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.

J. Edward 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, 1982, 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, 19-9.

(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. Calculation of Emission rates

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. Compliance with Emission Standards.

(a) Definitions.

(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. BINDING EFFECT

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 _____

By _____
Attorney

Date 3/14/94

Montana Department of Health and Environmental Sciences

By _____
Robert J. Robinson
Director

By _____
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".

Section 4 Compliance Determinations

(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) (ie., 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):

$$B = Q_B \cdot ß \cdot (1.1952 \times 10^{-7}) = X \text{ Tons/Day}$$

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 OTHER 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
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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

		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			