxon Refinery. The plant is located in Yellowstone County, Township 1 North, Range 26 East, NE ¼ Section 25.

(B) Affected Equipment and Facilities:

(1) Boiler stack
(2) Exxon coker unit process gas flue

SECTION 2. DEFINITIONS

(A) The following definitions apply throughout this Stipulation and Exhibit A.

(1) "Annual Emissions" means the amount of SO_2 emitted in a calendar year, expressed in pounds per year rounded to the nearest pound.

Where:

[Annual Emissions] = Σ [Daily Emissions]

(2) "Attachment #1" means the "Performance Specifications for Stack Flow Rate Monitors", attached to this Exhibit and incorporated herein by reference.

(3) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later.

(4) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard

60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(5) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an Hourly SO_2 Emission Rate, provided each SO_2 concentration and stack gas volumetric flow rate monitor is designed to achieve a temporal sampling resolution of at least one concentration or flow rate measurement per minute. Such equipment includes:

(a) a continuous emission monitor (CEM) which determines sulfur dioxide concentrations in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rate, and associated data acquisition equipment.

(6) "Daily Emissions" means the amount of SO_2 emitted in a Calendar Day, expressed in pounds per day rounded to the nearest pound.

Where:

[Daily Emissions] = Σ [Three Hour Emissions]

Each Calendar Day is comprised of eight non-overlapping 3-hour periods. The Three Hour Emissions from all of the 3-hour periods in a Calendar Day shall be used to determine that day's emissions.

(7) "Hourly Average" means an arithmetic average of all Valid and complete 15-minute data blocks in a Clock Hour. Four (4) Valid and complete 15-minute data blocks are required to determine an Hourly Average for each monitor and source per Clock Hour.

Exclusive of the above definition, an Hourly Average may be determined with two (2) Valid and complete 15-minute data blocks, for two of the 24 hours in any Calendar Day.

A complete 15-minute data block for each sulfur dioxide continuous emission monitor and stack gas flow rate monitor shall have a minimum of one (1) data point value; however, each monitor shall be operated such that all Valid data points acquired in any 15-minute block shall be used to determine that 15-minute block's reported concentration and flow rate.

(8) "Hourly SO_2 Emission Rate" means the pounds per Clock Hour of sulfur dioxide emissions from a stack determined using Hourly Averages and rounded to the nearest tenth of a pound.

For stack systems, SO_2 concentrations shall be measured in parts per million (PPM) on either a wet or dry basis.

(a) If the SO_2 concentration is measured on a wet basis, YELP shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM; and
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH).

(b) If the SO_2 concentration is measured on a dry basis, YELP shall either install, operate, and maintain a continuous moisture monitor for measuring and recording the moisture content of the stack gases or determine the moisture content of the stack gases continuously (or on an hourly basis) and correct the measured hourly volumetric stack gas flow rates for moisture. YELP shall calculate the Hourly SO_2 Emission Rate using the following equation:

$$E_H = K * C_H * Q_H * \frac{(100 - \%H_2O)}{100}$$

Where:

E_H = Hourly SO_2 Emission Rate in pounds per hour and rounded to the nearest tenth of a pound;
K = 1.663×10^{-7} in (pounds/SCF)/PPM;
C_H = Hourly Average SO_2 concentration in PPM (dry basis);
Q_H = stack gas Hourly Average volumetric flow rate, measured on an actual wet basis, converted to Standard Conditions, and reported in standard cubic feet per hour (SCFH); and
$\%H_2O$ = Hourly Average stack gas moisture content, in percent by volume.

(9) "Operating" means whenever an affected facility is starting up, shutting down, using fuel, or processing materials and SO_2 emissions are expected from the source or stack.

(10) "Quarterly Data Recovery Rate" means the percentage of hours in a calendar quarter when CEMS-derived Hourly SO_2 Emission Rate data are available for a stack in comparison to the number of

corresponding Operating hours for that stack.

The Quarterly Data Recovery Rate (QDRR) for a stack shall be calculated in accordance with the following equation:

$$QDRR = \frac{VH\ (100)}{OH}$$

Where:

VH =	number of hours of Hourly SO_2 Emission Rate data that are also stack Operating hours in a calendar quarter;
OH =	total number of stack Operating hours in a calendar quarter; and
QDRR =	Quarterly Data Recovery Rate.

(11) "Standard Conditions" means 20.0°C (527.7°R, 68.0°F, or 293.2°K) and 1 atmosphere pressure (29.92" Hg).

(12) "Three Hour Emissions" means the amount of SO_2 emitted in each of the eight non-overlapping three hour periods in a Calendar Day, expressed in pounds and rounded to the nearest pound.

Where:

[Three Hour Emissions] = Σ [Hourly SO_2 Emission Rates]

Whenever Hourly SO_2 Emission Rates are unavailable and the facility is not Operating, zero pounds per hour shall be substituted for the missing Hourly SO_2 Emission Rates.

(13) "Valid" means data that is obtained from a monitor or meter serving as a component of a CEMS which meets the applicable specifications, operating requirements, and quality assurance and control requirements of Section 6.

SECTION 3. EMISSION LIMITATIONS

(A) Emission Limitations

YELP may have (hourly, daily, and annual) SO_2 emission limits in their operating permit that are more restrictive than those presented here. In those instances where the permit emission limits are more stringent, YELP shall conform to the permit limitations.

(1) YELP Boiler stack SO_2 emissions shall be limited as follows during periods when either the Exxon Coker Unit is not operating or the Exxon Coker Unit is operating and YELP is receiving the Exxon Coker flue gas:

(a) Three Hour Emissions of SO_2 from the YELP boiler stack shall not exceed 2040.0 pounds per three hour period;

(b) Daily Emissions of SO_2 from the YELP boiler stack shall not exceed 16,320.0 pounds per Calendar Day; and

(c) Annual Emissions of SO_2 from the YELP boiler stack shall not exceed 5,956,800 pounds per calendar year.

(2) YELP Boiler stack SO_2 emissions shall be limited as follows during periods when the Exxon Coker Unit is operating and YELP is not receiving the Exxon Coker flue gas:

(a) Three Hour Emissions of SO_2 from the YELP boiler stack shall not exceed:

(i) 2,040.0 pounds per three hour period during that portion of each Calender Day beginning at 6:00 a.m. and ending at 9:00 p.m.; and

(ii) 114.2 pounds per three hour period during that portion of each Calender

Day beginning at 9:00 p.m. and ending at 6:00 a.m.

(b) Daily Emissions of SO_2 from the YELP boiler stack shall not exceed 10,543.0 pounds per Calendar Day; and

(c) Annual Emissions of SO_2 from the YELP boiler stack shall not exceed 3,848,049.0 pounds per calendar year.

(3) If, for any 3-hour period during the course of a Calendar Day, the conditions for Section 3(A)(1) and Section 3(A)(2)(ii) both apply, then the resulting 3-hour emission limitation for the YELP boiler stack shall be determined by prorating, on an hourly basis, the emission limits contained in Section 3(A)(1 and 2). The prorated 3-hour emission limitation shall be calculated as the sum of the 1-hour values determined in accordance with the requirements of Section 3(A)(3)(a and b) below:

(a) Each Clock Hour during any part of which the conditions for Section 3(A)(2)(ii) apply shall be assigned a 1-hour value equal to the emission limitation contained in Section 3(A)(2)(a)(ii) divided by 3; and

(b) All other Clock Hours in the subject 3-hour period shall be assigned a 1-hour value equal to the 3-hour emission limitation contained in Section 3(A)(1)(a) divided by 3.

(4) Other Minor Sources:

YELP shall utilize appropriate maintenance, repair, and operating practices to control emissions of sulfur bearing gases from minor sources such as ducts, stacks, valves, vents, vessels, and flanges which are not otherwise subject to this Stipulation and Exhibit A.

SECTION 4. COMPLIANCE DETERMINATIONS

(A) Compliance with the emission limitations for the boiler stack shall be determined using data from the CEMS required by Section 6 (B)(1) and (2) and in accordance with the appropriate equation(s) in Section 2 (A)(1), (6), (8), and (12) except when CEMS data is not available and as provided in Section 2 (A)(12). Although the CEMS data is the method of demonstrating compliance on a continuous basis, the data from the testing required by Sections 5(A) or 6 (C) and (D) shall also be used to demonstrate compliance.

(B) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in Section 6 (A)(2) shall be determined in accordance with Section 2 (A)(10), with no exceptions for out-of-specification data or monitor downtime, except as provided in Section 6(A)(2).

(2) For quarters in which Operating hours are reduced (short quarters), a determination of whether YELP has violated the Quarterly Data Recovery Rate (QDRR) requirements in Section 6(A)(2)(b) shall include consideration of whether the reduced Operating hours made compliance with Section 6(A)(2)(b) unreasonable.

(3) Upon determination that the CEMS is not functioning properly, YELP shall implement short term corrective measures and, if necessary, long term corrective measures to accomplish, as expeditiously as practicable, either:

(a) correction of the failure; or

(b) development, installation (if necessary), testing, maintenance, and operation of a new CEMS or appropriate replacement portions of the affected CEMS.

SECTION 5. EMISSION TESTING

(A) In order to accurately determine the sulfur dioxide emission rate in pounds per hour for the boiler stack, YELP shall perform annual source testing using EPA approved methods (40 CFR Part 60, Appendix A, Methods 1-4 and 6/6C as appropriate for this Stipulation and Exhibit A) or an equivalent method approved by the Department and EPA, and in accordance with the Montana Source Testing Protocol (ARM 17.8.106). The annual Relative Accuracy Test Audits (RATAs) required by Sections 6(C) and (D) may substitute for the annual source tests provided that the flow rate RATA and the concentration RATA are performed simultaneously and additional calculations are made to determine and report the data in pounds per hour of sulfur dioxide.

(B) YELP shall notify the Department in writing of each annual source test a minimum of 25 working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 6. CONTINUOUS MONITORING

(A) CEM Quarterly Data Recovery Rates

(1) "Unusual Circumstances" means circumstances which are unforeseeable, beyond YELP's control, and which could not reasonably have been prevented or mitigated by YELP. Such circumstances may include but are not limited to earthquakes, power outages, or fire; but do not include failures of any monitoring or metering equipment or associated data acquisition equipment unless such failures meet the following conditions:

(a) prior to the failure, the equipment was installed, operated, and maintained in accordance with the requirements of Section 6;

(b) upon failure, YELP initiates the short term corrective measures and, if necessary, the long term corrective measures required by Section 4(B);

(c) within two working days of occurrence, YELP notifies the Department's Permitting and Compliance Division by telephone of the occurrence of Unusual Circumstances, as defined herein; and

(d) YELP demonstrates, by utilizing properly signed contemporaneous CEMS operating logs and other relevant evidence, in the first quarterly report following the failure that the failure meets the above conditions.

(2) Quarterly Data Recovery Rates

(a) Notwithstanding the QDRR requirements specified in Section 6(A)(2)(b), whenever a source or stack is Operating, YELP shall use best efforts to operate the associated CEMS in a manner to achieve the highest Quarterly Data Recovery Rate (QDRR) that is technically feasible.

(b) At a minimum, YELP shall achieve the following QDRR requirements, unless prevented by Unusual Circumstances or by reduced Operating hours as provided in

Section 4(B)(2):

(i) for the boiler stack CEMS and Exxon coker unit process gas stream CEMS, YELP shall achieve a QDRR for each CEMS of equal to or greater than 90%.

(c) In its evaluation of whether YELP used best efforts to achieve the highest QDRR technically feasible, the Department will consider:

(i) the design capabilities of the CEMS; and whether:

(ii) YELP has properly operated and maintained the CEMS, including the maintenance of an adequate spare parts inventory;

(iii) YELP has complied with the quality assurance requirements described in Section 6;

(iv) YELP has taken timely and appropriate action to correct a failure in the CEMS; and

(v) Unusual Circumstances have occurred, as defined in Section 6 (A)(1).

(d) Any time that a CEMS, including the associated data acquisition system, is not functioning properly, YELP shall implement the short term corrective measures and if necessary, the long term corrective measures required by Section 4 (B)(3).

(B) Affected Sources

(1) By January 1, 1997, YELP shall install, operate, and maintain continuous emission monitors to measure sulfur dioxide concentrations from the boiler stack and from the Exxon coker unit process gas stream.

(2) By January 1, 1997, YELP shall install, operate, and maintain continuous flow rate monitors to measure the gas flow rates from the boiler stack and from the Exxon coker unit process gas stream.

(C) CEM Performance Specifications

(1) All continuous SO_2 concentration monitors required by this control plan shall:

(a) be installed, certified (on a concentration basis), and operated in accordance with the performance specifications in 40 CFR Part 60, Appendix B, Performance Specifications 2; and

(b) be subject to and meet the quality assurance and quality control requirements (on a concentration basis) of 40 CFR Part 60 Appendix F including but not limited to:

(i) daily calibration drift checks (zero/span or Z/S) using either electro- optical methods or certified calibration gas (however, in addition to the requirements of Appendix F at least one Z/S per calendar week must be conducted using a certified calibration gas),

(ii) quarterly Cylinder Gas Audits (CGA) or Relative Accuracy Audits (RAA), and

(iii) the annual Relative Accuracy Test Audit (RATA).

(2) YELP shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

(D) Stack Gas Flow Rate Monitor Performance Specifications

(1) All continuous stack gas flow rate monitors required by this control plan shall:

(a) be installed, certified (on a flow rate basis), and operated in accordance with Department Method A-1 of Attachment #1; and

(b) be subject to and meet (on a flow rate basis) the quality assurance and quality control requirements of Department Method B-1 of Attachment #1.

(2) YELP shall notify the Department in writing of each annual Relative Accuracy Test Audit a minimum of twenty-five (25) working days prior to the actual testing (unless otherwise specified by the Department).

SECTION 7. DATA REPORTING REQUIREMENTS

(A) YELP shall submit quarterly reports on a calendar year basis, beginning with the first calendar quarter of 1998. The quarterly reports shall be submitted within 30 days of the end of each calendar quarter. The quarterly reports shall be submitted to the Department's Permitting and Compliance Division office in Helena and the Billings Regional Office. The quarterly report format shall consist of both a comprehensive electronic-magnetic report and a written or hard copy data summary report.

(B) The electronic report format and records structure shall require hourly CEMS data, stack temperature and calibration data to be submitted to the Department as required in Section 7(A). The data shall be submitted to the Department on magnetic or optical media, and such submittal shall follow the reporting format specified by the Department in 1996, as may be subsequently amended. The Department shall reserve the right to call for any necessary future revisions to the reporting format delineated in this Section.

(1) The electronic report shall contain the following:

(a) Hourly Average SO_2 concentrations in PPM from the boiler stack and the Exxon coker unit process gas stream;

(b) Hourly Average gas volumetric flow rates in SCFH from the boiler stack and the Exxon coker unit process gas stream;

(c) Hourly Average stack gas temperature in °F from the boiler stack;

(d) Hourly SO_2 Emission Rates in pounds per Clock Hour from the boiler stack; and

(e) daily calibration data from the CEMS required by Section 6(B).

(2) In addition to submitting the electronic-magnetic quarterly reports to the Department, YELP shall also record, organize and archive for at least five years the same data, and upon request by the Department, YELP shall provide the Department with any data archived in accordance with this Section.

(C) The quarterly written report shall consist of summarized CEMS data for Daily Emissions, Three Hour Emissions, Quarterly Data Recovery Rates and text regarding excess emissions.

(1) The following data shall be recorded, organized, reported, and archived for a minimum of five years:

(a) Three Hour Emissions of SO_2 in pounds per three hour period from the boiler stack, including the calculations of the Three Hour Emissions limitation during all three-hour-periods when the emission limitations in Section 3(A)(1) and (2) both apply;

(b) Daily Emissions of SO_2 in pounds per Calendar Day from the boiler stack;

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(c) the Quarterly Data Recovery Rate for the boiler stack and Exxon coker unit process gas CEMS expressed in percent;

(d) the Operating hours during the calendar quarter for the source or units associated with the boiler stack;

(e) the date and time identifying each nonoverlapping three-hour period of operation when the emission limitations in Section 3(A)(1) and (2) both apply;

(f) the date and time identifying each period of continuous monitoring system downtime during the reporting period, including quality control and quality assurance checks, and the nature of system repairs or adjustments;

(g) the results of the quarterly CGA's or RAA's and flow rate checks, the annual RATAs required in Section 6 (C) and (D), and the annual source tests required by Section 5 (A); and

(h) any documentation which demonstrates that a CEMS failure meets the conditions of Unusual Circumstances.

(2) For each Calendar Day on which any emission limitations are exceeded, the written report shall identify the source or unit with excess emissions and include the following information in a report submittal as specified in Section 7(A):

(a) total hours of Operation with excess emissions, the Hourly SO_2 Emission Rates, and Three Hour Emissions;

(b) all information regarding reasons for Operating with excess emissions; and

(c) corrective actions taken to mitigate excess emissions.

(D) Upon request from a representative of the Department , EPA or Yellowstone County Air Pollution Control, YELP shall provide Hourly SO_2 Emissions Rate data for any prior day not covered by the latest quarterly report for the sources or units covered by this control plan and listed in Section 1(B).

(E) By January 1, 2000, the Department shall reevaluate the reporting requirements of this Section and determine if revisions are necessary or desirable. The purpose of the reevaluation is to determine if the reporting requirements should be modified to more closely meet the informational needs of the Department and the public, and to reduce or simplify the requirements for YELP while still providing the necessary information. Any revisions shall be made only after consultation with YELP, consideration of the number and type of data requests made by the public, and the Department's emission inventory and compliance needs.

SECTION 8. ADDITIONAL REQUIREMENTS AND CONDITIONS

Except as otherwise provided herein, nothing in this Stipulation, Exhibit A, or Attachment #1 shall be construed to alter YELP's obligations under any other applicable state, federal and local laws and regulations, orders, and permit conditions. In any enforcement proceeding pertaining to such other requirements, YELP reserves the right to raise any and all available equitable or legal defenses.

SECTION 9. GENERAL CONDITIONS

(A) Inspection - For the purpose of ensuring compliance with this Stipulation, Exhibit A, and Attachment #1, YELP shall allow the Department representative(s) access to all SO_2 emitting sources at the YELP facility such that, the Department representative(s) may enter and inspect, at any reasonable time, any property, premises, or place, except a private residence, on or at which an SO_2 emitting source is located or is being constructed or installed. The Department representative(s) shall be allowed to conduct surveys, collect samples, obtain data, audit any monitoring equipment (CEMS), or observe any monitoring or testing, and conduct all necessary functions related to this control plan.

(B) Enforcement - Any violation of a limitation, condition, or other requirement contained herein ("Stipulation Requirement") constitutes grounds for judicial or administrative enforcement action. If the incident causing the violation would also form the basis of a violation of ARM Title 17, Chapter 8, or of Title 75, Chapter 2, MCA, the Department shall not count the violation of the Stipulation Requirement as an additional or separate violation incident for penalty calculation and assessment purposes.

ATTACHMENT 1
PERFORMANCE SPECIFICATIONS FOR STACK FLOW RATE MONITORS
(Includes Methods A-1 and B-1)

METHOD A-1
INSTALLATION AND INITIAL CERTIFICATION
IN-STACK OR IN-DUCT FLOW MONITORS

1.0 FLOW MONITOR INSTALLATION AND MEASUREMENT LOCATION

Install the flow monitor in a location that provides representative volumetric flow for all operating conditions. Such a location provides an average velocity of the flue gas flow over the stack or duct cross section, provides a representative SO_2 emission rate (in lb/hr), and is representative of the pollutant concentration monitor location. Where the moisture content of the flue gas affects volumetric flow measurements, use the procedures in both Reference Methods 1 and 4 of 40 CFR Part 60, Appendix A to establish a proper location for the flow monitor.

The Department recommends (but does not require) performing a flow profile study following the procedures in 40 CFR Part 60, Appendix A, Test Method 1, Section 2.5 to determine the acceptability of the potential flow monitor location and to determine the number and location of flow sampling points required to obtain a representative flow value. The procedure in 40 CFR part 60, Appendix A, Test Method 1, Section 2.5 may be used even if the flow measurement location is greater than or equal to 2 equivalent stack or duct diameters downstream or greater than or equal to 1/2 duct diameter upstream from a flow disturbance. If a flow profile study shows that cyclonic (or swirling) or stratified flow conditions exist at the potential flow monitor location that are likely to prevent the monitor from meeting the performance specifications of this Method, then the Department recommends either (1) selecting another location where there is no cyclonic (or swirling) or stratified flow condition, or (2) eliminating the cyclonic (or swirling) or stratified flow condition by straightening the flow, e.g., by

installing straightening vanes. The Department also recommends selecting flow monitor locations to minimize the effects of condensation, coating, erosion, or other conditions that could adversely affect flow monitor performance.

1.1 Acceptability of Flow Monitor Location

The installation of a flow monitor is acceptable if (1) the location satisfies the minimum siting criteria of Method 1 in Appendix A to 40 CFR Part 60 (i.e., the location is greater than or equal to eight stack or duct diameters downstream and two diameters upstream from a flow disturbance; or, if necessary, two stack or duct diameters downstream and one-half stack or duct diameter upstream from, a flow disturbance), (2) the results of a flow profile study, if performed, are acceptable (i.e., there are no cyclonic (or swirling) or stratified flow conditions), and (3) the flow monitor satisfies the performance specifications of this Method. If the flow monitor is installed in a location that does not satisfy these physical criteria, but the monitor achieves the performance specifications of this Method, then the Department and EPA may certify the location as acceptable.

1.2 Alternative Flow Monitoring Location

Whenever the flow monitor is installed in a location that is greater than or equal to two stack or duct diameters downstream and greater or equal to one-half diameter upstream from a flow disturbance, and/or in a location that is acceptable based on a flow profile study, but nevertheless the monitor does not achieve the performance specifications of this Method, perform another flow profile study (the procedures described in 40 CFR Part 60, Appendix A, Method 1, Section 2.5 may be used) to select an alternative flow monitoring installation site.

Whenever the owner or operator successfully demonstrates that modifications to the exhaust duct or stack (such as installation of straightening vanes, modifications of ductwork, and the like) are necessary for the flow monitor to meet the performance specifications, the Department and EPA may approve an interim alternative flow monitoring methodology and an extension to the required certification date for the flow monitor.

Where no location exists that satisfies the physical siting criteria in section 1.1, where the results of flow profile studies performed at two or more alternative flow monitor locations are unacceptable, or where installation of a flow monitor in either the stack or the ducts is demonstrated to be technically infeasible, the owner or operator may petition the Department and EPA for an alternative method for monitoring flow.

2.0 FLOW MONITOR EQUIPMENT SPECIFICATIONS

2.1 Instrument Span - General Requirements

In implementing Section 2.1.1 of this Method, to the extent practicable, measure at a range such that the majority of readings obtained during normal operation are between 25 and 75 percent of full-scale range of the instrument.

2.1.1 Instrument Span for Flow Monitors

Select the full-scale range of the flow monitor so that it is consistent with Section 2.1 of this Method, and can accurately measure all potential volumetric flow rates at the flow monitor installation site. Establish the span value of the flow monitor at a level which is approximately 80% of the full-scale range and 125% of the maximum expected flow rate. Based upon the span value, establish reference values for the calibration error test in accordance with Section 2.2.1.

If the volumetric flow rate exceeds the flow monitor's ability to accurately measure and record values, adjust the full-scale range, span value, and reference values as described above and in Section 2.2.1. Record the new span value and report the new span value and reference values as parts of the results of the calibration error test required by Method B-1. Whenever the span value is adjusted, use reference values for the calibration error test based on the new span value.

2.2 Flow Monitor Design for Quality Control Testing

Design all flow monitors to meet the applicable performance specifications of this Method.

2.2.1 Flow Monitor Calibration Error Test

Design and equip each flow monitor to allow for a daily calibration error test consisting of at least two reference values: (1) Zero to 20 percent of span or an equivalent reference value (e.g., pressure pulse or electronic signal) and (2) 50 to 70 percent of span. Flow monitor response, both before and after any adjustment, must be capable of being recorded by the data acquisition and handling system. Design each flow monitor to allow a daily calibration error test of (1) the entire flow monitoring system, from and including the probe tip (or equivalent) through and including the data acquisition and handling system, or (2) the flow monitoring system from and including the transducer through and including the data acquisition and handling system.

2.2.2 Flow Monitor Interference Check

Design and equip each flow monitor in a manner to minimize interference due to moisture. Design and equip each flow monitor with a means to detect, on at least a daily basis, pluggage of each sample line and sensing port, and malfunction of each resistance temperature detector (RTD), transceiver or equivalent.

Design and equip each differential pressure flow monitor to provide (1) an automatic, periodic back purging (simultaneously on both sides of the probe) or equivalent method of sufficient force and frequency to keep the probe and lines sufficiently free of obstructions on a least a daily basis to prevent velocity sensing interference, and (2) a means for detecting leaks in the system on a least a quarterly basis (manual check is acceptable).

Design and equip each thermal flow monitor with a means to ensure on at least a daily basis that the probe remains sufficiently clean to prevent velocity sensing interference.

Design and equip each ultrasonic flow monitor with a means to ensure on at least a daily basis that the transceivers remain sufficiently clean (e.g., backpurging system) to prevent velocity sensing interference.

3.0 FLOW MONITOR PERFORMANCE SPECIFICATIONS

3.1 Flow Monitor Calibration Error

The calibration error of flow monitors shall not exceed 3.0 percent based upon the span of the instrument as calculated using Equation A-1 of this Method.

3.2 Flow Monitor Relative Accuracy

Except as provided in this Section, the relative accuracy for flow monitors, where volumetric gas flow is measured in scfh, shall not exceed 20.0 percent. For affected units where the average of the flow monitor measurements of gas velocity during the relative accuracy test audit is less than or equal to 10.0 fps, the mean value of the flow monitor velocity measurements shall not exceed ±2.0 fps of the reference method mean value in fps wherever the relative accuracy specification above is not achieved.

4.0 DATA ACQUISITION AND HANDLING SYSTEMS

Automated data acquisition and handling systems shall: (1) read and record the full range of pollutant concentrations and volumetric flow from zero through span; and (2) provide a continuous record of all measurements and required information in an electronic format specified by the Department and capable of transmission via an IBM-compatible personal computer diskette or other electronic media. These systems also shall have the capability of interpreting and converting the individual output signals from a pollutant concentration monitor and a flow monitor to produce a continuous readout of pollutant mass emission rates in pounds per hour.

Data acquisition and handling systems shall also compute and record monitor calibration error .

5.0 INITIAL FLOW MONITOR CERTIFICATION TESTS AND PROCEDURES

5.1 Flow Monitor Pretest Preparation

Install the components of the continuous flow monitor as specified in Sections 1.0, 2.0, and 3.0 of this Method, and prepare each system component and the combined system for operation in accordance with the manufacturer's written instruction. Operate the unit(s) during each period when measurements are made.

5.2 7-Day Calibration Error Test for Flow Monitors

Measure the calibration error of each flow monitor according to the following procedures.

Introduce the reference signal corresponding to the values specified in Section 2.2.1 of this Method to the probe tip (or equivalent), or to the transducer. During the 7-day certification test period, conduct the calibration error test once each day while the unit is operating (as close to 24-hour intervals as practicable). Record the flow monitor responses by means of the data acquisition and handling system. Calculate the calibration error using Equation A-1 of this Method.

Do not perform any corrective maintenance, repair, replacement or manual adjustment to the flow monitor during the 7-day certification test period other than that required in the monitor operation and maintenance manual. If the flow monitor operates within the calibration error performance specification, (i.e., less than or equal to 3 percent error each day and requiring no corrective maintenance, repair, replacement or manual adjustment during the 7-day test period) the flow monitor passes the calibration error test portion of the certification test. Whenever automatic adjustments are made, record the magnitude of the adjustments. Record all maintenance and

required adjustments. Record output readings from the data acquisition and handling system before and after all adjustments.

5.3 Flow Monitor Relative Accuracy

Within 90 days of installation concurrent relative accuracy test audits may be performed by conducting simultaneous SO_2 concentration and volumetric flow relative accuracy test audit runs, or by alternating an SO_2 relative accuracy test audit run with a flow relative accuracy test audit run until all relative accuracy test audit runs are completed. Where two or more probes are in the same proximity, care should be taken to prevent probes from interfering with each other's sampling. For each SO_2 pollutant concentration monitor and each flow monitor, calculate the relative accuracy with data from the relative accuracy test audits.

Perform relative accuracy test audits for each flow monitor at normal operating load expressed in terms of percent of flow monitor span. If a flow monitor fails the relative accuracy test, the relative accuracy test audit must be repeated.

Complete each relative accuracy test audit within a 7-day period while the unit is operating in a normal condition. Do not perform corrective maintenance, repairs, replacements or adjustments during the relative accuracy test audit other than as required in the operation and maintenance manual.

5.3.1 Calculations

Using the data from the relative accuracy test audits, calculate relative accuracy in accordance with the procedure and equations specified in Section 6 of this Method.

5.3.2 Reference Method Measurement Location

Select a location for reference method measurements that is (1) accessible; (2) in the same proximity as the monitor or monitoring system location; and (3) meets the requirements of Method 1 (or 1A) of 40 CFR Part

60, Appendix A for volumetric flow, except as otherwise indicated in this Section.

5.3.3 Reference Method Traverse Point Selection

Select traverse points that (1) ensure acquisition of representative samples of pollutant concentration, moisture content, temperature, and flue gas flow rate over the flue cross section; and (2) meet the requirements of Method 1 (or 1A) (for volumetric flow), and Method 4 (for moisture determination) in 40 CFR part 60, Appendix A.

5.3.4 Sampling Strategy

Conduct the reference method tests so they will yield results representative of the moisture content, temperature, and flue gas flow rate from the unit and can be correlated with the flow monitor measurements. Conduct any moisture measurements that may be needed simultaneously with the flue gas flow rate measurements. To properly correlate volumetric flow rate data with the reference method data, mark the beginning and end of each reference method test run (including the exact time of day) on the individual chart recorder(s) or other permanent recording device(s).

5.3.5 Correlation of Reference Method and Continuous Emission Monitoring System

Confirm that the monitor or monitoring system and reference method test results are on consistent moisture, pressure, and temperature basis (e.g., since the flow monitor measures flow rate on a wet basis, Method 2 test results must also be on a wet basis). Compare flow-monitor and reference method results on a scfh basis. Also consider the response time of the flow monitoring system to ensure comparison of simultaneous measurements. For each relative accuracy test audit run, compare the measurements obtained from the flow monitor against the corresponding reference method values. Tabulate the paired data in a table similar to the one shown in Figure 1.

5.3.6 Number of Reference Method Tests

Perform a minimum of nine sets of paired monitor (or monitoring system) and reference method test data for every required relative accuracy test audit. Conduct each set within a period of 30 to 60 minutes.

The tester may choose to perform more than nine sets of reference method tests. If this option is chosen, the tester may reject a maximum of three sets of the test results as long as the total number of test results used to determine the relative accuracy is greater than or equal to nine. Report all data, including the rejected data, and reference method test results.

5.3.7 Reference Methods

The following methods from 40 CFR Part 60, Appendix A or their approved alternatives are the reference methods for performing relative accuracy test audits: Method 1 or 1A for siting; Method 2 (or 2A, 2C, or 2D as appropriate) for velocity; and Method 4 for moisture.

6.0 CALCULATIONS

6.1 Flow Monitor Calibration Error (Drift)

For each reference value, calculate the percentage calibration error based upon span using the following equation:

$$CE = \frac{(R-A)}{S} x\ 100 \qquad \text{(EQ.A-1)}$$

Where:

CE = Calibration error;

R = Low or high level reference value specified in Section 2.2.1 of this Method;
A = Actual flow monitor response to the reference value; and
S = Flow monitor span.

Whenever the flow rate exceeds the monitor's ability to measure and record values accurately, adjust the span to prevent future exceedances. If process parameters change or other changes are made such that the expected flue gas velocity may change significantly, adjust the span to assure the continued accuracy of the monitoring system.

6.2 Relative Accuracy for Flow Monitors

Analyze the relative accuracy test audit data from the reference method tests for flow monitors using the following procedures. Summarize the results on a data sheet. An example is shown in Figure 1. Calculate the mean of the monitor or monitoring system measurement values. Calculate the mean of the reference method values. Using data from the automated data acquisition and handling system, calculate the arithmetic differences between the reference method and monitor measurement data sets. Then calculate the arithmetic mean of the difference, the standard deviation, the confidence coefficient, and the monitor or monitoring system relative accuracy using the following procedures and equations.

6.2.1 Arithmetic Mean

Calculate the arithmetic mean of the differences, $\bar{d}$, of a data set as follows.

$$\text{(Eq. A-2)} \quad \bar{d} = \frac{1}{n} \sum_{i=1}^{n} d_i$$

Where:

n=Number of data points

$\sum_{i=1}^{n} d_i$ = Algebraic sum of the individual differences d_i

d_i = The difference between a reference method value and the corresponding continuous flowrate monitoring system value (RM_i-FR_i) at a given point in time i.

When calculating the arithmetic mean of the difference of a flow monitor data set, be sure to correct the monitor measurements for moisture if applicable.

6.2.2 Standard Deviation

Calculate the standard deviation, S_d of a data set as follows:

$$S_d = \sqrt{\frac{\sum_{i=1}^{n} d_i^2 - [\frac{(\sum_{i=1}^{n} d_i)^2}{n}]}{}} \qquad \text{(Eq. A-3)}$$

6.2.3 Confidence Coefficient

Calculate the confidence coefficient (one-tailed), cc, of a data set as follows.

$$CC = t_{0.025} \frac{S_d}{\sqrt{n}} \qquad \text{(Eq. A-4)}$$

where:

$t_{0.025}$ = *t value (see Table* 2)

TABLE 2 T-VALUES

n-1	$t_{0.025}$	n-1	$t_{0.025}$	n-1	$t_{0.025}$
1.......	12.706	12	2.179	23	2.069
2.......	4.303	13	2.160	24	2.064
3.......	3.182	14	2.145	25	2.060
4.......	2.776	15	2.131	26	2.056
5.......	2.571	16	2.120	27	2.052
6.......	2.447	17	2.110	28	2.048
7.......	2.365	18	2.101	29	2.045
8.......	2.306	19	2.093	30	2.042
9.......	2.262	20	2.086	40	2.021
10......	2.228	21	2.080	60	2.000
11......	2.201	22	2.074	>60	1.960

6.2.4 Relative Accuracy

Calculate the relative accuracy of a data set using the following equation.

$$RA = \frac{|\bar{d}| + |cc|}{\overline{RM}} x\ 100 \qquad \text{(Eq. A-5)}$$

where:

RM = Arithmetic means of the reference method values.

|d| = The absolute value of the mean difference between the reference method values and the corresponding continuous flow monitor values.

|cc|= The absolute value of the confidence coefficient.

FIGURE 1.-RELATIVE ACCURACY DETERMINATION (FLOW MONITORS)

Run No.	Date & Time	Flow rate (Normal) (scf/hr)*		
		RM	M	Diff
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
Mean or mean of differences				
			Confidence coefficient	
			Relative accuracy	

* Make sure RM and M are on a consistent moisture basis.

METHOD B-1
ON-GOING QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES
FOR IN-STACK AND IN-DUCT FLOW MONITORS

1.0 FREQUENCY OF FLOW MONITOR TESTING

A summary chart showing each quality assurance test and the frequency at which each test is required is located at the end of this Method in Table 1.

1.1 **Daily** Flow Monitor Assessments

For each flow monitor perform the following assessments during each day in which the unit is operating. These requirements are effective as of the date when the monitor or continuous emission monitoring system completes certification testing.

1.1.1 Calibration Error Test for Flow Monitors

Test, compute, and record the calibration error of each flow monitor at least once on each operating day. Introduce the reference values (specified in section 2.2.1 of Method A-1) to the probe tip (or equivalent) or to the transducer. Record flow monitor output from the data acquisition and handling system before and after any adjustments to the flow monitor. Keep a record of all maintenance and adjustments. Calculate the calibration error using Equation A-1 in Method A-1.

1.1.2 Flow Monitor Interference Check

Perform the daily flow monitor interference checks specified in section 2.2.2 of Method A-1 at least once per operating day (when the unit(s) operate for any part of the day).

1.1.3 Flow Monitor Recalibration

Adjusts the calibration, at a minimum, whenever the daily calibration error exceeds the limits of the applicable performance specification for the flow monitor in Method A-1. Repeat the calibration error test procedure following the adjustment or repair to demonstrate that the corrective actions were effective.

1.1.4 Flow Monitor Out-of-Control Period

An out-of-control period occurs when either the low or high level reference value calibration error exceeds 6.0 percent based upon the span value for five consecutive daily periods or 12.0 percent for any daily period. The out-of-control period begins with the hour of completion of the failed calibration error test and ends with the hour of completion following an effective recalibration. Whenever the failed calibration, corrective action, and effective recalibration occur within the same hour, the hour is not out of control if two or more complete and valid readings are obtained during that hour. An out-of-control period also occurs whenever interference of a flow monitor is identified. The out-of-control period begins with the hour of completion of the failed interference check and ends with the hour of completion of an interference check that is passed. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.1.5 Flow Monitor Data Recording

Record and tabulate all calibration error test data according to month, day, clockhour, and magnitude in scfh. Program monitors that automatically adjust data to the corrected calibration values (e.g., microprocessor control) to record either: (1) The unadjusted flow rate measured in the calibration error test prior to resetting the calibration or (2) the magnitude of any adjustment. Record the following applicable flow monitor interference check data: (1) sample line/sensing port pluggage, and (2) malfunction of each RTD, transceiver, or equivalent.

1.2 **Quarterly** Flow Monitor Assessments

For each flow monitor, conduct a quarterly stack velocity and flow rate check by performing a velocity traverse and visual inspection of the pitot tubes. Perform the following assessments during each calendar quarter in which the unit operates. This requirement is effective as of the calendar quarter following the calendar quarter in which the flow monitor is provisional certified.

1.2.1 Flow Monitor Leak Check

For differential pressure flow monitors, perform a leak check of all sample lines (a manual check is acceptable) at least once during each unit operating quarter. Conduct the leak checks no less than two months apart.

1.2.2 Flow Monitor Flow Rate Check

Once during each operating quarter and for each flow monitor, perform a flow rate check by completing a single velocity traverse, calculating the associated average flow rate, and comparing the average flow with the concurrent flow measured by the continuous flow monitor. The flow rate check shall be performed at normal operating rates or load level. The flow rate check shall be performed in accordance with Section 5.3 of Method A-1 as appropriate for a single traverse. The difference (PD) between the average flow rate determined by the single velocity traverse and the continuous flow monitor shall not exceed 20 percent as determined by equation B-1. If the single velocity traverse fails to meet the 20% difference specification, the owner/operator may conduct an additional single velocity traverse or a complete Relative Accuracy Test Audit (RATA) in accordance with Section 5.3 of Method A-1 in order to demonstrate compliance with the 20% difference or 20% relative accuracy requirements.

$$PD = \frac{TF - FR}{TF} \times 100 \qquad \text{(Eq. B-1)}$$

Where:

PD = Percent Difference;
TF = Traverse Flow (scfh);
FR = Continuous Flow Monitor Flow (scfh); and
TF and FR are on a consistent moisture basis.

If the Relative Accuracy of the latest annual Relative Accuracy Test Audit (RATA) conducted pursuant to Section 1.3.1 is less than 10%, the single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the single velocity traverse flow rate check shall resume.

1.2.3 Flow Monitor Out-of-Control Period

An out-of-control period occurs when a flow monitor fails the quarterly flow rate check (the difference between the average flow rate determined by the velocity traverse and the continuous flow monitor exceeds 20%), the visual inspection of the pitot tube indicates pluggage or wear, or if a sample line leak is detected. The out-of-control period begins with the hour of the failed flow rate check, visual inspection, or leak check and ends with the hour of a satisfactory flow rate check, RATA, leak check, or cleaning or replacement of the pitot tube. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

1.3 **Annual** Flow Monitor Assessments

For each flow monitor, perform the following assessments once annually. This requirement is effective as of the calendar quarter in which the monitor or continuous emission monitoring system is provisionally certified.

1.3.1 Flow Monitor Relative Accuracy Test Audit

For flow monitors, relative accuracy test audits shall be performed annually. The relative accuracy audit shall be performed at the normal operating rate or load level (with a minimum of 9 paired velocity traverses).

The relative accuracy test audit shall be conducted according to the procedures and specifications of Method A-1.

1.3.2 Flow Monitor Out-of-Control Period

An out-of-control period occurs under any of the following conditions: (1) the relative accuracy of a flow monitor exceeds 20.0 percent or (2) for low flow situations (≤10.0 fps), the flow monitor mean value (if applicable) exceeds ±2.0 fps of the reference method mean whenever the relative accuracy is greater than 20.0 percent. For flow relative accuracy test audits, the out-of-control period begins with the hour of completion of the failed relative accuracy test audit and ends with the hour of completion of a satisfactory relative accuracy test audit. During any period that the flow monitor is out-of-control, the data may not be used in calculating emission compliance nor be counted towards meeting minimum data recovery requirements.

TABLE 1.-FLOW MONITOR QUALITY ASSURANCE TEST REQUIREMENTS

Test	QA test frequency requirements		
	Daily	Quarterly	Annual
Calibration Error (2 pt.)	x		
Interference (flow)	x		
Visual probe check		x	
Flow rate check (single traverse)		x[1]	
Leak (flow)		x[2]	
RATA (flow)			x

[1] The owner/operator has an option to perform a RATA if the quarterly flow rate check (single traverse) fails specifications. In addition, if the Relative Accuracy determined by the latest RATA is less than 10%, the quarterly single velocity traverse flow rate check may be discontinued. However, if future RATAs indicate a Relative Accuracy of 10% or greater, performance of the quarterly single velocity traverse flow rate check shall resume.

[2] The leak check requirement only applies to differential pressure flow rate monitors and does not apply to thermal or ultrasonic flow rate monitors.

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	)	**STIPULATION OF DEPARTMENT AND YELLOWSTONE ENERGY LIMITED PARTNERSHIP**

The Department of Environmental Quality ("Department"), and Yellowstone Energy Limited Partnership ("YELP"), hereby stipulate to the following paragraphs 1 through 12, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Environmental Review ("Board").

1. On June 9, 1998, the Department and YELP executed a document entitled "Stipulation of Department and YELP," which included an Exhibit A and Attachment 1 (collectively "1998 YELP Stipulation"). The 1998 YELP Stipulation contained the sulfur dioxide control plan for YELP, as part of the state's efforts to revise the State Implementation Plan for the control of sulfur dioxide (SO_2) emissions in the Billings/Laurel area ("Billings/Laurel SIP").

2. On March 4, 1993, the United States Environmental Protection Agency (EPA) notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 National Ambient Air Quality Standards ("NAAQS"). The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 YELP Stipulation was to "establish an emission control strategy for YELP which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary

(Stipulation of Department and YELP)
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and secondary SO_2 NAAQS." (1998 YELP Stipulation, para. 7). As part of the 1998 YELP Stipulation, Exhibit A contained emission limitations and other conditions, including but not limited to: methods for determining compliance with emission limitations, requirements by which such emission limitations are made quantifiable and enforceable by the Department, and facility modification requirements. Attachment 1 addressed performance specifications for stack flow rate monitors. The 1998 YELP Stipulation was approved and made enforceable by Board Order, dated June 12, 1998. On July 29, 1998, the 1998 YELP Stipulation was submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In letters to the Department dated January 15 and March 2, 1999, EPA identified a concern with the 1998 YELP Stipulation. (Letters from Richard Long, to Mark Simonich, dated 1/15/99 and 3/2/99). Specifically, EPA noted there were questions regarding the practical enforceability and pro-rating of emission limitations for the Coker CO Boiler stack of Exxon Company, USA ("Exxon"), and YELP's boilers. In a letter dated March 24, 1999, Governor Marc Racicot committed the Department to revise the Billings/Laurel SIP to address this concern.

5. The purpose of this Stipulation is to revise Exhibit A of the 1998 YELP Stipulation, as necessary to fulfill the Department's commitment to EPA to address the issue described above in paragraph 4. Unless expressly stated otherwise, this document does not in any way supercede or alter the provisions of the 1998 YELP Stipulation, and except as expressly revised by this document, the 1998 YELP Stipulation, including Exhibit A and Attachment 1, remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

6. The parties agree that Exhibit A to the 1998 YELP Stipulation is revised as follows:

<u>Section 3(A)(1) is revised to read</u>:

"YELP Boiler stack SO_2 emissions shall be limited as follows during periods when either the Exxon Coker Unit is not operating or the Exxon Coker Unit is operating and YELP is receiving the Exxon Coker flue gas:

a. Three Hour Emissions of SO_2 from the YELP boiler shall not exceed 2040.0 pounds per 3-hour period;
b. Daily emissions of SO_2 from the YELP boiler stack shall not exceed 16,320.0 pounds per Calendar Day; and

(Stipulation of Department and YELP)
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c. Annual emissions of SO_2 from the YELP boiler stack shall not exceed 5,956,800.0 pounds per calendar year."

Section 3(A)(2) is revised to read:

"YELP Boiler stack SO_2 emissions shall be limited as follows during periods when the Exxon Coker Unit is operating and YELP is not receiving the Exxon Coker flue gas:

a. Three Hour Emissions of SO_2 from the YELP boiler stack shall not exceed:
   i. 2040.0 pounds per 3-hour period during that portion of each Calendar Day beginning at 6:00 a.m. and ending at 9:00 p.m.; and
   ii. 114.2 pounds per 3-hour period during that portion of each Calendar Day beginning at 9:00 p.m. and ending at 6:00 a.m.
b. Daily emissions of SO_2 from the YELP boiler stack shall not exceed 10,543.0 pounds per Calendar Day; and
c. Annual emissions of SO_2 from the YELP boiler stack shall not exceed 3,848,049.0 pounds per calendar year."

Section 3(A)(3) is revised to read:

"If, for any 3-hour period during the course of a Calendar Day, the conditions for Section 3(A)(1) and Section 3(A)(2)(ii) both apply, then the resulting 3-hour emission limitation for the YELP boiler stack shall be determined by prorating, on an hourly basis, the emission limits contained in Section 3(A)(1 and 2). The prorated 3-hour emission limitation shall be calculated as the sum of the 1-hour values determined in accordance with the requirements of Section 3(A)(3)(a and b) below:

a. Each Clock Hour during any part of which the conditions for Section 3(A)(2)(ii) apply shall be assigned a 1-hour value equal to the emission limitation contained in Section 3(A)(2)(a)(ii) divided by 3; and
b. All other Clock Hours in the subject 3-hour period shall be assigned a 1-hour value equal to the 3-hour emission limitation contained in Section 3(A)(1)(a) divided by 3."

Section 7(C)(1)(b) is revised to read:

"Daily Emissions of SO_2 in pounds per Calendar Day from the boiler stack;"

7. This Stipulation shall become effective immediately upon the issuance of an order by the Board in this proceeding.

8. It is the intent of the parties that this Stipulation, after adoption and incorporation by Board Order, shall be submitted to the EPA for review and approval as revisions to the YELP control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State

(Stipulation of Department and YELP)
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Implementation Plan. The revised requirements in this Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to YELP.

9. The 1998 YELP Stipulation, as revised by this Stipulation, is intended to assure attainment and maintenance of the primary and secondary NAAQS for SO_2, but is not intended to address attainment or maintenance of the Montana Ambient Air Quality Standards.

10. This Stipulation may be subject to modification as provided in paragraphs 16 and 17 of the 1998 YELP Stipulation.

11. YELP does not waive and expressly reserves its right to contest any Board order or federal action which, without the written consent of YELP, modifies this Stipulation.

12. Accordingly, the parties agree that the Board shall issue an order adopting the terms of this Stipulation. Upon adoption in a Board Order, this Stipulation shall be enforceable by the Department.

Yellowstone Energy Limited Partnership	Montana Department of Environmental Quality
By ________ Owen H. Orndorff, President Billings Generation, Inc, General partner	By ________ Mark Simonich Director
Date 2-9-00	Date 2/11/00
Approved as to form:	Approved as to form:
By ________ Attorney	By ________ Attorney
Date ________	Date 2/14/00

(Stipulation of Department and YELP)
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STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Air Pollution Control Program

56.9.3.26 MARCH 17, 2000 ORDER OF THE BOARD OF ENVIRONMENTAL REVIEW CONCERNING YELLOWSTONE ENERGY LIMITED PARTNERSHIP, BILLINGS, MT

RECEIVED
MAR 2 0 2000
DEQ
Planning Division

BEFORE THE BOARD OF ENVIRONMENTAL REVIEW
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Environmental Quality for Revision of the Montana State Air Quality Control Implementation Plan relating to Control of Sulfur Dioxide Emissions in the Billings/Laurel Area, Affecting the Following Industries: Cenex, Inc. (Laurel); Conoco, Inc.; Exxon Company, USA; Montana Power Company (J.E Corette and F. Bird Plants); Montana Sulphur & Chemical Company; and Yellowstone Energy Limited Partnership.	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ADOPTING STIPULATION OF DEPARTMENT AND YELLOWSTONE ENERGY LIMITED PARTNERSHIP**

The Department of Environmental Quality ("Department") has requested an Order from the Board of Environmental Review ("Board") adopting revisions to the sulfur dioxide control plan for the Yellowstone Energy Limited Partnership ("YELP"). As amended by the revisions contained herein, the control plan, together with the control plans for the other above-captioned industries, is intended to attain and maintain the sulfur dioxide National Ambient Air Quality Standards ("NAAQS") in the Billings/Laurel area.

Pursuant to public notice, on March 17, 2000, the Board conducted a hearing in Helena, Montana, on the proposed revisions to the control plan. At the hearing an opportunity for comment was provided to the Department, YELP, and interested members of the public. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. On June 9, 1998, the Department and YELP executed a document entitled "Stipulation of Department and YELP," which included an Exhibit A and Attachment 1 (collectively "1998 YELP Stipulation"). The 1998 YELP Stipulation contained the sulfur dioxide (SO_2) control plan for YELP, as part of the state's efforts to revise the State Implementation Plan for the control of SO_2 emissions in the Billings/Laurel area

("Billings/Laurel SIP"). On June 12, 1998, the Board issued its Findings of Fact, Conclusions of Law and Order ("1998 YELP Order") which expressly adopted and incorporated the 1998 YELP Stipulation as an enforceable Order of the Board.

2. On March 4, 1993, the United States Environmental Protection Agency ("EPA") notified the Governor of Montana that it had determined that the existing implementation plan for the control of SO_2 emissions in the Billings/Laurel area was substantially inadequate to attain and maintain the SO_2 NAAQS. The letter further called for a revision to the implementation plan for the Billings/Laurel area, to assure attainment and maintenance of the SO_2 NAAQS.

3. The express purpose of the 1998 YELP Stipulation was to "establish an emission control strategy for YELP which, together with similar control strategies for the other Billings/Laurel industries, will assure attainment and maintenance of the primary and secondary SO_2 NAAQS." (1998 YELP Stipulation, para. 7). On July 29, 1998, the 1998 YELP Stipulation was submitted to EPA as a revision to the existing Billings/Laurel SIP, in response to the March 1993 SIP Call.

4. In letters to the Department dated January 15 and March 2, 1999, EPA identified concerns with the 1998 YELP Stipulation. (Letters from Richard Long, to Mark Simonich, dated 1/15/99 and 3/2/99). Specifically, EPA noted there were questions regarding the practical enforceability and pro-rating of emission limitations for the Coker CO Boiler stack of Exxon Company, USA (now Exxon Mobil Corporation), and YELP's boilers. In a letter dated March 24, 1999, Governor Marc Racicot committed that the Department would revise the Billings/Laurel SIP to address these concerns.

5. As part of the current proceeding, the Department and YELP have submitted to the Board a "Stipulation of Department and Yellowstone Energy Limited Partnership," dated February 14, 2000 ("2000 YELP Stipulation"), that contains the revisions to the 1998 YELP Stipulation that are necessary to fulfill the Department's commitment to EPA to address the issues described above in paragraph 4. The 2000 YELP Stipulation will be effective immediately upon the issuance of an Order by the Board in this proceeding.

6. The Board adopts the 2000 YELP Stipulation, and incorporates that document in its entirety as a part of this Order. Unless expressly stated otherwise in the 2000 YELP Stipulation, this Order does not in any way supercede or alter the provisions of the 1998

YELP Order (and the 1998 YELP Stipulation and exhibit and attachment adopted therein), and the 1998 YELP Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

7. It is the intent of the Department and YELP that both the 2000 YELP Stipulation (after adoption and incorporation by the Board), and this Order, shall be submitted to EPA for review and approval as revisions to the YELP control strategy for the attainment and maintenance of the primary and secondary SO_2 NAAQS in the Billings/Laurel area, as part of the State Implementation Plan. The revised requirements in this Order and the 2000 YELP Stipulation shall supersede any less stringent corresponding conditions pertaining to SO_2 sources in any existing permit currently issued to YELP.

8. The Department has issued public notice of the proposed revisions to the sulfur dioxide control plans. Notice was published, at least 30 days prior to the date of the hearing in this matter, by prominent advertising in the affected area. A copy of the proposed revisions was made available for public inspection.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapters 3 and 4, MCA. The federal requirements for notice and hearing prior to adoption and submittal of SIP revisions have been met. 40 CFR § 51.102.

2. The Department is required to prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state. Section 75-2-112(2)(c), MCA.

3. The Board has authority to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-111(3), MCA.

4. A Board Order adopting the attached Stipulation of the Department and Yellowstone Energy Limited Partnership, dated February 14, 2000, is appropriate to comply with the March 4, 1993, EPA request to revise the Billings/Laurel SIP, and to address the

concerns identified by EPA in the letters to the Department dated January 15 and March 2, 1999.

5. All Findings of Fact are hereby incorporated in these Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED THAT:

1. The revisions to the sulfur dioxide control plan for YELP set forth in the attached Stipulation of the Department and Yellowstone Energy Limited Partnership, dated February 14, 2000, is adopted by the Board and incorporated herein as part of this Order.

2. This Order shall be enforceable by the Department.

3. Unless expressly stated otherwise in the Stipulation of the Department and Yellowstone Energy Limited Partnership, dated February 14, 2000, this Order does not in any way supercede or alter the provisions of the 1998 YELP Order (and the 1998 YELP Stipulation and exhibit and attachment adopted therein), and the 1998 YELP Order remains in full force and effect, as part of the Department's control plan for SO_2 emissions in the Billings/Laurel area.

4. Modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

DATED this 17th day of March, 2000.

By: Joe Gerbase
JOE GERBASE
Chair
Board of Environmental Review

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Petition of the Department of Health and Environmental Sciences for an Order Adopting a Sulfur Oxides Control Strategy for the Anaconda Copper Smelter at Anaconda, Montana, and requiring The Anaconda Company to Comply with the Control Strategy.	)	FINDINGS OF FACT, CONCLUSIONS OF LAW, ORDER AND NOTICE OF OPPORTUNITY FOR JUDICIAL REVIEW

FINDINGS OF FACT

After notice and hearing concerning the petition of the Department of Health and Environmental Sciences (Department) for an order adopting a Sulfur Oxides Control Strategy (Control Strategy) for the Anaconda Copper Smelter at Anaconda, Montana, and requiring The Anaconda Company (Anaconda) to comply with the Control Strategy, the Board considered the evidence and exhibits and makes the following disposition of this contested case.

1. Under the Federal Clean Air Act as amended in 1977, all states are required to designate those areas within their boundaries in which National Ambient Air Quality Standards (NAAQSs) are not being attained and maintained and to submit to the Environmental Protection Agency (EPA) by December 31, 1978, revisions to the state implementation plans (SIPs) which will provide for the attainment of NAAQSs in non-attainment areas as expeditiously as practicable, but not later than December 31, 1982.

2. On March 3, 1978, the Department designated an area near Anaconda, Montana, as a non-attainment area for the NAAQSs relating to sulfur dioxide.

3. Anaconda owns and operates a pyrometallurgical

copper smelter (smelter) for the production of anode copper which is located in the non-attainment area described above. Sulfur dioxide gas is emitted from the smelter during the copper smelting process. Such emissions are causing the NAAQSs for sulfur dioxide to be exceeded in the non-attainment area described above

4. Dispersion modeling and other investigation and studies conducted on behalf of the Department and Anaconda establish that NAAQSs for sulfur dioxide will be attained and maintained in the non-attainment area near the smelter if Anaconda is subject to and complies at the smelter with the requirements, schedules and restrictions described in the Control Strategy, a copy of which is attached as Exhibit A, and made a part hereof.

5. The schedule set forth in the Control Strategy will result in attainment of NAAQSs in the non-attainment area described above as expeditiously as practicable, but not later than December 31, 1982.

CONCLUSIONS OF LAW

1. The applicable requirements of Sections 110 and 172 of the Federal Clean Air Act, as amended in 1977, will be met if Anaconda is required to comply with the Control Strategy.

O R D E R

Pursuant to the power conferred on this Board by Revised Codes of Montana, 1947, § 69-3904 et seq (as amended), the Board hereby adopts and orders that The Anaconda Company comply with the Sulfur Oxides Control Strategy attached as Exhibit A.

It is further ordered that the Department submit this order to the Governor with the request that he submit it, along with supporting data, to EPA as a revision to Montana's State Implementation Plan, as required by and pursuant to Section 172 of the Federal Clean Air Act, as amended in 1977.

Dated this 16 day of November 1978.

John W Bartlett
Chairman
BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES

NOTICE: You are entitled to judicial review of this order. Judicial review may be obtained by filing a petition for review within thirty (30) days from the service of this order. Judicial review is pursuant to the provisions of Section 82-4216, R.C.M. 1947.

SULFUR OXIDES CONTROL STRATEGY

ANACONDA COPPER SMELTER

1. Sulfur Dioxide Emission Controls and Limitations.

(a) Fugitive Emissions. The Anaconda Company (Anaconda) shall utilize at its copper smelter at Anaconda, Montana (smelter) good engineering practices for reducing the escape of sulfur oxides to the atmosphere, to capture sulfur oxides emissions and pass them through control equipment where feasible, and to vent sulfur oxides emissions from process and control equipment through a stack or stacks. Such practices shall consist of:

(i) Installing and operating exhaust hoods on all active matte tapholes, matte launders, slag tapholes, and slag launders;

(ii) Installing and operating primary exhaust hoods on all active converters and operating such hoods except during pouring and charging operations;

(iii) Operating and maintaining all ducts, flues, and stacks as designed and installed using good operating practice;

(iv) Operating and maintaining all furnaces and converters according to good engineering practices in order to reduce leakage of sulfur oxide gases to atmosphere under normal operating practices; and

(v) Ducting captured sulfur oxide fugitive emissions through any tall stack serving the facility.

(b) Main Stack. Anaconda shall not discharge or cause the discharge of sulfur dioxide from the main stack of its smelter into the atmosphere in excess of 11,800 pounds per hour maximum twenty-four hour average and 16,800 pounds per hour maximum six hour average as determined by the methods specified hereinafter in paragraph (4). Anaconda shall not modify its main stack or construct additional stacks through which sulfur dioxide will be emitted without a construction permit from the Department.

(c) Acid Plant Stacks. Anaconda shall not discharge or cause the discharge from the main stack of any sulfuric acid plant at the smelter sulfur dioxide in excess of 1,000 parts per million six-hour average.

2. Compliance Schedule.

(a) Anaconda shall comply with the compliance schedule specified below:

(i) July 1, 1979. Submit a final plan to the Department for meeting the requirements of paragraph (1) above. Such plan shall be subject to approval by the Department.

(ii) January 1, 1980. Let contracts or issue purchase orders for emission capture and control systems and/or process modifications.

(iii) June 1, 1980. Initiate on-site construction and/or installation of emission capture and control equipment and/or process modifications.

(iv) July 1, 1982. Complete on-site construction and/or installation of emission capture and control systems and/or process modifications.

(v) October 1, 1982. Complete start-up and shakedown operations of all emission capture and control systems and/or process modifications.

(vi) December 31, 1982. Achieve final compliance with the requirements of paragraph (1) above.

(b) Anaconda may submit in writing to the Department, proposed changes to the compliance schedule. As a minimum, any such proposed schedule change shall contain the actions specified in subparagraph (a) of this paragraph.

No such compliance schedule change may provide for final compliance with the requirements of paragraph (1) after December 31, 1982. If approved by the Department such compliance schedule change shall satisfy the compliance schedule requirements of subparagraph (a) of this paragraph. If disapproved by the Department, the requirements of subparagraph (a) of this paragraph shall apply.

(c) Anaconda shall certify to the Department within 30 days after each date in the compliance schedule whether or not the action required by such date was completed.

(d) In the event Anaconda is presently in compliance with any of the requirements of paragraph (1) above, it shall certify such compliance to the Department on or before July 1, 1979. The Department may request such supporting information as it deems necessary to determine the validity of the certification. If such certification or any part thereof is acceptable to the Department, the requirements of subparagraph (a) of this paragraph shall not apply with respect to the requirements so certified and accepted. If such certification or any part thereof is unacceptable to the Department, Anaconda shall comply with the requirements of subparagraph (a) of this paragraph with respect to the parts of the certification the Department refused to accept.

3. Monitoring, Recordkeeping and Reporting.

(a) Anaconda shall install, calibrate, maintain and operate a measurement system for continuously monitoring sulfur dioxide emissions and gas volumetric flow rates representative of the main stack which shall take and record one measurement of sulfur dioxide concentration and gas flow in each five minute period. Anaconda shall also install a device in each acid plant for continuously measuring gas volumetric flow rates and sulfur dioxide concentrations representative of each acid plant main stack.

(b) No later than July 1, 1932, and at such other times in the future as the Department may specify, any new systems for measuring and monitoring sulfur dioxide concentrations and gas volumetric flow rates representative of the main stack installed and used pursuant to this paragraph shall be demonstrated to meet the measurement system performance specifications prescribed in Appendixes D and E to Part 52 of Chapter I, Title 40, Code of Federal Regulations. Existing systems shall be modified to meet the requirements of paragraph

(3) no later than December 31, 1979.

(c) The Department shall be notified at least 30 days in advance of the start of the field test period required in Appendixes D and E (described above) to afford the Department the opportunity to have an observer present.

(d) The sampling point for monitoring emissions representative of the main stack shall be in the duct at the centroid of the cross section if the cross sectional area is less than 4.647 m^2 (50 ft^2) or at a point no closer to the wall than 0.914 m (3 ft) if the cross section area is 4.647 m^2 (50 ft^2) or more. The monitor sample point shall be in an area of small spatial concentration gradient and shall be representative of the average concentration of the duct. The sampling point for monitoring emissions representative of acid plant main stack emissions shall be as specified by the Department.

(e) The measurement systems installed and used pursuant to this section shall be subjected to the manufacturer's recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer(s) specifies or recommends calibration at shorter intervals, in which case such specifications or recommendations shall be followed. Records of these procedures shall be made which clearly show instrument readings before and after zero adjustment and calibration.

(f) The Department may require Anaconda to verify the accuracy of the measurement system required by paragraph (3)(a) for continuously monitoring sulfur dioxide emissions and gas volumetric flow rates representative of the main stack by determining a six-hour average sulfur dioxide emission rate as follows:

(i) A test of the emission rate of the main stack shall be conducted while the processing units which emit gases which are vented through the stack are operating at the maximum rate at which they were operated and under such other relevant conditions as the Department shall specify based upon representative performance of the smelter units.

(ii) Concentrations of sulfur dioxide in emissions shall be determined by using Method 8 as described in Part 60 of Chapter I, Title 40, Code of Federal Regulations, modified by (1) increasing the concentration of hydrogen peroxide from 3% to at least 15% to meet the minimum sampling volume requirements of 40 cubic feet corrected to standard conditions, dry basis for each two-hour test conducted, and (2) increasing the amount of hydrogen peroxide in the impinger bottles from 200 ml. to an amount necessary to capture the total concentration of sulfur dioxide in emissions. The concentration of hydrogen peroxide and the volume used in the impinger bottles will depend upon the isokinetic sampling conditions and the sulfur dioxide concentration in the gas stream. The analytical and computational portions of Method 8 as they relate to determination of sulfuric acid mist and sulfur trioxide as well as isokinetic sampling may be omitted from the over-all test procedure.

(iii) Three independent sets of measurements of sulfur dioxide concentrations and gas volumetric flow rates shall be conducted. Each set of measurements shall consist of three consecutive two-hour tests conducted with the minimum time between tests as may be reasonably practicable. All tests must be completed within a 72-hour period.

(iv) In using modified Method 8, traversing shall be conducted according to Method 1 as described in Part 60, Chapter I, Title 40, Code of Federal Regulations. The minimum sampling volume for each two-hour test shall be 40 cubic feet corrected to standard conditions, dry basis.

(v) The volumetric flow rate of the total effluent from the main stack shall be determined by using Method 2, as described in Part 60, Chapter I, Title 40, Code of Federal Regulations, and traversing according to Method 1 described above. Gas analysis shall be performed by using the integrated sample technique of Method 3 as described in Part 60, Chapter I, Title 40, Code of Federal Regulations. Moisture content shall be determined by use of Method 4 as described in Part 60 of Chapter I, Title 40, Code of Federal Regulations.

(vi) The gas sample shall be extracted at a rate proportional to gas velocity at the sampling point.

(vii) For each two-hour test, the sulfur dioxide emission rate representative of the main stack shall be determined by multiplying the gas volumetric flow (ft^3/hr at standard conditions, dry basis) by the sulfur dioxide concentration (lb/ft^3 at standard conditions, dry basis). The sulfur dioxide emission rate in lbs/hr is determined by calculating the arithmetic average of each set of three two-hour tests.

(g). Six-hour and twenty-four hour average sulfur dioxide emission rates for the main stack shall be calculated in accordance with paragraph (4) below, and recorded daily. Hourly acid plant main stack gas volumetric flow rates and sulfur dioxide concentrations (calculated on a six-hour rolling average), shall be recorded daily.

(h) Anaconda shall maintain a record of all measurements required by this paragraph. Measurement results shall be expressed as pounds of sulfur dioxide emitted per six-hour period and per twenty-four hour period for the main stack and as parts per million for the acid plant main stacks.

(i) Six-hour and twenty-four hour average values calculated pursuant to paragraph (4) shall be reported as of each hour for the preceding six-hour and twenty-four hour periods. Results shall be summarized monthly and shall be submitted to the

Department within 15 days after the end of each month along with a monthly summary of acid plant main stack gas volumetric flow rates and sulfur dioxide concentrations. A record of such measurements shall be retained for at least two years following the date of such measurements.

(j) The continuous monitoring, recordkeeping and reporting requirements of this paragraph shall be effective with respect to new measurement systems installed pursuant to this paragraph on July 1, 1982. Such requirements shall become effective with respect to existing measurement systems on December 31, 1979. Prior to such date Anaconda shall provide data to the Department in accordance with the terms and conditions of orders of the Board granting Anaconda variances, or renewing variances, from ARM § 16-2.14(1)-S1470(2).

4. <u>Calculation of Emission rates</u>

Compliance with the requirements of paragraph (1)(b) above, shall be determined by calculating six-hour and twenty-four hour emission rates, as of the end of each clock hour, in the following manner:

(a) Divide each six-hour into 6 one hour segments.

(b) Determine on a compatible basis a sulfur dioxide concentration and gas flow rate for each 5-minute period. These measurements may be obtained either by continuous integration of sulfur dioxide concentrations and gas flow rates recorded during the 60-minute period or from the arithmetic average of any number of sulfur dioxide concentrations and gas flow readings equally spaced over the 60-minute period. In the latter case, the same number of concentration readings shall be taken in each 60-minute period and shall be similarly spaced within each 60-minute period.

(c) Calculate the arithmetic average (lbs SO_2 hr) for the six-hour and twenty-four hour averages in the following manner:

(i) Compute a weighted total for each one-hour period by multiplying the one-hour average by the number of entries used to obtain the average;

(ii) Sum the weighted totals for the preceding six and twenty-four hour periods;

(iii) Divide by the number of five-minute samples in each period.

5. <u>Compliance with Emission Standards.</u>

(a) <u>Definitions.</u>

(i) The term "excess emissions" means an emission rate which exceeds any applicable emission limitation prescribed by paragraph (1) above. The procedures for calculating emission rates for the main stack shall be as specified in paragraph (4) above.

(ii) The term "malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or a process to operate in a normal and usual manner. Failures caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions. No failure shall be considered a malfunction unless Anaconda notifies the Department as required by subparagraph (b) of this paragraph.

(iii) The term "start-up" means the setting into operation of any air pollution control equipment or process equipment for any purpose, except routine phasing in of process equipment.

(iv) The term "shutdown" means the cessation of operation of any air pollution control equipment or process equipment for any purpose, except routine phasing out of process equipment.

(v) The term "violation" means any incident of excess emissions, except when such incident (1) is caused by malfunction or (2) occurs during start-up or shutdown when the air pollution control equipment, process equipment, or processes are maintained and operated, to the extent practicable, in a manner consistent with good practice for minimizing emissions.

(b) In the event of a malfunction Anaconda shall notify the Department as soon as practicable. The Department shall determine whether to permit the operation to continue in accordance with ARM § 16-2.14(1)-S14000(1).

(c) Anaconda shall notify the Department when the applicable emission limitations in paragraph (1) above are not met. Such notification shall be made in writing for each month in which excess emissions occur. Each monthly report shall be submitted within fifteen days following the end of each month together with the applicable monthly reports required by paragraph (3)(i) and shall include with respect to each incident of excess emissions (1) the magnitude, time and duration, (2) a description of the nature, circumstances and cause, (3) the identity of the equipment which caused such incident, (4) the steps taken to prevent, limit or remedy the incident, and (5) documentation that the incident was not caused by poor maintenance, careless operation or any other preventable condition.

(d) No incident of excess emissions shall constitute a violation of this Sulfur Oxides Control Strategy except as defined in subparagraph (a)(v) of this paragraph.

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions from the Lead Smelter Located at East Helena, Montana, owned and operated by Asarco Incorporated	FINDINGS OF FACT, CONCLUSIONS OF LAW AND ORDER

On February 25, 1994, the Department of Health and Environmental Sciences ("Department") filed with the Board of Health and Environmental Sciences ("Board") a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area.

Pursuant to public notice, and on March 18, 1994, at the Cogswell Building, Helena, Montana, the Board conducted a hearing on the Petition filed by the Department. At the hearing testimony and evidence were presented by the Department and Asarco Incorporated, ("Asarco"). The Department and Asarco also presented to the Board for its consideration a Stipulation, dated March 15, 1994 ("Stipulation"). An opportunity to be heard was provided to all interested parties at the hearing. Based on the record in this proceeding, the Board enters the following Findings of Fact, Conclusions of Law and Order in regard to this matter:

FINDINGS OF FACT

1. That on September 14, 1973, the United States Environmental Protection Agency ("EPA") promulgated both primary and secondary National Ambient Air Quality Standards ("NAAQS") for sulfur oxides (measured as sulfur dioxide, "SO_2"). These standards were promulgated by EPA pursuant to the federal Clean Air Act, 42 U.S.C. §§ 7401, et seq., as amended by the Clean Air Act Amendments of 1990 ("federal Act").

2. That primary NAAQS define levels of air quality which are determined by EPA to be necessary, with an adequate margin of safety, to protect the public health. Secondary NAAQS define levels of air quality which are determined by EPA to be necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

3. That the primary annual SO_2 NAAQS is 80 micrograms per cubic meter (0.03 parts per million) of SO_2, annual arithmetic mean (40 CFR § 50.4(a)). The primary 24-hour SO_2 NAAQS is 365 micrograms per cubic meter (0.14 ppm) of SO_2, maximum 24-hour concentration, not to be exceeded more than once per year (40 CFR § 50.4(b)).

4. That the secondary SO_2 NAAQS is 1300 micrograms per cubic meter (0.5 ppm) of SO_2, maximum 3-hour concentration, not to be exceeded more than once per year (40 CFR § 50.5).

5. That in August, 1980, the Board adopted Montana Ambient Air Quality Standards ("MAAQS") for sulfur dioxide, including: an annual standard of 0.02 ppm (annual average); a

24-hour standard of 0.10 ppm (24-hour average), not to be exceeded more than once per year; and an hourly standard of 0.5 ppm (one-hour average), not to be exceeded more than 18 times in any consecutive 12 months (ARM 16.8.820).

6. That in March, 1978, EPA designated the area of East Helena, Montana, as nonattainment for SO_2 based on historical ambient monitoring data showing violations of the primary 24-hour SO_2 NAAQS. The EPA nonattainment designation encompassed that portion of East Helena and vicinity located within a 0.67 kilometer radius centered on the sinter storage building at the Asarco primary lead smelter ("East Helena facility").

7. That section 110 of the federal Act (42 U.S.C. § 7410), requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since standards have been promulgated for sulfur oxides, the State of Montana is required to submit an implementation plan for sulfur dioxide to EPA.

8. That on February 14, 1975, the Department and Asarco stipulated to a final control plan for the control of sulfur dioxide emissions from the East Helena facility, which was approved by the Board on May 16, 1975. On September 19, 1975, EPA approved a proposed SO_2 control strategy for the East Helena facility that incorporated the final control plan adopted by the Board. This control strategy was incorporated into the Montana State Air Quality Control Implementation Plan ("SIP").

9. That in April, 1979 the Department submitted a revision to the SIP for the East Helena area, which was designed to achieve compliance with the SO_2 NAAQS. EPA proposed to approve this revision in July, 1983 (48 Fed. Reg. 30696), but final action was not taken pending litigation concerning the federal stack height regulations.

10. That in November 1990, the federal Act was significantly amended, and required that any SIP lacking full approval be resubmitted under new guidelines contained in the amended Act (42 U.S.C. § 7514(b)). The federal Act established May 15, 1992, as the deadline to submit a sulfur dioxide control plan for the East Helena area to EPA (42 U.S.C. § 7514), and requires that the new SIP provide for attainment of the primary SO_2 NAAQS no later than November 15, 1995 (42 U.S.C. § 7514a(b)).

11. That the Department and Asarco have reevaluated the ambient air quality impacts of the Asarco East Helena facility utilizing established protocols, dispersion modeling techniques, and detailed emission inventories approved by the Department and EPA.

12. That using both the RTDM (Rough Terrain Dispersion Model) and ISCST (Industrial Source Complex Simple Terrain) models, and utilizing current allowable emissions from the Asarco East Helena facility, modeling analyses predicts violations of the primary SO_2 NAAQS (both annual and 24-hour standards) in areas of elevated terrain outside of the area formally designated as nonattainment by EPA in 1978.

13. That the Department has filed with the Board a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area. Specifically, the Department proposed the following: that Chapter 5 of the SIP be revised by completely deleting the existing control strategy for the SO_2 NAAQS in the East Helena area; and, that the proposed primary SO_2 NAAQS control strategy for East Helena be adopted and incorporated into the SIP as a new Chapter 25.

14. That since the filing of the Department's Petition, the Department and Asarco have presented to the Board a Stipulation which includes a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area (Exhibit A to the Stipulation, entitled "Emission Limitations and Conditions - Asarco Incorporated").

15. That the control strategy attached to the Stipulation as Exhibit A contains specific limitations, conditions and requirements that are proposed to be applicable to the Asarco East Helena facility. The control strategy proposed by the Department and Asarco (Exhibit A to the Stipulation, entitled "Emission Limitations and Conditions - Asarco Incorporated", hereafter "East Helena control strategy"), including the Stipulation, is attached to this Order as Appendix A and by this reference is incorporated herein as part of this Order.

16. That using both the RTDM and ISCST models, and

utilizing the East Helena control strategy, compliance with both the 24-hour and the annual SO_2 NAAQS is demonstrated. The 24-hour standard has proven to be more difficult to achieve in the East Helena area, and has the most influence upon the modeling and control strategy.

17. That the East Helena control strategy establishes a fixed emission limitation for the acid plant stack, crushing mill baghouse stack #1, crushing mill baghouse stack #2, and concentrate storage and handling building, while performance requirements (work practices) have been established for other minor SO_2 sources. Emissions from the blast furnace stack and the sinter plant stack are allowed to vary in accordance with a series of equations that are based upon a dispersion modeling analysis (Exhibit B to the Stipulation, entitled "Modeling Analysis in Support of Compliance Demonstration for SO_2 Primary NAAQS at East Helena, Montana"). Asarco agrees that it will need to implement production and process controls which will insure that the limitations are not exceeded on a daily or annual basis.

18. That as part of the emission limitations and conditions applicable to the Asarco East Helena facility, the East Helena control strategy contains methods for determining emission limits for the blast furnace and sinter plant stacks, and the requirements by which all such emission limitations and conditions are made quantifiable and enforceable by the Department.

19. That the emission limitations and conditions and the

testing and reporting requirements contained in the East Helena control strategy are intended to achieve and maintain compliance with the primary SO_2 NAAQS.

20. That in order to demonstrate compliance with the primary SO_2 NAAQS using the RTDM and ISCST models, the Asarco East Helena facility must be subject to the emission limitations and conditions set forth in the East Helena control strategy.

21. That the Department and Asarco agree that, given Finding No. 20, above, the Board may issue an appropriate Order that adopts the limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation), and requires the same as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law.

22. That the East Helena control strategy does not address compliance by the East Helena area with either the federal secondary SO_2 NAAQS or the SO_2 MAAQS. Further action by the Board in the future will be necessary to address concerns regarding compliance with these requirements, and additional controls and limitations may be necessary at the Asarco East Helena facility.

23. That Asarco remains concerned with the reliability of the RTDM model, does not in any way acknowledge the reliability of the RTDM model, and entered into the submitted Stipulation in the spirit of cooperation. Notwithstanding Asarco's concerns with the RTDM model, the Department and Asarco agree

that the emission limitations, conditions and requirements set forth in the East Helena control strategy shall remain in full force and effect after adoption by the Board, unless expressly modified or replaced by a subsequent Board Order.

24. That pursuant to section 110 of the federal Act, any limitations, conditions and other requirements that are contained in a control strategy designed to achieve and maintain compliance with the NAAQS must be enforceable by both the Department and EPA.

25. That the limitations, conditions and requirements contained in the East Helena control strategy are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

26. That the East Helena control strategy, after adoption and incorporation by Board Order, must be submitted to the Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena.

27. That the Department and Asarco are proposing, except as described below in Finding No. 28 relating to catalyst screening, that the requirements contained in the East Helena control strategy supersede the following: all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena; any less stringent corresponding requirements set forth in any existing air quality permit

currently issued to Asarco for the East Helena facility; and, any less stringent corresponding requirements set forth in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

28. That the Department and Asarco are proposing that the East Helena control strategy be subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds (approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984); provided, however, that the Board's prior approval of such criteria and procedures in 1982, as described above, shall terminate and no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date.

29. That the Department and Asarco are proposing that the limitations, conditions and requirements contained in the East Helena control strategy become effective immediately upon the issuance of this Order, except as follows: the specified emission monitoring requirements become effective on July 1, 1994; the reporting requirements apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of

the control strategy, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates.

30. That the Department and Asarco agree that it would be appropriate for the Board to issue an Order in this proceeding that incorporates the terms of the Stipulation and adopts the limitations, conditions and requirements contained in the East Helena control strategy as enforceable measures applicable to the Asarco East Helena facility.

31. That public notice of the Board hearing of March 18, 1994, concerning the issuance of an Order addressing the matters herein was published in the following newspaper on or before February 15, 1994: Independent Record

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board hereby enters the following Conclusions of Law:

1. The public has been provided with appropriate notice and an opportunity to participate in this matter. Title 2, Chapter 3 and 4, MCA. The public notice requirements set forth in 40 CFR section 51.102 have been fulfilled.

2. The Department of Health and Environmental Sciences is charged with the responsibility to "prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state". Section 75-2-112(c), MCA.

3. Under Sections 75-2-101 et seq., MCA, the Montana

Board of Health and Environmental Sciences is required to protect public health and welfare by limiting the levels and concentrations of air pollutants within the State. This responsibility includes the adoption of ambient standards (Section 75-2-202, MCA) and emission standards (Section 75-2-203, MCA), and the issuance of orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA (Section 75-2-111, MCA).

4. The limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation) are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

5. Given Finding No. 20, above, a revision of the Montana State Air Quality Control Implementation Plan is necessary for the East Helena nonattainment area to achieve and maintain the primary SO_2 NAAQS.

6. Upon finding the limitations, conditions and requirements contained in the East Helena control strategy (Exhibit A to the Stipulation) to be necessary for the East Helena nonattainment area to achieve and maintain the primary SO_2 NAAQS, the Board has jurisdiction to issue an appropriate Order that adopts such limitations, conditions and requirements and requires the same as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law. Sections 75-2-111, -203, MCA.

7. All Findings of Fact are hereby incorporated and

restated herein as Conclusions of Law.

ORDER

Based on the foregoing Findings of Fact and Conclusions of Law, IT IS HEREBY ORDERED:

1. That the control strategy proposed by the Department and Asarco in this proceeding (Exhibit A to the Stipulation, entitled "Emission Limitations and Conditions - Asarco Incorporated", hereafter "East Helena control strategy"), including the Stipulation presented to the Board, is attached to this Order as Appendix A, is adopted by the Board, and is incorporated herein as part of this Order.

2. That consistent with this Order, Asarco Incorporated implement the limitations, conditions and requirements contained in the East Helena control strategy that are applicable to its East Helena facility.

3. That except as described below in Order Paragraph No. 4 relating to catalyst screening, the requirements contained in the East Helena control strategy supersede the following: all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena; any less stringent corresponding requirements set forth in any existing air quality permit currently issued to Asarco for the East Helena facility; and, any less stringent corresponding requirements set forth in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

4. That except as described below in Order Paragraph No. 5, the East Helena control strategy is subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds (approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984).

5. That the Board's 1982 approval of the criteria and procedures for maintenance of Asarco's acid plant catalyst beds, as described above in Order Paragraph No. 4, shall terminate and no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date.

6. That the limitations, conditions and requirements contained in the East Helena control strategy become effective immediately upon the issuance of this Order, except as follows: the specified emission monitoring requirements become effective on July 1, 1994; the reporting requirements apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of the control strategy, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates.

7. That this Order, including the attached Appendix A, be submitted to the Governor of the State of Montana for submittal to the U.S. Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena.

8. That modifications of this Order shall only be by initiation of the Board or by petition to the Board and the issuance of a subsequent order revising this Order.

9. That a copy of this Order as executed by the Board be provided to a representative of each party to this proceeding.

DATED this 18 day of March, 1994.

By: Raymond W. Gustafson
RAYMOND W. GUSTAFSON,
Chairman, Board of Health and Environmental Sciences

BEFORE THE BOARD OF HEALTH AND ENVIRONMENTAL SCIENCES
OF THE STATE OF MONTANA

In the Matter of the Application of the Department of Health and Environmental Sciences for Revision of the Montana State Air Quality Control Implementation Plan Relating to Control of Sulfur Dioxide Emissions from the Lead Smelter Located at East Helena, Montana, owned and operated by Asarco Incorporated

STIPULATION

The Department of Health and Environmental Sciences ("Department"), and Asarco Incorporated, ("Asarco"), hereby stipulate and agree to all the following Paragraph Nos. 1-30 inclusive, including the exhibits as referenced below, in regard to the above-captioned matter and present the same for consideration and adoption by the Board of Health and Environmental Sciences ("Board"):

A. BACKGROUND:

1. On September 14, 1973, the United States Environmental Protection Agency ("EPA") promulgated both primary and secondary National Ambient Air Quality Standards ("NAAQS") for sulfur oxides (measured as sulfur dioxide, "SO_2"). These standards were promulgated by EPA pursuant to the federal Clean Air Act, 42 U.S.C. §§ 7401, et seq., as amended by the Clean Air Act Amendments of 1990 ("federal Act").

2. Primary NAAQS define levels of air quality which are

determined by EPA to be necessary, with an adequate margin of safety, to protect the public health. Secondary NAAQS define levels of air quality which are determined by EPA to be necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

3. The primary annual SO_2 NAAQS is 80 micrograms per cubic meter (0.03 parts per million) of SO_2, annual arithmetic mean (40 CFR § 50.4(a)). The primary 24-hour SO_2 NAAQS is 365 micrograms per cubic meter (0.14 ppm) of SO_2, maximum 24-hour concentration, not to be exceeded more than once per year (40 CFR § 50.4(b)).

4. The secondary SO_2 NAAQS is 1300 micrograms per cubic meter (0.5 ppm) of SO_2, maximum 3-hour concentration, not to be exceeded more than once per year (40 CFR § 50.5).

5. In August, 1980, the Board adopted Montana Ambient Air Quality Standards ("MAAQS") for sulfur dioxide, including: an annual standard of 0.02 ppm (annual average); a 24-hour standard of 0.10 ppm (24-hour average), not to be exceeded more than once per year; and an hourly standard of 0.5 ppm (one-hour average), not to be exceeded more than 18 times in any consecutive 12 months (ARM 16.8.820).

6. This Stipulation (and associated proposed control strategy) does not address compliance by the East Helena area with either the federal secondary SO_2 NAAQS or the SO_2 MAAQS. The parties recognize that further action by the Board in the future will be necessary to address concerns regarding compliance by the East Helena area with these requirements, and

that additional controls and limitations may be necessary at the Asarco East Helena facility.

7. In March, 1978, EPA designated the area of East Helena, Montana, as nonattainment for SO_2 based on historical ambient monitoring data showing violations of the primary 24-hour SO_2 NAAQS. The EPA nonattainment designation encompassed that portion of East Helena and vicinity located within a 0.67 kilometer radius centered on the sinter storage building at the Asarco East Helena facility.

8. Section 110 of the federal Act (42 U.S.C. § 7410), requires each state to submit an implementation plan for the control of each air pollutant for which a national ambient air quality standard has been promulgated. Since standards have been promulgated for sulfur oxides, the State of Montana is required to submit an implementation plan for sulfur dioxide to EPA.

9. Pursuant to section 110 of the federal Act, any limitations, conditions and other requirements that are contained in a control strategy designed to achieve and maintain compliance with the NAAQS must be enforceable by the Department.

10. The Clean Air Act of Montana is found generally at Title 75, Chapter 2, MCA. Pursuant to § 75-2-112(c), MCA, the Department is charged with the responsibility to "prepare and develop a comprehensive plan for the prevention, abatement, and control of air pollution in this state".

11. Pursuant to § 75-2-111, MCA, the Board is authorized

to issue orders necessary to effectuate the purposes of Title 75, Chapter 2, MCA. Section 75-2-203, MCA, authorizes the Board to establish such limitations on the levels, concentrations, or quantities of emissions of various pollutants from any source as may be necessary to prevent, abate, or control air pollution.

12. On February 14, 1975, the Department and Asarco stipulated to a final control plan for the control of sulfur dioxide emissions from the East Helena facility, which was approved by the Board on May 16, 1975. On September 19, 1975, EPA approved a proposed SO_2 control strategy for the East Helena facility that incorporated the final control plan adopted by the Board. This control strategy was incorporated into the Montana State Air Quality Control Implementation Plan ("SIP").

13. In April, 1979 the Department submitted a revision to the SIP for the East Helena area, which was designed to achieve compliance with the SO_2 NAAQS. EPA proposed to approve this revision in July, 1983 (48 Fed. Reg. 30696), but final action was not taken pending litigation concerning the federal stack height regulations.

14. In November 1990, the federal Act was significantly amended, and required that any SIP lacking full approval be resubmitted under new guidelines contained in the amended Act (42 U.S.C. § 7514(b)). Pursuant to section 192 of the federal Act, as amended, the new SIP must provide for attainment of the primary SO_2 NAAQS no later than November 15, 1995 (42 U.S.C. §

7514a(b)). Consequently, the Department and Asarco have reevaluated the ambient air quality impacts of the Asarco East Helena facility utilizing established protocols, dispersion modeling techniques, and detailed emission inventories approved by the Department and EPA.

15. As amended, the federal Act established May 15, 1992, as the deadline to submit to EPA a sulfur dioxide control plan for the East Helena area (42 U.S.C. § 7514). However, the federal Act and implementing regulations allow EPA to extend the deadline for submitting the control plan for the secondary SO_2 NAAQS to three years. This extension may be granted if "compelling evidence" is provided that achieving and maintaining the secondary NAAQS requires significant additional controls beyond those required for the primary NAAQS (42 U.S.C. § 7410).

16. On August 5, 1993, the Department submitted a request to EPA for the full three years to develop a plan for the East Helena area that addresses the secondary SO_2 NAAQS. On October 7, 1993, EPA published its approval of this request (58 Fed. Reg. 52237).

17. On February 25, 1994, the Department filed with the Board a Petition for Revision of the Montana State Air Quality Control Implementation Plan, seeking a Board Order in this proceeding approving and adopting a proposed control strategy for achieving and maintaining the primary SO_2 NAAQS in the East Helena area. Specifically, the Department has proposed the following: that Chapter 5 of the SIP be revised by completely

deleting the existing control strategy for the SO_2 NAAQS in the East Helena area; that the proposed primary SO_2 NAAQS control strategy for East Helena be adopted and incorporated into the SIP as a new Chapter 25.

18. The Department and Asarco both understand and agree that the emission limitations and conditions and the testing and reporting requirements established by this Stipulation (Exhibit A) are intended to achieve and maintain compliance with the primary SO_2 NAAQS. Furthermore, both parties understand and agree that additional or more stringent emission limitations and conditions and testing and reporting requirements may be necessary in the future to achieve the secondary SO_2 NAAQS and SO_2 MAAQS.

19. Utilizing a dispersion modeling analysis, Asarco and the Department have developed an emission control strategy that achieves compliance with the primary SO_2 NAAQS. Using both the RTDM (Rough Terrain Dispersion Model) and ISCST (Industrial Source Complex Simple Terrain) models, and utilizing the control strategy proposed by this Stipulation (Exhibit A), this modeling analysis demonstrates compliance with both the 24-hour and the annual SO_2 NAAQS. The 24-hour standard has proven to be more difficult to achieve in the East Helena area, and has the most influence upon the modeling and proposed control strategy. As discussed further below, Asarco is concerned with the reliability of the RTDM model, but nevertheless is entering into this Stipulation in the spirit of cooperation.

20. The proposed control strategy contained in Exhibit A

establishes a fixed emission limitation for the acid plant stack, crushing mill baghouse stack #1, crushing mill baghouse stack #2, and concentrate storage and handling building, while performance requirements (work practices) have been established for other minor SO_2 sources. Emissions from the blast furnace stack and the sinter plant stack are allowed to vary in accordance with a series of equations that are based upon the dispersion modeling analysis (Exhibit B, "Modeling Analysis in Support of Compliance Demonstration for SO_2 Primary NAAQS at East Helena, Montana"), and ensures compliance with the primary SO_2 NAAQS. As a part of this Stipulation, Asarco agrees to implement production and process controls which will ensure that the limitations are not exceeded on a daily or annual basis.

21. The Department and Asarco agree that in order to demonstrate compliance with the primary SO_2 NAAQS using the RTDM and ISCST models, the East Helena facility must be subject to the emission limitations and conditions set forth in Exhibit A. Exhibit A to this Stipulation contains emission limitations and conditions applicable to the Asarco East Helena facility, methods for determining emission limits for the blast furnace and sinter plant stacks, and the requirements by which all such emission limitations and conditions are made quantifiable and enforceable by the Department. The parties acknowledge that Asarco remains concerned with the reliability of the RTDM model, and has entered into this Stipulation in the spirit of cooperation. As noted in Paragraph No. 24, below, by entering

into this Stipulation Asarco does not in any way acknowledge the reliability of the RTDM model. The parties are developing data to model air quality using the CTDMPLUS model, and it is possible that the results of this model may differ from the RTDM results. As a result of the use of the CTDMPLUS model, it is possible that the emissions limitations, conditions and requirements for the Asarco East Helena facility, as set forth in Exhibit A to this Stipulation, may be modified by a subsequent Board Order. Notwithstanding Asarco's concerns with the RTDM model and the subsequent evaluation and use of the CTDMPLUS model, the parties agree that the emission limitations, conditions and requirements set forth in Exhibit A to this Stipulation shall remain in full force and effect after adoption by the Board, unless expressly modified or replaced by a subsequent Board Order.

B. <u>BINDING EFFECT</u>

22. The parties to this Stipulation agree that any such emission limitations and conditions and associated testing and reporting requirements placed on Asarco must be enforceable by both the Department and EPA. To this end, the parties have negotiated specific limitations, conditions and requirements that are to be applicable to Asarco, which are contained in Exhibit A to this Stipulation (entitled "Emission Limitations and Conditions - Asarco Incorporated") which is attached hereto and by this reference is incorporated herein in its entirety as part of this document.

23. The parties understand and agree that this Stipulation may be either renegotiated and made enforceable through an associated Board Order, or superseded by a subsequent Order of the Board upon notice of hearing. This may occur for a number of reasons, including, but not limited to, the following: an EPA determination that the submitted plan is incomplete; an EPA disapproval, either partial or complete, of the submitted plan; additional or more stringent emission limitations and conditions and testing and reporting requirements are necessary in the future to achieve and maintain the secondary SO_2 NAAQS or SO_2 MAAQS; or, the CTDMPLUS model produces valid results that indicate the emission limitations, conditions and requirements set forth in Exhibit A are either more stringent than necessary or inadequate to demonstrate compliance with the primary SO_2 NAAQS.

24. As previously noted, Asarco remains concerned with the reliability of the RTDM model, and has entered into this Stipulation in the spirit of cooperation. By entering into this Stipulation, Asarco does not in any way acknowledge the reliability of the RTDM model. Nothing in this Stipulation, including Exhibit A, shall affect or limit Asarco's ability to later petition the Board to modify this Stipulation and Exhibit A, or to obtain judicial review of the Board's action or failure to act respecting such a petition. Asarco may later petition the Board to modify the emission limitations, conditions and requirements set forth herein and demonstrate, if it can, that such limitations, conditions and requirements

are not supported by valid scientific evidence and are more stringent than necessary to demonstrate compliance with applicable ambient air quality standards. However, nothing in this paragraph shall be construed to provide Asarco with administrative or judicial remedies that are not otherwise provided by law. In addition, nothing in this paragraph shall be construed as impairing in any manner the finality or enforceability of the Board Order approving this Stipulation.

25. The parties to this Stipulation agree that upon finding the limitations, conditions and requirements contained in Exhibit A to this Stipulation to be necessary for the East Helena non-attainment area to achieve and maintain the primary SO_2 NAAQS, the Board has jurisdiction to issue an appropriate Order that adopts such limitations, conditions and requirements as enforceable measures applicable to the Asarco East Helena facility pursuant to Montana law.

26. The limitations, conditions and requirements contained in Exhibit A to this Stipulation are consistent with the provisions of the Montana Clean Air Act, Title 75, Chapter 2, MCA, and rules promulgated pursuant to the Act.

27. It is the intent of the parties that this Stipulation and the attached Exhibit A, after adoption and incorporation by Board Order, shall be submitted to the Environmental Protection Agency for review and approval as a revision to the Montana State Air Quality Control Implementation Plan, containing the control strategy for attainment and maintenance of the primary SO_2 NAAQS in East Helena. Consistent with this intent, and

except as described below in Paragraph No. 28 relating to catalyst screening, the requirements contained in this Stipulation and attached Exhibit A shall supersede all requirements contained in the existing provisions of the SIP relating to sulfur dioxide in East Helena. The obligations in this Stipulation and Exhibit A supersede any less stringent corresponding requirements set forth in any existing air quality permit currently issued to Asarco for the East Helena facility, or in any Order issued by the Board respecting sulfur dioxide emissions from the East Helena facility that is not part of the existing SIP.

28. The provisions of this Stipulation are subject to the continuing applicability of the Stipulated Findings of Fact, Conclusions of Law and Order, dated April 15, 1982, and approved by the Board on May 21, 1982, respecting the criteria and procedures for maintenance of Asarco's acid plant catalyst beds, which criteria and procedures were approved by EPA on April 19, 1984, as published in the Federal Register of May 1, 1984; provided, however, that the Board's prior approval of such criteria and procedures in 1982, as described above, shall no longer be effective after November 15, 1995, and it shall be unlawful for Asarco to employ such criteria and procedures for maintenance of the acid plant catalyst beds after that date. As described above, Asarco is concerned with the reliability of the RTDM model, and continues to evaluate and use the CTDMPLUS model. Nothing in this paragraph shall be construed as in any way limiting Asarco's ability to later petition the Board to

demonstrate that adherence to such criteria and procedures, or a modified version thereof, will not result in a predicted violation of the applicable SO_2 NAAQS, utilizing dispersion models approved by the Montana Air Quality Bureau and the United States Environmental Protection Agency. Nothing in this paragraph shall be construed as in any manner allowing Asarco to rely on an intermittent control system (ICS) as a part of such petition and demonstration.

29. The parties agree that the limitations, conditions and requirements contained in this Stipulation and Exhibit A will become immediately effective upon the issuance of an Order by the Board in this proceeding, except as follows: the specified emission monitoring requirements will become effective on July 1, 1994; the reporting requirements will apply only to emission monitoring data gathered after July 1, 1994; and the emission limitations and conditions will, except as otherwise specifically provided in PART I, Section 3, subsections (H), (I), and (K) of Exhibit A to this Stipulation, become effective on September 1, 1994. All current sulfur dioxide emission monitoring and reporting requirements and emission limitations and conditions shall remain in effect until these dates. Nothing herein shall be construed as in any way impairing or otherwise affecting the existing obligations of Asarco to conduct ambient monitoring in the East Helena area.

30. Accordingly, the parties to this Stipulation agree that it would be consistent with the terms and intent of this

Stipulation for the Board to issue an Order imposing the terms in this Stipulation and the limitations, conditions and requirements contained in Exhibit A of this Stipulation, and adopting the same as enforceable measures applicable to the Asarco East Helena facility.

ASARCO, East Helena, MT

By [signature]

By [signature: William O. Hunt]
Attorney

Date 3/14/94

Montana Department of Health and Environmental Sciences

By [signature]
Robert J. Robinson
Director

By [signature]
Timothy R. Baker
Attorney

Date 3/15/94

EXHIBIT A

EMISSION LIMITATIONS AND CONDITIONS

Asarco Incorporated
East Helena, Montana

PART I EMISSION LIMITATIONS AND CONDITIONS

Section 1. Affected Facilities

(A) Plant Location:

The Asarco primary lead smelter is located immediately south of the community of East Helena, Montana. The plant's slag pile is adjacent to and on the south side of U.S. Highway 12. The plant is physically located in Lewis and Clark County, Township 10 North, Range 3 West, Section 36.

(B) Affected Equipment and Facilities:

(1) Crushing Mill and Baghouses,
(2) Sinter (D&L) Plant and Baghouse,
(3) Acid Plant,
(4) Blast Furnace and Baghouses,
(5) Mist Precipitator Building,
(6) Pump Tank Building,
(7) Cottrell, and
(8) Concentrate Storage and Handling Building and Baghouses.

(C) Sources of Sulfur Dioxide:

(1) All sources of sulfur dioxide (SO_2) from this smelting facility including all point sources, volume sources, and fugitive sources are subject to this document (Exhibit A).

Section 2. Definitions

(A) The following definitions apply throughout this Exhibit A.

(1) "Calendar Day" means a 24-hour period starting at 12:00 midnight and ending at 12:00 midnight, 24 hours later, with the span of time occurring during

one calendar date.

(2) "CEMS-Derived Hourly Emission Rate" means a sulfur dioxide emission rate (expressed in tons per hour) determined using Hourly Averages and calculated using the following equation:

Equation A-01

CEMS-Derived Hourly Emission Rate (tons/hour) = (Hourly Average SO_2 Concentration) x (Hourly Average Stack Gas Flow Rate) x (4.98×10^{-9})

Where:

(a) SO_2 concentrations are in parts per million (ppm) and measured on a wet basis, and

(b) Stack gas volumetric flow rates are determined on a wet basis and reported in standard cubic feet per minute (scfm).

Equation A-01 is derived from conversion factors based upon the wet measurement of SO_2 and stack flow rate. If concentrations and stack gas flow rates are determined on a dry basis, a different equation must be used to determine emissions of sulfur dioxide, and the equation must be approved by the department.

(3) "Clock Hour" means one twenty-fourth (1/24) of a Calendar Day and refers to any of the standard 60-minute periods in a day which are generally identified and separated on a clock by the whole numbers one through twelve.

(4) "Complete 15-Minute Data Block" means an arithmetic average of a minimum of nine one minute values or 60% of the duration of a 15-Minute Data Block. A Complete 15-Minute Data Block must be derived from Valid Data, and obtained from a continuous sulfur dioxide monitor, continuous temperature monitor, or continuous flow rate monitor which measures SO_2 concentrations, temperature, or flow rate such that no more than one minute can elapse between measurements.

A 15-Minute Data Block refers to any one of the four 15-minute periods in a Clock Hour, commencing with the first, sixteenth, thirty-first and forty-sixth minute of the Clock Hour.

(5) "Continuous Emission Monitoring System (CEMS)" means all equipment necessary to obtain an hourly emission rate of sulfur dioxide including, but not necessarily limited to, a continuous emission monitor (CEM) which determines sulfur dioxide concentrations in a stack gas, a continuous stack gas volumetric flow rate monitor which determines stack gas flow rates, and associated data acquisition equipment.

(6) "Daily Emissions" means the amount of sulfur dioxide (SO_2) emitted in a Calendar Day (expressed in tons per day) as determined in accordance with the matrix contained in Table 1 and utilizing Equation A-02 and Appendix A-1 of this Exhibit A as appropriate.

The following table provides a template for determining daily emissions for the Sinter Plant Stack, Blast Furnace Stack and Acid Plant Stack.

TABLE 1
DAILY EMISSIONS MATRIX
FOR THE SINTER PLANT STACK, BLAST FURNACE STACK, AND ACID PLANT STACK

Number of CEMS-Derived Hourly Emission Rates Available Per Calendar Day.	**Operating Hours Per Calendar Day of the Stack equal 24.**	**Operating Hours Per Calendar Day of the Stack do not equal 24.**
24 CEMS-Derived Hourly Emission Rates.	Determine Daily Emissions by Summing all CEMS-Derived Hourly Emission Rates for the given Calendar Day.	Determine Daily Emissions by Summing all CEMS-Derived Hourly Emission Rates for the given Calendar Day.
Less than 24 and greater than or equal to 20 CEMS-Derived Hourly Emission Rates.	Determine Daily Emissions by the use of Equation A-02 in Exhibit A.	Determine Daily Emissions by the use of Equation A-02 in Exhibit A.
Less than 20 CEMS-Derived Hourly Emission Rates (Blast Furnace Stack and Sinter Plant Stack only).	Determine Daily Emissions by summing the available CEMS-Derived Hourly Emission Rates with the applicable Surrogate Hourly Emission Rates (as determined by Equations 1 and 2 of Appendix A-I to this Exhibit A).	Determine Daily Emissions by summing all available CEMS-Derived Hourly Emission Rates, all applicable Surrogate Hourly Emission Rates (as determined by Equations 1 and 2 of Appendix A-1 to this Exhibit A), and any applicable De Minimis Hourly Emission Rates.

Since Surrogate Hourly Emission Rates are not applicable to the Acid Plant Stack, daily emissions for the Acid Plant Stack shall be determined in accordance with rows 1 and 2 of Table 1, above.

Equation A-02

Daily Emissions (tons/day) = {[(Sum of CEMS-Derived Hourly Emission Rates for Operating Hours) x (No. of Operating Hours)]/(No. of Operating Hours for Which CEMS-Derived Emission Rates are Available)} + (Sum of CEMS-Derived Hourly Emission Rates for Hours Other Than Operating Hours) + (Sum of De Minimis Hourly Emission Rates)

(7) "De Minimis Hourly Emission Rate" means a substitute emission rate for the Sinter Plant Stack, Blast Furnace Stack, or the Acid Plant Stack which shall apply during those Clock Hours that are not Operating Hours, and for which a CEMS-Derived Hourly Emission Rate is unavailable. The De Minimis Hourly Emission Rate is 0.20 tons per hour of sulfur dioxide for the Blast Furnace Stack, 0.40 tons per hour of sulfur dioxide for the Sinter Plant Stack, and 0.00 tons per hour of sulfur dioxide for the Acid Plant Stack.

(8) "Hourly Average" means an arithmetic average of all Complete 15-Minute Data Blocks for a Clock Hour. A minimum of three Complete 15-Minute Data Blocks are required to determine an Hourly Average for each monitor per Clock Hour.

(9) "Operating Hours" means:

For the Acid Plant Stack, those Clock Hours when the Acid Plant is operating, as determined by the use of contemporaneous operating logs, production logs, and/or other records which indicate the operating status of the Acid Plant.

For the Sinter Plant Stack and Blast Furnace Stack, respectively, those hours when the Sinter Machine and Blast Furnace are operating or when emissions are greater than any associated De Minimis Hourly Emission Rate. Operating Hours for the Sinter Plant Stack and the Blast Furnace Stack shall be determined as follows: if the CEMS is not functioning, by use of contemporaneous operating logs, production logs, and/or other records which indicate the operating status of the Sinter Plant Stack or the Blast Furnace Stack, as appropriate; if the CEMS is functioning, any Clock Hours when the CEMS-Derived Hourly Emission Rate for the specific stack is greater than the respective De Minimis Hourly Emission Rate.

(10) "Surrogate Hourly Emission Rate" means a sulfur dioxide emission rate for the Blast Furnace Stack or Sinter Plant Stack (expressed in tons per hour) derived from one or more surrogate parameters. A Surrogate Hourly Emission Rate will be substituted for CEMS-Derived Hourly Emission Rate during each Operating Hour when a CEMS-Derived Hourly Emission Rate is not available. The methods by which Surrogate Hourly Emission Rates are determined, and how they are used, are set forth in Appendix A-1 to this Exhibit A.

The use of hourly emission data from continuous emission monitors and stack flow rate monitors is the preferred method by which compliance is to be determined under this Exhibit A. Although Surrogate Hourly Emission Rates are being substituted for CEMS-Derived Hourly Emission Rates to provide emission estimates during certain instances when CEMS-Derived Hourly Emission Rates are not available, Asarco may not use Surrogate Hourly Emission Rates to satisfy the requirements for a Quarterly Data Recovery Rate specified in PART I, Section 3, subsections (E) and (F) of this Exhibit A.

(11) "Quarterly Data Recovery Rate" means the relationship between the number of Operating Hours in a calendar quarter when CEMS-Derived Hourly Emission Rates are available for a stack in comparison to the number of corresponding Operating Hours during the calendar quarter, and expressed as a percentage. The Quarterly Data Recovery Rate for a stack shall be calculated in accordance with the following equation:

Equation A-03

$$\text{Quarterly Data Recovery Rate} = \frac{\text{CEMS-Derived Hourly Emission Rates in a Calendar Quarter that are also Operating Hours}}{\text{Total No. of Operating Hours in a Calendar Quarter}} \times 100$$

(12) "Standard Conditions" means 20°C (68°F) and 1 atmosphere (29.92" Hg).

(13) "Unusual Circumstances" means circumstances which are beyond Asarco's control such as earthquakes, lightning, area wide power outages, or fire; but not to include malfunctions of any monitoring equipment or associated data acquisition equipment unless such malfunctions meet the following conditions:

(a) Asarco has properly designed the continuous emission monitoring and stack flow rate monitoring systems including the associated data acquisition systems (CEMS);

(b) Asarco has properly operated and maintained the continuous emission monitors, stack flow rate monitors, and associated data acquisition systems (CEMS);

(c) Asarco has maintained a complete inventory of those spare parts that are reasonably expected to fail, which would allow Asarco to substantially replace the continuous emission and stack flow rate monitors as well as the associated data acquisition systems (CEMS);

(d) Asarco has maintained a larger inventory of spare parts for those CEMS parts which have shown a history of failure;

(e) Asarco produces evidence that it has exhausted its spare parts inventory specific to the problem or malfunction and can show evidence that additional spare parts were ordered within 2 working days of the inventory being exhausted for the specific part;

(f) Asarco produces evidence that it has taken all reasonable steps to minimize the period of inoperation of the monitor or associated data acquisition equipment (CEMS); and

(g) Asarco submits a report to the department's air quality bureau documenting that the malfunction meets the above conditions within one week of occurrence.

Asarco shall promptly notify the department's air quality bureau by telephone of the occurrence of Unusual Circumstances, as defined herein, except that if telephone notification is not immediately possible, notification at the beginning of the next working day is acceptable.

(14) "Valid Data" means data that is obtained from a continuous sulfur dioxide emission monitor, continuous temperature monitor, or continuous flow rate monitor, which meets the applicable specifications, operating requirements and quality assurance and control requirements of PART I, Sections 5 and 6 of this Exhibit A.

Section 3 Emission Limitations

(A) Daily Emissions of sulfur dioxide (SO_2) from the sulfuric Acid Plant Stack shall not exceed 4.30 tons per Calendar Day.

(B) Daily Emissions of sulfur dioxide (SO_2) from the Sinter Plant Stack shall not exceed 60.27 tons per Calendar Day.

(C) Daily Emissions of sulfur dioxide (SO_2) from the Blast Furnace Stack shall not exceed 29.64 tons per Calendar Day.

(D) In addition to the requirements of PART I, Section 3, subsections (B) and (C) above, the Daily Emissions of sulfur dioxide from the Blast Furnace Stack shall not exceed the values determined by the following equations:

Where: B = Daily Emissions of SO_2 from the Blast Furnace Stack in tons per Calendar Day (not to exceed 29.64 tons per day).

S = Daily Emissions of SO_2 from the Sinter Plant Stack in tons per Calendar Day (not to exceed 60.27 tons per day).

Equation A-04

When the Daily Emissions from the Sinter Plant Stack are less than or equal to 22.93 tons per Calendar Day, then Daily Emissions from the Blast Furnace Stack shall not exceed (per corresponding Calendar Day):

$$B = 29.64 - (0.180)(S)$$

Equation A-05

When the Daily Emissions from the Sinter Plant Stack are greater than 22.93 tons per Calendar Day but less than or equal to 54.54 tons per Calendar Day, then Daily

Emissions from the Blast Furnace Stack shall not exceed (per corresponding Calendar Day):

$$B = 38.74 - (0.577)(S)$$

Equation A-06

When the Daily Emissions from the Sinter Plant Stack are greater than 54.54 tons per Calendar Day, then Daily Emissions from the Blast Furnace Stack shall not exceed (per corresponding Calendar Day):

$$B = 76.60 - (1.271)(S)$$

(E) Given both the emission limitations contained in this Exhibit A and the modeling results upon which such limitations are based, the successful use of continuous emission and stack flow rate monitors by Asarco is critical for the department to be able to ensure that Asarco maintains compliance with the emission limits contained in this Exhibit A. Except for Unusual Circumstances, and subject to the best efforts requirements of PART I, Section 3, subsection (F), the Quarterly Data Recovery Rate for sulfur dioxide emissions from the Acid Plant Stack, Sinter Plant Stack, and Blast Furnace Stack shall each be equal to or exceed 94 percent.

Nothing in this section shall preclude enforcement action for a Quarterly Data Recovery Rate that is less than 100 percent but equal to or greater than 94 percent, if the conditions in PART I, Section 3, subsection (F) are not satisfied.

(F) In addition to complying with the minimum Quarterly Data Recovery Rates specified in PART I, Section 3, subsection (E), Asarco shall undertake its best efforts to strive for and achieve the highest Quarterly Data Recovery Rates which are practical. The determination of what is practical and therefore acceptable data loss shall be made consistent with PART I, Section 4, subsection (C).

(G) Sulfur dioxide emissions from the Concentrate Storage and Handling Building Stack (including the exhaust from the new SPVS baghouse) shall not exceed 46.00 pounds per hour or 0.552 tons per Calendar Day.

(H) Effective June 30, 1995, sulfur dioxide emissions from the Crushing Mill Baghouse Stack #1 shall not exceed 0.19 tons per Calendar Day.

(I) Effective June 30, 1995, sulfur dioxide emissions from the Crushing Mill Baghouse Stack #2 shall not exceed 0.37 tons per Calendar Day.

(J) In order to limit fugitive emissions of sulfur dioxide from the Sinter (D&L) Building, openings to the building enclosure shall not exceed 1100 square feet. Garage doors, man doors, and temporary openings necessary for maintenance and repairs shall not count against this limitation, provided Asarco keeps such openings in their closed position except when actually in use.

(K) Asarco and the department acknowledge that the control options proposed to control lead emissions from the Blast Furnace Feed Floor and the Blast Furnace Tapping Platform will also substantially increase the capture efficiency for fugitive emissions of sulfur dioxide from these sources. If a lead SIP containing control options which substantially increase the capture efficiency for fugitive sulfur dioxide emissions from these sources is not submitted by the Governor to EPA by November 15, 1995, Asarco shall by January 15, 1996 submit to the department an alternative method to ensure that emissions do not significantly increase over the levels identified in the January 20, 1992 report entitled "SO_2 Emission Inventory, Asarco Primary Lead Smelter, East Helena, Montana".

(L) Asarco shall maintain and operate all processes and systems within the Cottrell Penthouse, Mist Precipitator Building, and Pump Tank Building such that conditions which contribute to volume source sulfur dioxide emissions from these sources are not significantly degraded compared to conditions existing during the preparation of the January 20, 1992 report entitled "SO_2 Emission Inventory, Asarco Primary Lead Smelter, East Helena, Montana".

(M) Asarco shall maintain and operate all processes and systems associated with the Acid Plant Scrubber Towers such that conditions which contribute to volume source sulfur dioxide emissions from this source are not significantly degraded compared to conditions existing during the preparation of the January 20, 1992 report entitled "SO_2 Emission Inventory, Asarco Primary Lead Smelter, East Helena, Montana".

<u>Section 4</u> <u>Compliance Determinations</u>

(A) Compliance with the emission limitations contained in PART I, Section 3, subsections (A), (B), (C), and (D) shall be determined using data from the CEMS required by

PART I, Section 6. When less than 24 and greater than or equal to 20 CEMS-Derived Hourly Emission Rates are available for a Calendar Day, compliance shall be determined through the use of Equation A-02 in this Exhibit A.

When less than 20 CEMS-Derived Hourly Emission Rates are available for a Calendar Day, compliance by the Blast Furnace Stack and Sinter Plant Stack with PART I, Section 3, subsections (B), (C), and (D), as appropriate, shall be determined through the use of CEMS-Derived Hourly Emission Rates, Surrogate Hourly Emission Rates for those Operating Hours when CEMS-Derived Emission Rates are unavailable, and De Minimis Hourly Emission Rates for those hours other than Operating Hours when CEMS-Derived Hourly Emission Rates are unavailable.

(B) Compliance with the Quarterly Data Recovery Rate requirements.

(1) Compliance with the Quarterly Data Recovery Rate requirements contained in PART I, Section 3, subsection (E) shall be determined in accordance with PART I, Section 2, subsection (A)(11), with no exceptions for out-of-specification data or monitor downtime, unless such downtime is due to Unusual Circumstances as defined in PART I, Section 2, subsection (A)(13).

(2) Asarco shall have the burden of proof in demonstrating that an Unusual Circumstance has occurred through properly signed, contemporaneous operating logs, or other relevant evidence. If, as a result of Unusual Circumstances, monitoring equipment or associated data acquisition equipment are inoperable (CEMS not functioning) for more than 10 days, Asarco may continue operation of the associated process(es) (i.e., Sinter Plant, Blast Furnace, Acid Plant) only in accordance with the following:

(a) Within 10 days of the occurrence of Unusual Circumstances, Asarco shall submit to the department a corrective action plan that includes a schedule with appropriate milestones to accomplish as expeditiously as practicable, and within a period not to exceed six months, either:

(i) correction of the failure; or

(ii) development, installation (if necessary), testing, maintenance and operation of a new Continuous Emission Monitoring System.

(b) Within 10 days after or any time prior to the occurrence of Unusual Circumstances, Asarco shall submit to the department an alternative monitoring plan which describes monitoring systems or procedures to monitor compliance with emission limits until the proposed corrective action plan has been approved and fully implemented. The alternative monitoring system must be sufficiently accurate or conservative to provide reasonable assurance of compliance with the emission limitations and should incorporate progressively more accurate equipment and methodologies based upon the length of time that the Continuous Emission Monitoring System will be non-operational. If Asarco has obtained approval of an alternative monitoring plan prior to the occurrence of an Unusual Circumstance, Asarco shall implement the approved plan within 10 days of the occurrence of an Unusual Circumstance.

(c) Asarco may continue to operate the associated process(es) (ie., Sinter Plant, Blast Furnace, Acid Plant) if it is implementing an approved corrective action plan and alternative monitoring plan, or complies with the requirements of PART I, Section 4, subsections (B)(3), (4) and/or (5) below, as applicable (except where expressly provided otherwise).

(3) The department shall have 20 days from receipt to review the corrective action and alternative monitoring plans described in PART I, Section 4, subsections (B)(2) above, and may approve, require revision, or disapprove such plans as appropriate to meet the specific objectives for each plan stated in PART I, Section 4, subsection (B). Consistent with the specific requirements of PART I, Section 4, subsections (B)(4) and/or (5), as appropriate, Asarco may continue operating the associated process(es) (ie., Sinter Plant, Blast Furnace, Acid Plant) while the department conducts its review and makes a determination, even if the department fails to make a determination within 20 days.

(4) Unless the department approves the proposed corrective action plan during the department's 20-day review period provided in PART I, Section 4, subsection (B)(3), Asarco shall not implement the proposed plan during this period. Asarco may implement the proposed corrective action plan after the department's 20-day review period has passed, if the department has failed to act in a timely manner. Within 20 days of receipt of a notice from the department that the proposed corrective action plan must be revised or is disapproved, Asarco shall correct the deficiencies and obtain approval of the revised or new plan. Asarco may continue operation of the associated process(es) (ie., Sinter Plant, Blast Furnace, Acid Plant), but shall cease operation of the respective process(es) if the department's approval of a new or revised plan is not obtained within this latter 20-day period.

(5) If prior approval has not been obtained, Asarco may submit a proposed alternative monitoring plan within 10 days after the occurrence of an Unusual Circumstance, which shall be reviewed in accordance with PART I, Section 4, subsection (B)(3). Asarco shall implement the proposed plan immediately upon submittal and shall continue to implement the plan until notified in writing by the department that a revision is necessary or the plan is disapproved. Upon receipt of such written notification, Asarco may continue to implement the proposed plan, but shall seek to correct any identified deficiencies and obtain department approval of the revised or new plan within 20 days. Asarco may continue operation of the associated process(es) (ie., Sinter Plant, Blast Furnace, Acid Plant) while it awaits the department's determination but shall cease operation of the respective process(es) if the department's approval of a new or revised plan is not obtained within this latter 20-day period. If complete implementation of the approved corrective action plan does not result in fully operational CEMS, the department may require a new or revised alternative monitoring plan to account for the additional time during which the CEMS will not be operational.

(C) In regard to the Quarterly Data Recovery Rate requirements contained in PART I, Section 3, subsection (F), the determination of what is practical and therefore acceptable data loss shall consider whether:

(1) Asarco has properly operated and maintained the continuous emission monitors, stack flow rate monitors, and associated data acquisition systems (CEMS) including the performance of preventive maintenance, the maintenance of the spare parts inventory described in PART I, Section 2, subsections (A)(13)(c) and (d), and the conduct of the quality assurance requirements described in PART I, Sections 5 and 6;

(2) Asarco has taken immediate and appropriate action to correct a malfunction in the continuous emission monitors, stack flow rate monitors or associated data acquisition systems (CEMS);

(3) Unusual Circumstances have occurred, as defined in PART I, Section 2, subsection (A)(13).

If requested in writing by the department, Asarco shall provide in writing a detailed explanation, including all pertinent documentation, of any data loss that has occurred under PART I, Section 3, subsection (F) and this section (4)(C).

(D) Compliance with the emission limitations contained in PART I, Section 3, subsections (G), (H), and (I) shall be determined by emissions testing as specified in PART I, Section 5, subsections (E) and (F).

Section 5 Emission Testing

(A) Except as provided by PART I, Section 5, subsection (C), Asarco shall perform annual source testing using EPA-approved methods (Methods 1-4 and 6/6C, 40 CFR Part 60, Appendix A) or an equivalent method approved by the department, and in accordance with the Montana Source Testing Protocol (ARM 16.8.709), to accurately determine the performance of all continuous emission monitors and stack gas flow rate monitors.

(B) Except as provided by PART I, Section 5, subsection (C), Asarco shall conduct quarterly Certified Gas Audits (CGA) or Relative Accuracy Audits (RAA).

(C) Asarco shall certify all continuous emission monitors on an annual basis using the Relative Accuracy Testing Audit (RATA) described in 40 CFR Part 60, Appendix F. The RATA testing will satisfy the requirements for one of the quarterly audits required by PART I, Section 5, subsection (B), the annual source test required by PART I, Section 5, subsection (A), and the annual Method 2

Test required by PART I, Section 6, subsection (E)(4).

(D) Asarco shall provide a minimum of ten (10) days advance notice to the department of each continuous emission monitor certification activity, to provide an opportunity for the activity to be observed by department personnel.

(E) Asarco shall perform annual source testing on the Concentrate Storage and Handling Building Stack using EPA-approved methods (Methods 1-4 and 6/6C, 40 CFR Part 60, Appendix A) or an equivalent method approved by the department, and in accordance with the Montana Source Testing Protocol (ARM 16.8.709). Asarco shall conduct the first annual source test in 1994, and conduct such annual testing through 1998. After the 1998 source test, Asarco may request that the department review the necessity of continued annual testing for the CSHB. Based on a review of the results of the annual testing performed by Asarco, the department may determine that the annual testing requirement is no longer appropriate, and may notify Asarco in writing of a new testing schedule for the CSHB.

(F) Upon request of the department, Asarco shall perform source testing on the Crushing Mill Baghouse Stack #1 and the Crushing Mill Baghouse Stack #2 using EPA-approved methods (Method 1-4 and 6/6C, 40 CFR Part 60, Appendix A) or an equivalent method approved by the department, and in accordance with the Montana Source Testing Protocol (ARM 16.8.709).

Section 6 Continuous Monitoring

(A) Asarco shall operate and maintain continuous emission monitors to measure sulfur dioxide concentrations from the Acid Plant Stack, the Sinter (D&L) Plant Stack, and the Blast Furnace Stack.

(B) Asarco shall operate and maintain continuous stack flow rate monitors to measure the stack gas flow rates from the Acid Plant Stack, the Sinter (D&L) Plant Stack, and the Blast Furnace Stack.

(C) The data from the continuous emission and stack flow rate monitors required by PART I, Section 6, subsections (A) and (B), above, shall be used to determine compliance with the Daily Emissions limits set forth in PART I, Section 3, subsections (A), (B), (C), and (D).

(D) Asarco shall operate, maintain, and test each continuous emission monitor required by this Exhibit A in accordance with the requirements of 40 CFR Part 60, Appendix B - Performance Specification Nos. 2 and 6. Asarco shall also implement quality assurance and quality control procedures in accordance with the requirements of 40 CFR Part 60, Appendix F.

(E) Asarco shall operate, maintain, and test all stack flow rate monitors required by this Exhibit A in accordance with the requirements of 40 CFR Part 75, Appendix A, Continuous Emission Monitoring, Specifications and Test Procedures. In addition, Asarco shall conduct:

(1) a daily blow-back or back purging of the pitot tube;

(2) a quarterly check of stack velocities and flow rates by performing a velocity traverse;

(3) a quarterly visual inspection of the pitot tubes, in conjunction with the quarterly stack velocities and flow rate checks; and

(4) an annual Reference Method 2 test (Determination of Stack Gas Velocity and Volumetric Flow Rate).

Notwithstanding the operation and maintenance requirements specified by 40 CFR Part 75, Asarco shall not exceed a relative accuracy of 15%.

Asarco shall conduct stack flow rate monitor performance testing at the plant's normal operating load/production rate, and shall not be required to perform this at three plant operating loads as specified in 40 CFR Part 75.

(F) If the activities required in PART I, Section 6, subsection (E)(3) indicate a worn or damaged pitot tube, the pitot tube will be replaced and a velocity traverse will be performed to confirm the accuracy of the new pitot tube.

(G) For each continuous emission monitor required by this Exhibit A, Asarco shall perform three zero/spans (Z/S) per day (one per eight hour shift). Asarco may conduct the daily Z/S checks using an electro-optical method, however, at least one Z/S per calendar week must be conducted using a certified calibration gas.

(H) Notwithstanding the requirements of PART I, Section 6, subsections (D) and (G), if any zero/span exceeds 2.5 percent calibration drift, Asarco shall immediately initiate calibration procedures or corrective action to correct the problem.

(I) Asarco shall develop, maintain, and utilize Quality Assurance and Quality Control and Standard Operating Procedures (QA/QC and SOP) documents specifically for the instruments and equipment that Asarco is using for continuous emission monitoring and stack gas flow rate monitoring (CEMS). These documents will detail specific operational controls, procedures and requirements that are designed to insure the collection of data which meets the requirements of this Exhibit A. If any instrument or equipment is changed or other hardware is placed into service, new QA/QC and SOP documents must be developed as appropriate for the new equipment. These documents, and any modifications thereto, are subject to review and approval by the department, as described below.

(1) Asarco shall submit the QA/QC and SOP documents for the existing CEMS to the department for review prior to implementation. Any modifications to the QA/QC and SOP documents shall be submitted to the department within 60 days after implementation. The department shall approve, require revision, or disapprove the QA/QC and SOP documents, or any modifications thereto, within 90 days after submittal by Asarco.

(2) Asarco shall implement the QA/QC and SOP documents for the existing CEMS no later than July 1, 1994, and for any modification when the modification is installed or implemented. Asarco shall continue to implement the QA/QC and SOP documents or any modifications until the receipt of a written notice of revision or disapproval from the department. Pending the department's action on any submitted QA/QC and SOP documents or modifications, CEMS data gathered using equipment or procedures to which such documents apply may be used to satisfy Asarco's Quarterly Data Recovery Rate requirements if Asarco is implementing such QA/QC and SOP documents.

(3) Upon receipt of a written notice of revision or disapproval from the department, Asarco may continue to implement the QA/QC and SOP documents or any modifications, but shall seek to correct any identified deficiencies and obtain department approval of the revised or new documents within 30 days. During this 30-day period, data from the CEMS may continue to be used to satisfy Asarco's Quarterly Data Recovery Rate requirements if Asarco is implementing such QA/QC and SOP documents. Data collected from the CEMS after this 30-day period, will be invalid and cannot be used to satisfy

Asarco's Quarterly Data Recovery Rate requirements unless the QA/QC and SOP documents related to the CEMS have been approved by the department.

Section 7 Data Reporting

(A) Asarco shall record, organize, and archive for at least three years the following data collected by or derived from the continuous emission monitors and the stack gas flow rate monitors required by this Exhibit A (CEMS):

(1) hourly average sulfur dioxide concentrations in ppm;

(2) hourly average stack volumetric flow rates in scfm;

(3) hourly average stack gas temperature in °F;

(4) CEMS-Derived Hourly Emission Rates;

(5) Daily Emissions of sulfur dioxide in tons per Calendar Day; and

(6) Quarterly Data Recovery Rate expressed in percent.

(B) Asarco shall, within 30 days after the end of each calendar quarter, submit to the department a written report for that quarter that includes the following:

(1) All information regarding excess emissions (in accordance with EPA guidance), including all SO_2 continuous emission monitor data and stack gas flow rate monitor data necessary to determine that emission limits have been exceeded. The information shall include, for each Calendar Day on which emission limits are exceeded, hourly average sulfur dioxide concentrations, hourly average stack gas flow rates, CEMS-Derived Hourly Emission Rates, Daily Emissions, and the daily data recovery rate for the appropriate stacks.

(2) The Quarterly Data Recovery Rate for each of the CEMS serving the Sinter Plant Stack, Blast Furnace Stack, and Acid Plant Stack. Asarco shall submit supporting data necessary to determine the number of Operating Hours for the Sinter Plant Stack, Blast Furnace Stack, and Acid Plant Stack.

(3) All Surrogate and De Minimis Hourly Emission Rate data, and extrapolated (Equation A-02) emission rate data, including the following:

(a) Calendar Days for which Surrogate Hourly Emission Rates were used to determine compliance with Daily Emission limits;

(b) Calendar Days for which Equation A-02 was used to determine compliance with Daily Emission limits;

(c) Calendar Days for which De Minimis Hourly Emission Rates were used to determine compliance with Daily Emission limits;

(d) specific Clock Hours for which emissions were determined by using Surrogate Hourly Emission Rates, De Minimis Hourly Emission Rates, or Equation A-02;

(e) for each Calendar Day on which Surrogate Hourly Emission Rates are used, a list of the Surrogate Hourly Emission Rates and the Daily Emissions for each such Calendar Day, and all data and analysis on which such rates are based, consistent with Appendix A-1.

(C) Upon request by the department, Asarco shall provide the department with any of the data archived in accordance with PART I, Section 7, subsection (A). The data shall be submitted to the department on magnetic media compatible with the department's data management system.

(D) Asarco shall, except when Surrogate Hourly Emission Rates are utilized, determine the Daily Emissions for the Acid Plant Stack, the Blast Furnace Stack, and the Sinter (D&L) Plant Stack at the conclusion of each Calendar Day. When Surrogate Hourly Emission Rates are necessary to determine the Daily Emissions for either the Sinter Plant Stack or the Blast Furnace Stack, Asarco shall determine the Daily Emissions for that Calendar Day within seven (7) days from that date. If requested, Asarco shall provide the Daily Emissions determination and underlying data from any prior Calendar Day to a representative of the department or EPA.

Section 8 Additional Requirements and Conditions

(A) Notwithstanding the testing that is required and specified by this Exhibit A, the department may require additional emissions testing on sources in the plant per ARM 16.8.704, Testing Requirements.

(B) Asarco shall maintain a copy of the final Order of the

Board of Health and Environmental Sciences (that adopts and incorporates this Exhibit A and Appendix A-1) including a copy of this Exhibit A and Appendix A-1, at the East Helena Facility, and make the copy available for inspection by department or EPA personnel upon request.

(C) Asarco shall comply with all other applicable state, federal and local laws and regulations.

Section 9 General Conditions

(A) Inspection - The department, for the purpose of ascertaining the state of compliance with all requirements contained in the final Order of the Board of Health and Environmental Sciences (that adopts and incorporates this Exhibit A and Appendix A-1), this Exhibit A, and Appendix A-1, may enter and inspect, at any reasonable time, any property, premises, or place owned or operated by Asarco at the facility in East Helena. Asarco may not refuse entry or access to an authorized representative of the department who presents appropriate credentials when the department requests entry for purposes of inspection.

As part of any inspection, the department's representatives shall be allowed to conduct surveys, collect samples, obtain data, audit monitoring equipment, or observe any monitoring or testing, and otherwise conduct all necessary functions related to Exhibit A, Appendix A-1, and the final Order of the Board of Health and Environmental Sciences (that adopts and incorporates this Exhibit A and Appendix A-1).

All inspections pursuant to this PART I, Section 9, subsection (A) shall be conducted in compliance with all applicable federal or state rules or requirements for workplace safety and Asarco East Helena plant safety rules or requirements. Asarco shall inform the department representatives of all applicable workplace safety rules or requirements at the time of the inspection. Nothing contained in this PART I, Section 9, subsection (A) shall be construed to limit the department's statutory right of entry and inspection as provided for in Section 75-2-403, MCA.

(B) Compliance with Statutes and Regulations - Specific listing of requirements, limitations, and conditions contained herein does not relieve Asarco from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the department to require compliance with all applicable statutes and administrative regulations, including amendments thereto.

(C) Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for judicial or administrative enforcement action.

PART II ANALYSIS OF CONDITIONS

Section 1 Process Description

Feed materials received into the Asarco East Helena Plant are delivered by either railcar or by haul truck. All incoming, unprocessed lead bearing concentrates are handled in the Concentrate Storage and Handling Building (CSHB). This building is designed to enclose and ventilate the unloading, storage, mixing, blending, and conveying operations of nearly all the materials to be smelted. The material unloaded in the CSHB are fed by overhead crane into a series of feeder bins and beltlines that deliver the mixed new material to the Sinter Plant.

The purpose of the Sinter Plant is to reduce the sulfur content of the new, unprocessed ore concentrate mix to approximately 1.5% and to produce a porous agglomerated material, called sinter, which is visually similar to lava and suitable for smelting in the Blast Furnace. Strong process gases generated from the front end of the sintering operation are drawn through an electrostatic precipitator which removes 99% of the particulate and produces an optically clear gas for the Acid Plant. The dried gas containing sulfur dioxide reacts with oxygen in the presence of a catalyst to form sulfur trioxide gas. This sulfur trioxide gas is converted to sulfuric acid in a final absorption tower. Weak gas from the back end of the sinter operation and ventilation air are distributed to the sinter baghouse and vented to the Sinter Plant Stack.

The sinter or roast produced in the sintering operation is mixed with coke and byproducts to make up the charge to the Blast Furnace. The charge is smelted in an oxygen-enriched Blast Furnace to produce molten lead bullion and slag. The lead bullion is removed to the dross plant for further processing. The slag is cooled in large molds and eventually transported in a solid state to the slag pile. The lead bullion is poured into 90-ton kettles where it is cooled, fluxed, and stirred, which causes the copper bearing material (called dross) to rise to the top of the kettle. The dross is skimmed off and charged to the dross reverberatory furnace. The remaining lead is pumped into 10-ton molds, cooled, and shipped to the Asarco Omaha refinery for further processing.

The copper bearing dross is melted in a reverberatory furnace where it is separated into matte, speiss, and lead. The matte (copper sulfide) and speiss (copper antimony and arsenide) are tapped from the furnace, cooled, and shipped to one of the Asarco copper refineries for further processing. The lead is returned to the drossing plant.

Section 2 Determination of Emissions from CEM Data

In order to comply with emission limits that apply to the Sinter Plant Stack, Blast Furnace Stack and Acid Plant Stack, it will be necessary for Asarco to develop a reliable system to monitor and control its operations to assure that such emission limits are not exceeded. Such a system might be based upon real-time monitoring of CEMS data and/or such other data or process monitoring as may be necessary and appropriate to assure compliance.

The net result of the compliance demonstration submitted by TRC (Asarco's consultant) is to provide greater flexibility for the two largest sources of sulfur dioxide (SO_2) emissions. The intent of the demonstration is to allow Asarco to increase the SO_2 emissions from the Blast Furnace Stack, with the Sinter Plant Stack emissions as the controlling parameter. In other words, if the emissions from the Sinter Plant Stack are high, then the emissions from the Blast Furnace Stack must be lower (normal). If the Sinter Plant process is slowed down or stopped, then the emissions from the Blast Furnace would be allowed to be higher than normal.

The modeling performed by TRC (Asarco's consultant), and submitted by Asarco as their compliance demonstration for the primary SO_2 NAAQS, focused upon meeting the primary 24-hour SO_2 NAAQS (365 micrograms per cubic meter (0.14 ppm), maximum 24-hour concentration, not to be exceeded more than once per year). Demonstrating compliance with this 24-hour standard also results in compliance with the primary annual SO_2 NAAQS. This analysis did not address compliance with the secondary SO_2 NAAQS (a 3-hour standard).

Modeling the emissions from the Sinter Plant Stack as the Control for setting the emissions from the Blast Furnace Stack generates the following emission parameters (From Part I, Section 2.B.4):

$0.00 < S \leq 22.93$	(Eq.A-04)	$B \leq 29.64 - (0.180)S$
$22.93 < S \leq 54.54$	(Eq.A-05)	$B \leq 38.74 - (0.577)S$
$54.54 < S \leq 60.27$	(Eq.A-06)	$B \leq 76.60 - (1.271)S$

Where S is the emission from the Sinter Plant Stack, and B is the emission from the Blast Furnace Stack, both in tons/day.

The following discussion is an example method which will allow Asarco to continuously track compliance with the emission limitations and conditions in this Exhibit A, and to take corrective action (production or process changes), if necessary, in order to ensure compliance.

S and B may be determined as follows:

Let "ß" be the concentration of SO_2 in the gases being emitted from the Blast Furnace Stack. ß is determined, on a wet basis, by a Continuous Emission Monitor (CEM) and reported in parts per million (ppm).

Let "Q_B" represent the volumetric gas flow rate of the Blast Furnace Stack (in standard cubic feet per minute, or scfm). This value is measured on a wet basis (actual), and reported as cubic feet per minute. It is reduced to Standard Conditions (20°C and 1 atmosphere) for determination of the mass emission rate.

Then B, the emission rate of the Blast Furnace Stack, can be determined at any time by the following equation (Eq. A-07):

$$B = Q_B \cdot \beta \cdot (1.1952 \times 10^{-7}) = X \text{ Tons/Day}$$

Stack gas volumetric flow rates for the sources addressed by this Exhibit A are reduced to Standard Conditions (20°C and 1 atmosphere of pressure), prior to calculating mass emission rates.

Similarly, let "α" represent the concentration of SO_2 present in the Sinter Plant Stack gases (wet basis determination) as reported by the CEM. Then "Q_S", the Sinter Plant Stack gas flow rate (in scfm), is determined concurrently with the Sinter Plant Stack SO_2 concentration.

Then S, the emission rate of the Sinter Plant Stack, can be determined at any time by the equation (Eq. A-08):

$$S = Q_S \cdot \alpha \cdot (1.1952 \times 10^{-7}) = Y \text{ Tons/Day}$$

These two equations, A-07 and A-08, provide a simple relationship between the concentration of SO_2 in the stack gas and the emission rate.

The conversion, 1.1952×10^{-7}, is generated from the EPA conversion listed in 40 CFR, Part 75, Appendix F, Equation F-1 (Vol. 58, No. 6, Fed. Reg., January 11, 1993). Accordingly, for wet basis measurements of SO_2 concentration and flow rate:

$$1 \text{ ppm } SO_2 = \frac{\text{lb}}{\text{scf}} SO_2 \cdot (1.660 \times 10^{-7})$$

{Conversion Valid for Reference Conditions: 20°C & 1 atm.}

The emission parameters discussed above were derived with the following additional emission limitations utilized as assumptions:

(A) the Acid Plant (Source 8) emissions are relatively constant, and can be held at or below 4.3 tons/day of SO_2 emitted;

(B) the Concentrate Storage and Handling Building (Source 6), will have a maximum emission rate of 0.552 tons/day (46.00 lb/hr) of SO_2;

(C) the emission rates of all <u>OTHER</u> miscellaneous emission sources remain constant.

Section 3 Determination of Emissions from Surrogate Parameters

Asarco, in an effort to demonstrate compliance with their emission envelope, will employ an alternative monitoring scheme to determine emissions data for those plant operating hours when the CEMS are inoperative.

The alternative monitoring scheme requires the monitoring of process parameters (sinter plant and blast furnace) such as raw material feed rate and sulfur in the feed rate. These "surrogate" parameters have been correlated with emissions and will be used to calculate Surrogate Hourly Emission Rates for both the Sinter Plant Stack and the Blast Furnace Stack.

Surrogate Hourly Emission Rates will be used in conjunction with the CEMS-Derived Hourly Emission Rates to determine the Daily Emissions of the Sinter Plant and the Blast Furnace, but only when less than 24 hours of CEMS-Derived Hourly Emission Rates are available for either source on a given Calendar Day. A detailed discussion of surrogate parameters and their relationship to emissions can be found in Appendix A-1 of this Exhibit A.

Section 4 De Minimis Hourly Emission Rates

De Minimis Hourly Emission Rates were developed to assign emission rates to the Sinter Plant Stack and Blast Furnace Stack whenever the associated process(es) (ie., Sinter Plant, Blast Furnace) is shutdown and the associated CEMS is inoperative. De Minimis Hourly Emission Rates were determined by Asarco through the review of historical CEMS-derived emissions data for both the Sinter Plant Stack and the Blast Furnace Stack, gathered when the respective process was shutdown.

If either the Sinter Plant or Blast Furnace are operating, but not both, and the CEMS associated with the process that is shutdown is also not operating, then the De Minimis Hourly Emission Rate that is applicable to the process that is shutdown will be used to determine compliance with the emission envelope.

Section 5 Applicable Rules and Regulations

Asarco is subject to all requirements of the federal Clean Air Act, 42 U.S.C. sections 7401, et seq., as amended, the Clean Air Act of Montana, Title 75, Chapter 2, MCA, and all rules and regulations promulgated pursuant to those statutes, including but not limited to the following:

(A) Administrative Rules of Montana (ARM) 16.8.820, Ambient Air Quality Standards for Sulfur Dioxide;

(B) ARM 16.8.1414, Sulfur Oxide Emissions -- Lead or Lead/Zinc Smelting Facilities (proposed for repeal on September 23, 1994);

(C) ARM Title 16, Chapter 8, Sub-Chapter 7, General Provisions;

(D) ARM Title 16, Chapter 8, Sub-Chapter 9, Prevention of Significant Deterioration of Air Quality;

(E) Section 75-2-203, MCA, Board to set Emission Levels;

(F) 40 CFR section 50.4, National Primary Ambient Air Quality Standard for Sulfur Oxides;

(G) 40 CFR Part 60, Subparts A and R, Standards of Performance for Primary Lead Smelters (applicable in the event of a modification or reconstruction of the affected facility);

(H) 40 CFR Part 60, Appendix A, Source Test Reference Methods 6 and 6C;

(I) 40 CFR Part 60, Appendix B, Performance Specification Nos. 2 and 6;

(J) 40 CFR Part 60, Appendix F, Quality Assurance Requirements for gas CEM systems used for compliance determination;

(K) 40 CFR Part 75, Appendix A, Specifications and Test Procedures; and

(L) 40 CFR Part 75, Appendix F, Conversion Procedures.

Section 6 RACM / RACT Determination

RACM / RACT, for this source, is that control technology which is necessary to meet the appropriate NAAQS (in this case, the primary SO_2 NAAQS). The Asarco Acid Plant is the primary SO_2 control for the Sinter Plant. This degree of control is generally considered RACT for this type of source, and when combined with operational and process controls will achieve and maintain the primary SO_2 NAAQS.

Section 7 Emission Inventory - SO_2

EAST HELENA SO_2 EMISSION INVENTORY SUMMARY*			
SOURCE	**EMISSION RATE**		
→Point Sources←	ppm	lbs/hr	Tons/Dy
Crushing Mill Baghouse Stack #1	14.5	3.1437	0.0377
Crushing Mill Baghouse Stack #2	40.8	6.1590	0.0739
Sinter Plant [D & L] Baghouse Stack	2090.2	3148.894	37.7867
Acid Plant Stack	434.4	238.0998	2.8572
Blast Furnace Baghouse Stack	491.6	1240.7	14.889
Water Treatment Plant - South Tank Vent (Removed from Service)	160.6	2.6278	0.03155
Water Treatment Plant - North Tank Vent (Removed from Service)	83.0	1.4522	0.01745
→Volume Sources←			
Sinter [D & L] Building	25.3	9.3028	0.03255
Cottrell Penthouse	1.8	0.1065	0.0013
Blast Furnace Feed Floor	0.5	0.9002	0.0108
Blast Furnace Tapping Platform	2.5	2.9769	0.0357
Water Treatment Plant - North Building (Removed from Service)	7.5	0.0104	0.2503
Water Treatment Plant - Swimming Pool Building (Removed from Service)	45.4	2.0597	0.0247
Mist Precipitator Building	10.7	2.7100	0.03252
Pump Tank Building	7.3	0.3845	0.00462
→Fugitive Sources←			
Acid Plant Scrubber Towers	N/A	1.0311	0.01237

* Gathered from report: "SO_2 EMISSION INVENTORY, ASARCO PRIMARY LEAD SMELTER, EAST HELENA, MONTANA"; NAWC Report AQ 92-1A. Report received by MAQB 01-22-92.

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES
Air Quality Bureau
Cogswell Building, Helena, Montana 59620
(406) 444-3454

ENVIRONMENTAL ASSESSMENT (EA)

Project or Application: Asarco Incorporated, Air Quality Control Strategy for sulfur dioxide in the East Helena, Montana, area, as part of the Montana State Air Quality Control Implementation Plan (SIP).

Description of Project: Asarco owns and operates a primary lead smelter in East Helena, Montana. The facility is located adjacent to, and directly South of Highway 12 East and the municipality of East Helena, and is the only significant source of SO_2 emissions in this area. The East Helena area is a designated nonattainment area for sulfur dioxide, and the department is required to prepare a control strategy for SO_2 that will achieve and maintain compliance with the primary SO_2 National Ambient Air Quality Standards (NAAQS).

Benefits and Purpose of Proposal: This control strategy identifies the SO_2 sources at the Asarco smelter, and makes enforceable emission limitations and conditions for those sources. Implementation of the terms of the control strategy will lead to achievement and maintenance of the primary SO_2 NAAQS in the East Helena area (this control strategy does not address compliance with either the secondary SO_2 NAAQS or the Montana Ambient Air Quality Standards for SO_2).

Description and analysis of reasonable alternatives whenever alternatives are reasonably available and prudent to consider: No reasonable alternatives are available.

A listing and appropriate evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency: A list of the enforceable conditions, limitations and requirements is contained in the control strategy (the final Order of the Board of Health and Environmental Sciences adopting and incorporating Exhibit A and Appendix A-1, Exhibit A, and Appendix A-1).

Recommendation: An EIS is not needed.

If an EIS is needed, and if appropriate, explain the reasons for preparing the EA: N/A

If an EIS is not required, explain why the EA is an appropriate level of analysis:

- The current actual emissions from this smelter have been modeled to be in compliance with the primary SO_2 NAAQS.

- The emissions allowed under this control strategy have also been modeled, and result in compliance with the primary SO_2 NAAQS.
- The emissions from this smelter will not increase above current allowed levels.
- This action makes the emission limitations and conditions contained in the control strategy enforceable by the department pursuant to Montana law.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

Individuals or groups contributing to this EA: Department of Health and Environmental Sciences, Air Quality Bureau.

EA prepared by: Jack Dartman

Date: December 17, 1993

Potential Impact on Physical Environment

		Majo r	Moderate	Minor	None	Unknown	Comments Attached
1	Terrestrial and Aquatic Life and Habitats				X		
2	Water Quality, Quantity and Distribution				X		
3	Geology and Soil Quality, Stability and Moisture				X		
4	Vegetation Cover, Quantity and Quality				X		
5	Aesthetics				X		
6	Air Quality			X			
7	Unique Endangered, Fragile or Limited Environmental Resource					X	
8	Demands on Environmental Resource of Water, Air and Energy			X			
9	Historical and Archaeological Sites					X	
10	Cumulative and Secondary Impacts			X			

Potential Impact on Human Environment

		Major	Moderate	Minor	None	Unknown	Comments Attached
1	Social Structures and Mores				X		
2	Cultural Uniqueness and Diversity				X		
3	Local and State Tax Base and Tax Revenue			X			
4	Agricultural or Industrial Production			X			
5	Human Health			X			
6	Access to and Quality of Recreational and Wilderness Activities				X		
7	Quantity and Distribution of Employment			X			
8	Distribution of Population				X		
9	Demands for Government Services			X			
10	Industrial and Commercial Activity			X			
11	Locally Adopted Environmental Plans and Goals			X			
12	Cumulative and Secondary Impacts			X			

of its stipulated control plan for low-level emission of SO_2, filed April 28, 1978, based on the terms of Paragraph 10 of a Stipulation and Agreement entered into by ASARCO and the Department on September 30, 1977, and incorporated by reference into the Order of the Board of Health and Environmental Sciences ("Board") dated October 25, 1977 regarding such variance. (Enclosures D, E).

Section 172 of the federal Clean Air Act requires that any state which designates an area as non-attainment must amend its SIP to achieve compliance with the applicable National Ambient Air Quality Standard (NAAQS) "as expeditiously as practicable, but, in the case of national primary ambient air quality standards, not later than December 31, 1982." Section 172(a)(1). Section 172(b) of the federal Clean Air Act sets forth requirements for the SIP revisions required by Section 172(a). (See Enclosure F.)

The information set forth herein is for the purpose of substantiating that the proposed revision to the Montana SIP will meet the requirements of the federal Clean Air Act, the Montana Clean Air Act, and associated statutes and regulations pertaining thereto, with respect to the aforesaid designation of non-attainment areas. The following enclosures are part hereof and support this request for a SIP revision:

A - Montana State Ambient Air Quality Control Implementation Plan, Ch. 3;

B - Letter from A.C. Knight to Alan Merson dated January 6, 1978, recommending areas as non-attainment for sulfur oxides and total supended particulates (TSP) (in pertinent part);

C - 43 Fed. Reg. 8962 (March 3, 1978) designating certain areas non-attainment for sulfur oxides and total suspended particulates (in pertinent part);

D - Stipulation and Agreement of September 30, 1977;

E - Order of the Board of Health and Environmental Sciences dated October 25, 1977 (incorporating the Stipulation and Agreement of September 30, 1977);

F - § 172 of the Clean Air Act, 42 U.S.C. § 7502;

G - 40 C.F.R. §§ 51.4, 51.6 (revision of SIP's);

H - A.R.M. 16-2.14(1)-S1470(2)-Sulfur Oxide Emissions - Primary Non-Ferrous Smelters;

I - Stipulation of June 5, 1974;

J - Application for Renewal of Variance filed by ASARCO on April 28, 1978;

K - Agreement between ASARCO Incorporated and the Department of Health and Environmental Sciences dated February 1, 1978 regarding study plan to be conducted with respect to ASARCO's plant.

L - 40 Fed. Reg. 43216 (Sept. 19, 1975) - Montana SIP Revision relating to ASARCO Incorporated;

M - § 123 of the Federal Clean Air Act, 42 U.S.C. § 7423.

N - Proposed Montana regulations governing stack heights;

O - Summation of results of air quality dispersion modeling conducted, assuming proposed blast furnace baghouse stack;

P - Engineer's drawing of proposed blast furnace baghouse stack;

Q - New Source Performance Standards, 39 Fed. Reg. 37040 (October 16, 1974); 41 Fed. Reg. 2332 (January 15, 1976);

R - Montana New Source Performance Standards, A.R.M. 16-2.14(1)-S14082.

To comply with the public hearing procedures set forth in 40 C.F.R. § 51.4 (Enclosure G), one copy of the enclosures hereto and of any other pertinent documents must be made available for inspection at a location in the Helena Intrastate Air Quality Control Region, which location is assumed will be in the Department's office. Additional copies have been submitted for use by the Department as may be required.

BACKGROUND: SO_2

Current Montana Air Quality Regulation A.R.M. 16-2.14(1)-1470(2) (Enclosure H) requires a primary non-ferrous smelter the size of ASARCO's East Helena complex to reduce its sulfur dioxide (SO_2) emissions by approximately 94%. ASARCO, based on a Stipulation entered into by it and the Department on June 5, 1974 (Enclosure I), obtained a variance from this regulation on September 5, 1974, such variance to run for a period of one year commencing on July 1, 1974. Under the Stipulation of June 5, 1974 ASARCO agreed to construct a sulfuric acid plant as a pollution control facility. The purpose of this plant is to convert SO_2 from the sinter plant off-gases to sulfuric acid by a catalytic process. Since that time, ASARCO has applied for and been granted annual variance renewals through June 30, 1978, for the purpose of completing acid plant construction and testing. A request for a renewal of this variance, to cover the period July 1, 1978 through June 30, 1979, has been applied for and is pending. (Enclosure J.) All such variances and renewals, granted and applied for, are in accordance with the original Stipulation of June 5, 1974 (Enclosure I).

The acid plant construction phase was completed on schedule in July, 1977. There is currently in progress a joint study of the operation of the ASARCO plant, being conducted by ASARCO and the Department. (Enclosure K). The purpose of this study, which was agreed to in the Stipulation and Agreement of September 30, 1977 (Enclosure D), is to analyze plant operations to determine whether the SO_2 emission limitations under which ASARCO is operating (Enclosure L) are sufficient to protect the health and welfare of the citizens of Montana.

ASARCO believes that the joint study, which will be completed in February, 1979, will conclude that current levels of sinter plant emission control are more than sufficient to protect the health and welfare of Montana's citizens. However, it has recently become evident that there is another problem which had not been taken into consideration and which is totally unrelated to the sinter machine SO_2 emissions. This new problem relates to low-level SO_2 emissions, which over the past year have caused NAAQS to be violated at air quality monitors near the smelter. This low volume of low-level emissions of weak, variable-strength gases has been traced to the blast furnace baghouse and their relatively short stacks associated therewith. The emissions cause readings relatively near the plant in excess of the NAAQS. It is evident that these violations are not the product of emissions from the acid plant or sinter plant.

These low-level problems caused a circular area centered on the East Helena smelter complex to be classified as a SO_2 non-attainment area on January 6, 1978 pursuant to § 107 of the Clean Air Act. (See Enclosures B, C).

Under terms of Paragraph 10 of the Stipulation and Agreement of September 30, 1977 (Enclosure D), as amended by an Order effected by the Board on March 10, 1978, ambient air quality levels exceeding NAAQS caused by low-level emissions would not be considered violations for a period ending May 1, 1978. If a problem with low-level emissions continued after that date, ASARCO was to submit a proposal for compliance with NAAQS. ASARCO submitted its proposal on April 28, 1978, providing for construction of a new blast furnace baghouse stack.

BACKGROUND: TSP

In his letter of January 6, 1978 to the Region VIII Administrator, Dr. Knight proposed that a portion of the East Helena area be designated non-attainment for TSP, because the national secondary ambient air quality standard for particulates had been violated during the year 1976. In the proposal, it was stated that: "The East Helena area is a localized problem which is proposed for designation because of the nearness of an industrial slag dump and contaminated soil." (Enclosure B).

PROPOSAL

(1) ASARCO proposes that Chapter 5 of the Montana SIP be revised as follows:

PARTICULATE MATTER

. . .

4) Non-Attainment Areas

Section 107 of the federal Clean Air Act, 42 U.S.C. § 7407, requires Montana to designate those areas that fail to meet National Ambient Air Quality Standards (NAAQS) for particulates.

a. East Helena - The State of Montana submitted a non-attainment designation for a portion of the East Helena area on January 6, 1978. This non-attainment designation is codified at 40 C.F.R. § 81.327. ASARCO Incorporated shall take the following steps to achieve compliance with the NAAQS. These steps are considered consistent with the requirements of A.R.M. 16-2.14 (1)-S1430 (Particulate Matter, Industrial Processes) and A.R.M. 16-2.14(1)-S1440 (Particulate Matter, Airborne):

Facility	Control Strategy
(a) Slag piles, ASARCO Incorporated, East Helena Lead-zinc smelter.	Spray piles with water or other coating material periodically as needed to minimize airborne particulate matter.

SULFUR OX[illegible]

. . .

3) Non-attainment Regions

a. East Helena - Section 107 of the federal Clean Air Act, 42 U.S.C. § 7407, requires Montana to designate those areas that fail to meet National Ambient Air Quality Standards (NAAQS) for sulfur oxides. The State of Montana submitted such a designation for a portion of the East Helena area on January 6, 1978. This non-attainment designation is codified at 40 C.F.R. § 81.327. ASARCO Incorporated will construct a 375 foot stack to vent the weak, low volume SO_2 gases from the blast furnace baghouses. In addition, ASARCO Incorporated will limit its emissions from such stack to the allowable amount of sulfur dioxide set forth below:

Facility	Emission Limit
(a) Blast Furnace Baghouse Stack	23 tons/day (5.75 tons per six hour period);

A point source diffusion model was employed to assess the effects of this control strategy on ambient levels of SO_2. The modeling was conducted for a stack 375 feet in height, which corresponds to good engineering practices pursuant to

Section 123 of the federal Clean Air Act, 42 U.S.C. § 7423. Modeling discloses that the allowable SO_2 emissions from a stack of 375 feet will cause the National Ambient Air Quality Standards to be attained and maintained.

RATIONALE

A. Particulates Strategy.

With regard to the non-attainment for TSP, the control strategy presented is the only manner in which further control can and should be exercised. The non-attainment designation was based on two isolated instances in 1976 when the secondary TSP standard was violated. It is recognized in the Montana SIP that dirt roads in the area probably contribute to any particulate problem that still may exist. Moreover, there have been no violations of the NAAQS since 1976, therefore the violations cited may have resulted from road construction that was in progress in the area at that time. The only reason for the designation was the very strict requirement levied by EPA with respect to the number of violations required over what period of time to cause such designation. The spraying that will be conducted by ASARCO will minimize airborne particulate matter.

B. Sulfur Oxide Strategy.

Pursuant to § 123 (Enclosure H) of the federal Clean Air Act, ASARCO may utilize a stack, the height of which does not exceed good engineering practice (GEP). That height is defined in the federal Clean Air Act as "the height necessary to insure that emissions from the stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of the source as a result of atmospheric downwash, eddies and wakes which may be created by the source itself, nearby structures or nearby terrain obstacles." Due to peculiar features in the East Helena area, that height is 375 feet. The construction of this stack will also comply with the applicable requirements of the Montana Administrative Regulations, as currently proposed. (Enclosure N).

Dispersion modeling conducted on a stack of 375 feet in height (Enclosure O) discloses that with a maximum emission limitation of 23 tons per day SO_2, NAAQS will be attained and maintained. Thus, ASARCO would be limited to 23 tons per day emissions from the blast furnace baghouse stacks. ASARCO proposes to construct the 375 foot stack (Enclosure P) as expeditiously as possible on the basis of increments of progress which will allow not more than 24 months for completion of construction after approval of the plans therefor.

It should be noted that in its New Source Performance Standards, EPA has determined after thorough investigation and analysis, that the only appropriate control technology for control of weak SO_2 gases from lead smelter blast furnaces is the dispersion thereof through a properly constructed stack. 39 Fed. Reg. 37040 (Oct. 16, 1974); 41 Fed. Reg. 2332 (Jan. 15, 1976) (Enclosure Q). Montana has adopted these NSPS by its A.R.M. 16-2.14(1)-S14082 (Enclosure R). ASARCO has also investigated this matter and concurs with these findings. Venting the weak and variable strength blast furnace gases through the proposed new baghouse stack constitutes that degree of control which is appropriate in the case of new sources. Therefore such control is obviously proper for existing sources.

A detailed time schedule for carrying out the SIP revisions proposed herein will be set forth in a separate Stipulation entered into by the Department and ASARCO. The terms of the Stipulation will be referenced in and made an integral part of the Order of the Board adopting the SIP revision applied for herein.

Respectfully submitted,

Peter A. DeSantis, Plant Manag
ASARCO Incorporated
East Helena Plant
East Helena, Montana 59635

AIR QUALITY PERMIT

Issued to: Western Energy Company
404 N. 31st
Billings, MT 59101

Permit # 1483
Date Recd: 3/28/80
Date Filed: 9/25/80
Date Issued: 10/22/80

SECTION I: Permitted Facilities

An air quality permit is hereby granted to the above named permittee, hereinafter referred to as recipient, pursuant to Section 72-2-204 and 211, MCA, as amended, and Sub-Chapter 11, PERMIT, CONSTRUCTION AND OPERATION OF AIR CONTAMINANT SOURCES, ARM 16.8.1101 through 16.8.1118 as amended, for the following:

A. One surface coal mine and extraction facilities comprised of areas A, B & E which shall produce an estimated 13,000,000 tons of coal annually. Total estimated coal production for the life of the various mine areas of A, B & E is 42,000,000, 67,000,000, and 11,500,000 tons respectively. Maximum annual disturbance has been estimated to be 457 acres for areas A, B, & E.

B. Coal handling facilities as identified below and located at areas A and E.

1. Truck dump with hopper areas A & E.

2. Primary crushers (2) Area A 1250 tons/hr each and one 1250 ton/hr at Area E.

3. The secondary crusher at Area E handles approximately 30% of the primary crushed coal which is either used by Colstrip Units 1 and 2 or shipped to the Corette plant at Billings, Montana. Area A secondary crusher(s) capacity should be approximately the same as that specified for area E, however, the coal from these areas is shipped to out of state customers.

4. Partially enclosed coal conveyor system (areas A, B & E).

5. Coal tipple at Area A.

6. One open coal storage pile of crushed coal at area A encompassing approximately 3.5 acres and containing an estimated maximum 96,000 tons.

7. Train loadout facilities with retractable chute located at areas A & E respectively. Area A capacity is 4000 tons/hr and area E is 1250 tons/hr.

C. Necessary Auxiliaries

Draglines, trucks, shovels, front-end loader, graders, scrapers, mobile units, auxiliary and storage facilities, etc., as applicable.

SECTION II: Limitations and conditions

A. Recipient shall install a coal dust suppression system or equivalent, at the truck dump, the acceptability and implementation of which shall be worked out with Air Quality Bureau (AQB) by February 1, 1981.

B. The recipient shall apply chemical stabilizer to all permanent haul roads. A report on the success of this program shall be made to the AQB on May 1, 1981. In addition, water sprinkling shall supplement stabilization when necessary.

C. Recipient shall not cause visible emissions of greater than twenty (20) percent opacity to be discharged into the atmopshere from any coal handling, conveying, crushing, processing, storing or loading system averaged over six consecutive minutes a specified by Rule 16.8.1404, Subchapter 14.

D. Recipient shall comply with all other applicable state, federal or local regulations.

E. A contingency plan for controlling coal dust emissions emanating from the area A stacking facility shall be presented to the AQB by April 1, 1982, with a date for full implementation should the interim control strategy of hooding the stacker prove ineffective in controlling said coal dust.

F. Uncrushed coal piles in all areas (A-B, & E) shall be contoured or shaped as necessary in order to minimize wind erosion.

G. Exposed areas shall be re-vegetated as soon as practical or as required by the Department of State Lands Reclamation Division.

H. Coal conveyor belts at all transfer points (Area E & A) shall be enclosed except as necessary to allow maintenance. Said construction shall commence as soon as possible.

I. Recipient shall maintain and operate its mine according to the "Minewide Dust Control Management Plan" except as required otherwise by the above conditions.

J. Train loadout shall continue as presently employed unless Department inspections indicate a problem.

K. The county road shall be treated with dehydrated oil or equivalent for a distance of approximately four mile west of Highway 39.

L. Should coal production from areas A, B & E exceed 13,000,000 tons annually bymore than five (5) percent Western Energy shall apply for a permit modification provided acceptable modeling also indicates a corresponding increase. In no event shall this condition supersede ARM 16.8.1113.

M. Recipient shall monitor the effectiveness of the control techniques employed utilizing both the high volume sampler and dust fall jar. The Department will analyze the new data so generated to determine effectiveness of the new permit requirements.

N. Except as otherwise specified, all proposals, information and statements in the application and subsequent permit information requested by the AQB are by reference made conditions of this permit.

SECTION III: Monitoring and Reporting

A. Recipient shall provide quarterly reports to the Department within forty-five days of the quarter's end. The first report shall be due in the AQB office no later than May 15, 1981. The report shall include all necessary information to determine compliance or progress with the stated conditions of Section II, including, but not limited to, amount of coal mined, maximum amount of disturbed area, and such other information that may be necessary to determine mine impacts on ambient air.

B. The present sampling sites are acceptable. Any future site selection or present site change shall be made only after consultation with and approval by the AQB.

1. Sampling shall be performed on the same frequency as is presently employed, pending a more complete assessment of the mine impacts. That frequency is now once every six days, and follows the AQB six day schedule.

2. Follow EPA quality assurance practices in Appendices A, B, and E (44 FR 27558-604).

3. Reporting

   a. Supply the Air Quality Bureau with all TSP daily values and hourly meteorological parameters such as surface wind speed and direction (ten meter tower), temperature and evaporation. The data shall be submitted on magnetic tape or cards in SAROAD (EPA) format. Also, a quarterly wind rose will be necessary. Said data shall be forwarded to the Air Quality Bureau within 45 days past each calendar quarter. The TSP data must include precision and accuracy information as specified in the May 10, 1979 Federal Register and subsequent changes thereof. TSP color coded information can be submitted with the annual report. Since Western Energy now submits data on a monthly basis to the Department of State Lands (DSL) an agreement on the new quarterly reporting frequency will be worked out to avoid conflicts between the two Departments.

   b. With the first quarterly report required by item a above, the recipient shall supply the Air Quality Bureau with a set of four color 35 mm prints or equivalent, looking at each sampler from the north, south, east, and west directions with brief documentation on each. This item shall be discussed with the AQB before implementation.

c. In light of the new enforceable Montana Ambient Air quality Standards, Western Energy will be required to submit data reflecting the annual arithmetic TSP mean in addition to the geometric mean. The submission of the arithmetic mean data shall continue until resolution of pending lawsuits on this matter.

d. Quarterly report should ideally summarize the data, develop meteorological correlations, show trends, list violations (if any), discuss control measures for meeting all ambient air standards (if necessary). These reports should be submitted to the Air Quality Bureau within 45 days following quarter end.

4. Auditing

The Air Quality Bureau or its consultant will audit the particulate and meteorological monitors at unspecified times throughout the sampling year. A report will be forwarded to the Company within thirty days of the field or performance audits.

SECTION IV: Duration

This permit shall be valid from date of issuance until completion of mining as specified in the application.

SECTION V: General

A. Inspection

The recipient shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, and otherwise conducting all necessary functions related to this permit.

B. Waiver

The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations

Specific listing of requirements, limitations, and conditions contained herein does not relieve the applicant from compliance with all applicable statutes and administrative regulations including amendments thereto, nor waive the right of the Department to require compliance with all applicable statutes and administrative regulations, incuding amendments thereto.

D. Enforcement

Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 74-2-401 MCA.

E. Appeals

Any person or persons who are jointly or severally adversely affected by the Department's decision may request, within fifteen (15) days after the Department renders its decision, upon affidavit, setting forth the grounds therefore, a hearing before the Board. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The Department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department's decision until the conclusion of the hearing and issuance of a final decision by the Board.

Permit Application Analysis
Western Energy Co, (WECO)
Application #1483

I. Introduction: The Western Energy Company (WECO) has applied for an Air Permit for their coal mining activities in area A, B and E at Colstrip, Montana. The coal from areas A & B will be processed by facilities in area A and the coal from area E will be processed by the faciities in area E.

The date of the original application was March 28, 1980; however, certain deficiencies were observed. Generally, the following items of concern were not addressed or the explanations were incomplete:

1. Actual area of disturbance;
2. Ambient data;
3. Particle size analysis;
4. Water injection (drilling);
5. Clean-up time table;
6. Control strategies;
7. Best Management Practices;
8. Emission factor use;
9. Emission calculations, climatic factors, etc.

Permit deficiences were initially addressed in a letter to WECO on April 25, 1980.

On June 25, 1980, WECO responded to the letter of deficiency. However, the Bureau was not completely satisfied with the responses and telephoned the company to talk over problems and proposals created by the responses plus other concerns.

On August 18, 1980, WECO met with the department representatives and at that time submitted proposals concerning dust suppression techniques, mine management plans, and a proposal for hooding the coal tipple at the point of discharge on the crushed coal pile at area A. Further information was relayed on September 10, 1980. Again, the Bureau was not completely satisfied and on September 25, 1980, the Air Quality Bureau sent a letter to WECO concerning proposed emission factors to be used for modeling purposes. WECO rejected the emission factors proposed by the Bureau in a letter dated October 1, 1980 and states their reasons for doing so. In an attempt to quantify impacts by modeling means the Department (Bureau) opted to do their own modeling which delayed the issuing of the permit. It is important to note that the Bureau did not notify the applicant in writing as to the status of the permit application. Normally, a letter is sent to the applicant advising him of the completeness of his application and a date when the permit was deemed complete.

II. Project Description: The Western Energy Company plans to produce from the areas of A, B & E an estimated maximum 13,000,000 tons of coal annually. The total anticipated coal production for the life of the various mine areas A, B & E is an estimated 42,000,000, 67,000,000 and 11,500,000 tons respectively. The estimated annual exposed area for areas A, B & E is 457 acres.

III. APPLICABLE REGULATIONS

The Western Energy Coal Company is required under Subchapter 11, Permits, Construction and Operation of Air Contaminant Sources, ARM 16.8.1101 thru 16.8.1118 to obtain an air quality permit since their potential particulate emissions are greater than 25 tons per year.

Emissions point sources within the mine are also subject to various state emission rules, Subchapter 14, including ARM 16.8.1403 Particulate Matter, Industrial Process, ARM 16.8.1401, Particulate Matter Airborne, and ARM 16.8.1404, Visible Air Contaminants, Restrictions.

IV. DEPARTMENT REVIEW OF THE APPLICATION

A. General

Review of coal mines cannot be performed adequately utilizing conventional technic therefore the Department has adopted a basic philosophy which is reflected by a statem in the State Implementation Plan (SIP).

> "Attempts by several groups, including EPA to develop computer models to relate mine emissions to ambient air quality have been rather unsuccessful. As previously mentioned, difficulties determining emission rates and behavior, in the air of the emitted particulates are prime among the causes. Thus, there is no adequate technique available to demonstrate that the standards will be attained"...."Progress towards the standard will be documented by ambient sampling and implementation of control programs."

The Department continues this philosophy, but recognizes that some evaluation must made. Therefore, estimation and prediction as well as monitoring plus requiring the in technology control remain prime tools of the agency.

B. Procedures

The affected coal mining area is Class II and has attainment status for the follow pollutants: carbon monoxide, hydrocarbons, ozone and sulfur dioxide. However, the Colstrip area has been designated as non-attainment for particulates.

The Department also has a non-degradation policy which would require Western Energy Company to install the best technology and techniques to control any predicted emissions.

C. Discussion

1. Data Handling - Before a permit analysis is performed, the following data must be supplied by the source in question.

    1. 24-hour average TSP data.
    2. Running geometric mean for the previous 12 months.
    3. Running arithmetic mean for the previous 12 months.
    4. Emission factors.
    5. Emission rates based on estimated production levels.
    6. Estimated production rates.

These data are then tabulated in an attempt to establish trends.

The ambient particulate data from July 1978 to August 1980 were tabulated with highest 24-hour reading, a running geometric mean to reflect any federal primary annual violations and a running arithmetic mean to reflect any state primary annual violations.

Permit analysis also includes an evaluation of control methods or techniques presently being employed.

Increasing the amount of coal mined will produce a corresponding increase in particulate emissions, at least according to the school of thought now employed by regulatory agencies. Therefore, any coal production increase theoretically raises the level of pollutants in an area. Since the emission factors in this case are tied to the coal production, any increase in particulate emissions would require a permit modification.

2. Emission Rates - Table 1 summarizes the estimated emission uncontrolled for the mobile sources at the mine site.

Table 1 has been prepared totally by the Air Quality Bureau (AQB) and deals with pollutants related to mobile sources. The emission rates were taken from the AP 42 publications.

Table 1

				Mobile source Emission Est. (Ton/year)		
	CO	SO_2	HC	NOx	Ald	Particulates
Heavy Equipment	133.8	46.8	45	786	11.6	26.6
Light Duty Equip.	*	—	—	—	—	—

*The light duty equipment was deemed non-significant by WECO and therefore the information necessary for the Department to make an estimate was not supplied.

D. Air Quality Review

WECO operates six high volume particulate samplers in and around their mine site. They have added five additional samplers in 1980 and the additional data were not used in the analysis. The tabulation of the data is in 3, 3a and 3b.

As mentioned previously, the Colstrip area has been designated as nonattainment for primary particulates based upon data obtained from non-government monitors and other sources in the Colstrip area. A nonattainment area is defined as an area that does not presently meet federal, state, or local air quality standards. Federal and state ambient air quality standards are shown for comparison in Table 2.

Presently the operations at Colstrip are being conducted under the state's offset policy. In general, this offset policy requires WECO to reduce the total suspended particulates (TSP) of the area before any new source of TSP can be permitted.

The two 350-megawatt power plants and other coal mines operating at Colstrip are the primary producers of airborne particulates and other emissions. Other sources of suspended particulates include: agricultural plowing, burning, and harvesting; industrial processing, vehicular traffic on unimproved roads, landfills, and possibly open-burning dumps.

An analysis of the data in tables 3, 3a, 3b indicates that emissions have increased in 1980 over 1979 levels.

Table 2

Ambient Air Standards

Federal	Primary 24 hour	260 ug/m^3
	Secondary 24-hour	150 ug/m^3
	Primary Annual Geometric Mean	75 ug/m^3
	Secondary Annual Geometric Mean	60 ug/m^3
Montana	Primary 24-hour	200 ug/m^3
	Primary annual arithmetic mean	75 ug/m^3

TABLE 3

TSP
Highest 24-hour ug/m^3

Site	1	2	3	4	5	6
July 1979	122	162	239	534	162	212
August	113	94	395	857	134	276
September	204	141	567	1143	300	138
October	193	108	280	1825	105	188
November	706	466	916	4430	147	310
December	186	477	491	2050	117	78
January 1980	407	1146	1135	6585	115	532
February	46	135	591	1330	31	376
March	74	66	77	284	56	57
April	118	667	529	2657	135	255
May	159	114	279	386	113	255
June	81	129	237	497	142	259
July	70	100	283	700	75	259
August	100	119	171	760	72	160

TABLE 3a

TSP Data Summary for HECO
Annual Arithmetic mean (ug/m^3)

Site	1	2	3	4	5	6
July 1979	76.1	64.8	168.2	286.1	37.99	80.9
August	68.6	59.9	166.6	352.4	37.8	83.1
September	72.3	60.5	188.2	393.3	46.1	84.3
October	76.8	60.1	196.2	450.5	50.2	86.0
November	91.0	63.6	209.95	551.6	49.6	90.7
December	81.4	73.5	220.8	613.3	52.6	90.6
January 1980	85.98	110.3	267.9	782.9	55.2	114.4
February	85.38	111.7	271.5	784.1	55.5	115.7
March	83.7	111.1	253.1	786.5	55.8	113.7
April	85.5	124.5	260.4	819.6	58.2	120.2
May	90.1	128.5	260.7	808.7	60.6	125.2
June	88.3	130.2	264.2	809.3	61.1	129.4
July	88.7	129.2	261.9	815.3	59.9	133.2
August	82.6	132.1	253.3	789.95	58.3	130.8

TABLE 3b

TSP Data Summary for WECo

Annual Geometric Mean (ug/m^3)

Site	1	2	3	4	5	6
July 1979	52.3	47.31	122.2	156.6	23.6	61.5
August	48.5	44.67	120.4	179.2	23.7	60.0
September	50.87	48.81	133.1	226.7	26.69	62.1
October	54.0	45.08	141.3	270.7	29.31	63.5
November	54.07	44.90	148.96	293.6	29.21	66.08
December	58.43	50.62	163.1	356.73	33.61	67.69
January 1980	43.71	58.07	167.4	407.37	35.81	76.09
February	53.91	59.10	167.1	417.5	36.58	76.62
March	51.24	57.30	148.7	432.2	37.04	71.22
April	53.26	61.19	149.7	440.3	38.64	74.56
May	56.79	65.23	152.3	415.1	40.21	77.76
June	57.55	67.97	155.4	412.1	41.26	79.11
July	55.91	67.02	152.7	418.9	40.74	82.96
August	56.38	70.01	146.7	390.6	39.24	84.77

V. Control Technology Review

The following summarizes the Air Quality Bureau's evaluation of control technology practiced and proposed by the Western Energy facility.

1. Coal Conveyors - The coal conveyors are above ground, and enclosed partially. WECO estimates the control efficiency of 90 percent. The AQB feels that 75 percent is more in order as a conservative estimate. The conveyors qualify as Reasonable Available Control Technology (RACT).

2. Truck Dump -The coal dumps through a grizzly that is partially enclosed. Since there are no additional air pollution controls to evaluate, no technology is qualified.

3. Primary and Secondary Crushers - The primary coal crusher is only partially enclosed and has no control efficiency established by WECO. The secondary coal crushing is totally enclosed and is considered BACT.

4. Coal Open Storage - The crushed coal at WECO is stored on an open pile at area A-3 and E. The company has minimized stacker fall distance and activity on the pile. There is no control efficiency established for this practice nor any technology to qualify.

5. Train Loadout - An underground reclaimer and a retractable chute on train loadout. This control practice is RACT.

6. Coal Removal - The control on the coal removal is basically obtained by minimizing fall distance into haul trucks. This is considered a "best management practice" since no additional control measures are utilized.

7. Coal open Storage (uncrushed)- At WECO there are two uncrushed surge piles, one in Area A-3 and one in Area E that are used to store coal. The activity on piles is minimized and is considered RACT.

8. Overburden Removal Dragline - WECO uses "Best Management Practice" by minimizing the fall distance of overburden (where applicable). This practice is considered BACT according to the EPA interim policy paper (Ref. 1, p. 16).

9. Overburden removal Scrapers - WECO uses water on haul roads and active stripping areas. The control efficiency on this procedure is 50 percent and is considered RACT.

10. Top Soil and Overburden Piles - Top soil is removed to storage areas and the overburden is then handled in such as way as to allow WECO maximum reserve recovery and also refill the pit as they go. No technology to qualify.

11. Coal and Overburden Haul Roads - The practice of watering temporary haul roads that WECO is utilizing is considered RACT. The permanent haul roads are chemically treated with calcium chloride and this practice is considered BACT.

12. Coal and Overburden Blasting - The blasting is performed in such a manner as to prevent overshooting in addition to minimizing the area to be blasted and is considered RACT, although it may also be BACT.

13. <u>Haul Road Maintenance</u> - Debris from haul roads, such as coal, rock, soil and other dust forming debris are removed on a timely basis (quarterly road maintenance plan). Similar removal of debris will be done more frequently th. each quarter as the need may dictate. The Department feels that this practice reflects "best management techniques."

TABLE 4

Allowable Emissions
Area A-B

Source	AQB Maximum Estimated #/hour	WECO Maximum Estimated #/hour	Maximum Allowable #/hr
Truck Dump	29.6 (1)	2.28 (1)	
Primary crusher	21.9 (1)	10.96 (1)	90.1(a)
Secondary crusher	1.97(2)	0.13 (6)	
Conveyors	54.8 (4)	21.9 (2)	
Stacker	219.2 (1)	0.55 (3)	
Train Loadout	0.23(5)	0.23 (5)	
Total	327.7	36.05	90.1

Area E

Source	AQB Maximum Estimated #/hour	WECO Maximum Estimated #/hour	Maximum Allowable #/hr
Truck Dump	8.45(1)	1.59 (1)	
Primary crusher	6.30(1)	3.15 (1)	80.6(b)
Secondary crusher	0.57(2)	0.038(6)	
Conveyors	15.7 (4)	6.30 (2)	
Stacker	0.32(1)	0.16 (3)	
Train Loadout	0.02(5)	0.023(5)	
Total	31.36	11.26	80.5(a)

(1) 0% control
(2) 90% control
(3) 50% control
(4) 75% control
(5) 95% control
(6) 99% control

Maximum operation conditions = P
1250 ton/hr Area E
2500 ton/hr area A-B
Allowable emission-$E=55xP^{0.11}-40$

Area A-B:
$E = 55x(2500)^{0.1}$
$E = 90.1$ #/hr
Area E:$E = 55x(1250)^{0.1}$
$E = 80.6$ #/hr

(a) Allowable emission of the entire process were based on the throughput of the primary crusher at A-B.

(b) Allowable emissions of the entire process were based on the throughput of the primary crusher at Area E.

Based on the Department's proposed conditions in Section II: Limitations and Conditions, it is believed that compliance at the various coal facilities will be achieved once those conditions are met. However, the Department recognizes that due to the conflicting nature of the differing emission factors utilized by both the applicant and DHES, actual compliance status may be unknown at the present time.

Table 5
Emission Factors

	WECO	AOB	Reference
Scraper Operations	0.38#/yd^3	0.38#/yd^3	(1)
Drilling Overburden	1.5#/hole	1.5#/hole	(1)
Blasting Overburden	14.2#/blast	85.3#/blast	(1)
Overburden Removal			
(dragline)	0.003#/yd^3	0.053#/yd^3	(1)
(scrapers)	0.38#/yd^3	0.38#/yd^3	(1)
Exposed Areas	3.02 ton/acre yr	* 0.59 ton/acre yr	(1)
Haul Roads			
(chem. stabilizer)	0.99#/vmt	0.66#/vmt	(2)
(H_2O)	3.30#/vmt	2.19#/vmt	(2)
(uncontrolled)	6.60#/vmt	4.38#/vmt	(2)(5)(6)
Access Roads			
(chemical stab)	0.99#/vmt	0.657#/vmt	(2)
Drilling Coal	0.22#/blast	0.22#/blast	(1)
Blasting Coal	25.1#/blast	78.1#/blast	(1)
Coal removal	0.002#/ton	0.014#/ton	(1)
Coal dumping	0.005#/ton	0.027#/ton	(1)
Coal storage	1.6 u#/acre hr	1.6 u#/acre hr	(1)
Primary crushers	0.01#/ton	0.02#/ton	(1)
Secondary crushers	0.04#/ton	0.06#/ton	(1)
Coal conveyor	0.02#/ton	0.02#/ton	(1)
Coal stacking**(area A-B)	0.001#/ton	0.2 #/ton	(1)
Coal stacking (area C		0.001#/ton	(3)
Coal storage (active)	1.6 u#/acre hr	1.6 u/3 acre hr	(1)
Train loadout	0.0002#/ton	0.002#/ton	(4)

(1) EPA Interim Policy Paper, Feb. 2, 1980
(2) Wyoming Emission Factors for Fugitive Dust Emissions, Jan. 24, 1979
(3) "Fugitive Emissions from Coal-Fired Power Plants," Bechtel Natl. Inc. Page 8
(4) EPA 908/1-78-003 "Survy of Fugitive Dust from Coal Mines" by PEDCo, Feb. 1978
(5) Compilation of Air Pollution Emission Factors AP-42
(6) Development of Emission Factors for Fugitive Dust Sources, EPA-450/3-74-037, June, 1974.

*Universal soil loss equation assume clay loam soil type.
**Emission factor that WECo uses is based on a stacker such that might be used at a power plant and the stacker at A-B is just a conveyor dump off and will be treated as an uncontrolled transfer point.

TABLE 6

Emission Inventory
Emission T/yr*

OPERATION	Potential (UNCONTROLLED) Area A t/yr	Area B t/yr	Area E t/yr	TOTAL t/yr	% Control EFF	(CONTROLLED) Area A t/yr	Area B t/yr	Area E t/yr	TOTAL t/yr
Scraper	(174)	(205)	(81)	(460)	0	174	205	81	460
Drilling Overburden	(3.17)	(4.36)	(2.67)	(10.12)	0	3.17	4.36	2.67	10.
Blasting Overburden	(0.83)	(1.14)	(0.70)	(2.6)	0	0.83	1.14	0.70	2.6
Overburden Removal									
(Dragline)	(24)	(24)	(24)	(72)	0	24	24	24	72
(scrapers)	(236)	(495)	(361)	(1092)	50	118	247.5	180.5	547
Exposed Areas	(446.7)	(625.4)	(307.1)	(1379.2)	85	67.0	93.8	46.1	206
Haul Roads									
(Chemical)	(800)	(733)	(302.7)	(1836.7)	85	120	110	45.5	275
(H_2O)	(136.8)	(134)	(49)	(320)	50	68.4	67	24.5	160
Access Road			---	(558)	85				83.
Drilling coal	(1.1)	(1.5)	(0.7)	(3.3)	0	1.1	1.5	0.7	3.3
Blasting coal	(5.4)	(7.2)	(3.4)	(16.0)	0	5.4	7.2	3.4	16.0
Coal removal dragline	(4)	(5.6)	(2.8)	(12.4)	0	4	5.6	2.8	12.
Coal dumping	(10)	(14)	(7.0)	(31)	0	10	14	7.0	31
Coal storage pile		(59)	(59)	(118)	0		59	59	118
Coal crusher primary		(48)	(13.8)	(61.8)	0		48	13.8	61.
Coal crusher secondary		(58)	(16.5)	(74)	99		0.58	0.165	0.7
Coal conveyors		(960)	(276)	(1234)	90		96	27.6	123.
Coal stacking		(4.8)	(1.38)	(6.2)	50		2.4	0.69	3.1
Coal storage (active)		(59.1)	—	(59.1)	0		59.1	—	59.
Train Load		(20)	2.0	(22.0)	95		1	0.1	1.1
				(7368.5 t/yr)					2243.8

*Western Energy's Tabulation

TABLE 7

Emission Inventory
Emissions T/Yr**

OPERATION	(UNCONTROLLED) Area A t/yr	Area B t/yr	Area E t/yr	TOTAL t/yr	%Control Eff.	(CONTROLLED) Area A t/yr	Area B t/yr	Area E t/yr	TOTAL t/yr
Scraper	(174)	(205)	(81)	(460)	0	174	205	81	460
Drilling Overburden	(3.2)	(4.4)	(2.7)	(10.2)	0	3.2	4.4	2.7	10.2
Blasting Overburden	(4.9)	(6.9)	(4.2)	(16)	0	4.9	6.9	4.2	16
Overburden Removal									
(dragline)	(424)	(424)	(424)	(1272)	0	424	424	424	1272
(scrapers)	(236)	(495)	(361)	(1092)	50	118	248	181	548
Exposed areas	(87.3)	(122)	(60)	(269.3)	85	13	18	9	40
Haul Roads									
(chemical)	(531)	(488)	(201)	(1220)	85	80	74	30	184
(H_2O)	(90)	(88)	(34)	(212)	50	45	44	17	106
Access Road (chemical)	—	—	—	—(370)	85	—	—	—	56
Drilling coal	(1.1)	(1.5)	(0.7)	(3.3)	0	1.1	1.5	0.7	
Blasting coal	(16.8)	(22.3)	(10.5)	(49.6)	0	16.8	22.3	10.5	[illegible]
Coal removal	(28)	(39.2)	(12.3)	(79.5)	0	28	39.2	12.3	79.5
Coal dumping	(54)	(75.6)	(37)	(166.7)	0	54	75.6	37	166.7
Coal Storage	(59)		(59)	(118)	0		59	59	118
Coal crusher primary	(96)		(27.6)	(123.6)	0		96	27.6	123.6
Coal crusher secondary	(86.4)		(24.8)	(111.2)	90		8.64	2.48	11.1
Coal conveyers	(960)		(275)	(1234)	75		240	68.8	308.[illegible]
Coal stacking(b)	(960)		(1.37)	(1235)	0	960	4.8	1.38	6.1
Coal storage (active)	(59.1)			(59.1)	0		59.1		59.1
Train load	(20)		(2.0)	(22.0)	95		1	0.1	1.1
				(7850 t/yr)					4583 t

**Emissions derived from emission factors suggested by the Air Quality Bureau
(b) Emissions from area E stacker were calculated from Reff. (3) page 16.

Discussion of the Emission Factors for Table 5

1. Blasting Overburden - The AQB feels that the 14.2 #/blast that WECO used is not indicative enough to be deemed worst case emissions and therefore the AQB has substituted a factor of 85.3 #/blast as referenced in Table 5. The derivation of emission factors as mentioned previously is controversial at best.

2. Overburden Removal Dragline - An emission factor of 0.053 #/yd^3 has been used by the AQB.

3. Exposed areas - A universal soil loss equation assumes a soil type of dayloam and is referenced in table 5. The factor stated by WECo is not used because the AQB feels the estimate may be high.

4. Haul and Access Roads - The emission factors used by WECO are higher than the AQB factors which may be more reflective.

5. Blasting Coal - Again, in overburden blasting WECO used a lower emission factor whereas the AQB used a factor that reflects the "worst case" situation. The AQB feels that the emission factor of 78.1 #/blast should be used.

6. Coal Removal - The AQB has used an emission factor of 0.014 #/ton.

7. Coal Dumping - The AQB feels that 0.025 #/ton is a more realistic emission factor.

8. Primary Crusher - The AQB uses 0.02 #/ton as referenced in Table 2.

9. Secondary Crushers - The AQB believes that a control factor of 90% is more indicative.

10. Conveyors - The Air Quality Bureau disagrees with the control efficiency of 90% used by WECO due to the fact that the conveyor belts are only partially covered. If the conveyors were covered in such a manner that wind would not stir up particulate matter and allow worker's in for maintenance with the botton open for safety reasons, AQB would look at 90%, but until this is accomplished 75% is estimated for control.

11. Scraper operation - Emission factors acceptable

12. Overburden Removal Scrapers - Emission factors acceptable

13. Drilling coal - Emission factors are acceptable

14. Coal storage - Emission factors are acceptable

15. Coal stacking - The Air Quality Bureau feels that the stacker at Area A-B does not meet the criteria of a stacker as set forth by WECO reference (3) page 16 of this analysis. Therefore, the 0.2 #/ton emisson factor has been used to estimate potential emissions from coal piling of crushed coal. This factor is from the EPA Interim Policy Paper for conveyor transfer points without controls. The stacker emission factor of 0.001 #/ton used by Western Energy in area E is acceptable. Hopefully in the near future more accurate emission factors for coal mined can be developed.

16. Train Loadout - Emission factors are acceptable.