Jane Dee Hull
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

3033 North Central Avenue • Phoenix, Arizona 85012-2809
(602) 207-2300 • www.adeq.state.az.us

Jacqueline E. Schafer
Director

CTS idno: 41794

October 9, 2001

COPY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

John R. Shaw, General Manager
ASARCO Incorporated - Ray Complex
P.O. Box 8
Hayden, Arizona 85235

Subject: Air Quality Permit No. 1000042
ASARCO - Hayden Smelter

Dear Mr. Shaw:

Enclosed is a permit for the referenced facility. In accordance with Arizona Revised Statutes, §49-430, this permit should be readily available at all times on the premises.

The permit is issued for a period of five years. Please keep us informed of any changes that would affect your air pollution status during the period of this permit.

You are advised that a permit is a legally enforceable document. If your facility fails to comply with the provisions contained in its permit, you will be subject to enforcement action and could incur civil fines of up to ten thousand dollars per day under A.R.S. §49-463 and/or be subject to criminal penalties in accordance with A.R.S. §49-464.

If you have any questions, please do not hesitate to contact the Permits Section of the Air Quality Division at (602) 207-4490.

Sincerely,

Nancy C. Wrona, Director
Air Quality Division

NCW:zfl

J:\AQD\PERMITS\COMMON\PERMITS\1000042\MISC\issltr.wpd

Enclosures

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division
3003 N. Central Ave. • Phoenix, AZ 85012-290703 • Phone: (602) 207-2338

COPY

AIR QUALITY CONTROL PERMIT

(As required by Title 49, Chapter 3, Article 2, Section 49-426, Arizona Revised Statutes)

This air quality control permit does not relieve applicant of responsibility for meeting all air pollution regulations

1. PERMIT TO BE ISSUED TO (Business license name of organization that is to receive permit) _____

ASARCO - Ray Complex Hayden Smelter

2. NAME (OR NAMES) OF OWNER OR PRINCIPALS DOING BUSINESS AS THE ABOVE ORGANIZATION _____

ASARCO Incorporated

3. MAILING ADDRESS *P. O. Box 8*
NUMBER STREET

Hayden, AZ 85235-0008-08
CITY OR COMMUNITY STATE ZIP CODE

4. ORIGINAL EQUIPMENT LOCATION/ADDRESS *640 Asarco Avenue*
NUMBER STREET

Hayden, Gila County, Arizona 85235
CITY OR COMMUNITY STATE COUNTY ZIP CODE

FACILITIES OR EQUIPMENT DESCRIPTION *Copper Smelter with Oxygen Flash Furnace; see Attachment "C"*

6. THIS PERMIT ISSUED SUBJECT TO THE FOLLOWING *Conditions contained in Attachments "A", "B" and "D"*

7. ADEQ PERMIT NUMBER *# 1000042* PERMIT CLASS *I* EXPIRATION DATE October 9, 2006

PERMIT ISSUED THIS 9th DAY OF October *, 2001*

SIGNATURE

Nancy C. Wrona, Director, Air Quality Division
TITLE

ADEQ/AQD/P100D (9-93)

Governor Jane Dee Hull
State of Arizona
Jacqueline E. Schafer, Director
Arizona Department of Environmental Quality

3033 N. Central Avenue
Phoenix, AZ 85012
(602) 207-2316 Voice
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ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY CLASS I PERMIT

COMPANY NAME: ASARCO Incorporated
FACILITY NAME: Ray Complex Hayden Smelter
PERMIT NUMBER: 1000042
DATE ISSUED: October 9, 2001
EXPIRY DATE: October 9, 2006

SUMMARY

This operating permit is issued to ASARCO Incorporated, the Permittee, for operation of their Ray Complex Hayden Smelter, located in Hayden, Gila County, Arizona. The Hayden Smelter is a primary copper smelter and consists of one Inco oxygen flash furnace, five Pierce-Smith converters, two Fuller anode furnaces, two Fuller fluid bed dryers and other auxiliary operations.

In regard to air pollution control, the Hayden Smelter operates a double contact acid plant, the Monsanto sulfuric acid plant to remove sulfur dioxide (SO_2) from the flash furnace and converters primary gases. The smelter also operates an electrostatic precipitator, the R&R Cottrell ESP for particulate matter (PM) removal from the flash furnace vent gases and the dryers flue gases, and a baghouse to capture the converters secondary hooding particulates. Baghouses are also used in other processes to control PM emissions.

The Hayden Smelter is classified as a Class I, Major Source, pursuant to A.A.C. R18-2-101.61. The potential emission rates of the following pollutants are greater than 100 tons per year: (i) particulate matter, (ii) sulfur dioxide, and (iii) nitrogen oxides.

This Class I permit is issued in accordance with Title V of the Clean Air Act, and Title 49, Chapter 3 of the Arizona Revised Statutes. Applicable requirements for the operations at Hayden are listed in portions subtitled "Permit shield" of this permit. All definitions, terms, and conditions used in this permit conform to those in the Arizona Administrative Code R18-2-101 et. seq. (A.A.C.) and 40 Code of Federal Regulations (CFR), except as otherwise defined in this permit. Unless noted otherwise, references cited in the permit conditions refer to the A.A.C. All terms and conditions in this permit are enforceable by the Administrator of the United States Environmental Protection Agency (U.S. EPA), except for those terms and conditions that have been designated as "State requirements".

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ATTACHMENT "A": GENERAL PROVISIONS

Air Quality Control Permit No. 1000042
For
ASARCO Incorporated - Ray Complex Hayden Smelter

IV. PERMIT EXPIRATION AND RENEWAL [A.R.S. § 49-426.F, A.A.C. R18-2-304.C.2 and 306.A.1]

A. This permit is valid for a period of five years from the date of issuance of the permit.

B. Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months prior to the date of permit expiration.

V. COMPLIANCE WITH PERMIT CONDITIONS [A.A.C. R18-2-306.A.8.a and b, A.R.S. §49-463 and A.R.S. §49-464]

A. Permittee shall comply with all the conditions contained in Attachments "A" through "D"of this permit including all applicable requirements of Arizona air quality statutes and the air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and re-issuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act.

B. Need to halt or reduce activity not a defense. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

VI. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE [A.A.C. R18-2-306.A.8.c and 321.A]

A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by Permittee for a permit revision, revocation and reissuance, or termination; or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.

B. The permit shall be reopened and revised under any of the following circumstances:

1. Additional applicable requirements under the Act become applicable to the Class I source. Such reopening shall only occur if there are three or more years remaining in the permit term. The reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to R18-2-322(B). Any permit revision required pursuant to this subparagraph shall comply with provisions in R18-2-322 for permit renewal and shall reset the five year permit term.

2. Additional requirements, including excess emissions requirements, become applicable to an affected source under the acid rain program. Upon approval by the Administrator, excess emissions offset plans shall be deemed to be incorporated into the Class I permit.

3. The Director or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions

of the permit.

4. The Director or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.

C. Proceedings to reopen and issue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall, except for reopenings under paragraph III.B.1 of this Attachment, affect only those parts of the permit for which cause to reopen exists. Such reopenings shall be made as expeditiously as practicable. Permit reopenings for reasons other than those stated in paragraph III.B.1 of this Attachment shall not result in a resetting of the five year permit term.

VII. POSTING OF PERMIT

[A.A.C. R18-2-315]

A. Permittee shall post such permit, or a certificate of permit issuance on location where the facility is located in such a manner as to be clearly visible and accessible. All equipment covered by the permit shall be clearly marked with one of the following:

1. Current permit number.
2. Serial number or other equipment number that is also listed in the permit to identify that piece of equipment.

B. A copy of the complete permit shall be kept on the site.

VIII. FEE PAYMENT

[A.A.C. R18-2-326 and 306.A.9]

Permittee shall pay fees to the Director pursuant to A.R.S. § 49-426(E) and A.A.C. R18-2-326.

IX. ANNUAL EMISSIONS INVENTORY QUESTIONNAIRE

[A.A.C. R18-2-327]

A. Permittee shall complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31 or ninety days after the Director makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.

B. The questionnaire shall be on a form provided by the Director and shall include the information required by A.A.C. R18-2-327.

X. COMPLIANCE CERTIFICATION

A. Permittee shall submit a compliance certification to the Director twice each year, which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than May 15th, and shall report the compliance status of the source during the period between October 1st of the previous year and March 31st of the current year. The second certification shall be submitted no later than November 15th, and shall report the compliance status of the source during the period between April 1st and September 30th of the current year. [A.A.C. R18-2-309.2.a]

The compliance certifications shall include the following:

1. Identification of each term or condition of the permit that is the basis of the certification;

[A.A.C. R18-2-309.2.c.i]

2. Compliance status with each applicable requirement; [A.A.C. R18-2-309.2.c.ii]

3. Whether compliance was continuous or intermittent; [A.A.C. R18-2-309.2.c.iii]

4. Method(s) used for determining the compliance status of the source, currently and over the reporting period; [A.A.C. R18-2-309.2.c.iv]

5. A progress report on all outstanding compliance schedules submitted pursuant to Section XI.D of this Attachment. Progress reports submitted with compliance certifications shall satisfy the reporting requirements of A.A.C. R18-2-309.5.d. [A.A.C. R18-2-309.2.c.v and 309.5.d]

B. A copy of all compliance certification for Class I permits shall also be submitted to the EPA Administrator. [A.A.C. R18-2-309.2.d]

XI. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS [A.A.C. R18-2-309.3]

Any document required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification and any other certification required under this part shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

XII. INSPECTION AND ENTRY [A.A.C. R18-2-309.4]

Permittee shall allow the Director or the authorized representative of the Director upon presentation of proper credentials to:

A. Enter upon Permittee's premises where a source is located or emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;

B. Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;

C. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

D. Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and

E. Record any inspection by use of written, electronic, magnetic and photographic media.

XIII. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT STANDARD

If this source becomes subject to a standard promulgated by the Administrator pursuant to section 112(d) of the Act, then Permittee shall, within twelve months of the date on which the standard is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard. [A.A.C. R18-2-304.C]

XIV. REPORTING OF EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCIES

A. EXCESS EMISSIONS REPORTING [A.A.C R18-2-310.01]

1. Permittee shall report to the Director any emissions in excess of the limits established by this permit. The report shall be in two parts as specified below:

   a. Notification by telephone or facsimile within 24 hours of the time when Permittee first learned of the occurrence of excess emissions that includes all available information from XI.A.2 below.

   b. Detailed written notification by submission of an excess emissions report as described in XI.A.2 below, within 72 hours of the notification paragraph a above.

2. The excess emissions report shall contain the following information:

   a. The identity of each stack or other emission point where the excess emissions occurred;

   b. The magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;

   c. The date, time and duration or expected duration of the excess emissions;

   d. The identity of the equipment from which the excess emissions emanated;

   e. The nature and cause of the emissions;

   f. The steps taken, if the excess emissions were the result of a malfunction, to remedy the malfunction and the steps taken or planned to prevent the recurrence of the malfunctions;

   g. The steps that were or are being taken to limit the excess emissions; and

   h. If the source's permit contains procedures governing source operation during periods of startup or malfunction and the excess emissions resulted from startup or malfunction, a list of the steps taken to comply with the permit procedures.

3. In the case of continuous or recurring excess emissions, the notification requirements of this subsection shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period or changes in the nature of the emissions as originally reported shall require additional notification pursuant to XI.A.1 and 2 above.

B. PERMIT DEVIATIONS REPORTING [A.A.C. R18-2-306.A.5]

1. Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Director by certified mail, facsimile, or hand delivery within two working days of the time when Permittee first learned of the occurrence of the deviations.

2. All instances of deviations from permit requirements shall be clearly identified in the required semiannual monitoring report specified in Attachment "B" of this permit, and shall be certified by the responsible official. [A.A.C. R18-2-306.A.5.a]

C. EMERGENCY PROVISION [A.A.C. R18-2-306.E]

1. An "emergency" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of paragraph 3 of this subsection are met.

3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An emergency occurred and that Permittee can identify the cause(s) of the emergency;

   b. The permitted facility was at the time being properly operated;

   c. During the period of the emergency, Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and

   d. Permittee submitted notice of the emergency to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.

4. In any enforcement proceeding, Permittee seeking to establish the occurrence of an emergency has the burden of proof.

5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.

D. COMPLIANCE SCHEDULE

For any excess emissions or permit deviations that cannot be corrected within 72 hours, Permittee is required to submit a compliance schedule to the Director within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated. [A.R.S. §426.I.5]

XV. RECORD KEEPING REQUIREMENTS [A.A.C. R18-2-306.A.4 and 313.E.6]

A. Permittee shall keep records of all required monitoring information including, but not limited to, the following:

1. The date, place as defined in the permit, and time of sampling or measurements;
2. The date(s) analyses were performed;
3. The name of the company or entity that performed the analyses;
4. A description of the analytical techniques or methods used;
5. The results of such analyses; and
6. The operating conditions as existing at the time of sampling or measurement.

B. Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.

XVI. REPORTING REQUIREMENTS

[A.A.C. R18-2-306.A.5.a]

Permittee shall submit the following reports:

A. Compliance certifications in accordance with Section VII of Attachment "A".
B. Reports of excess emissions, permit deviations, and emergencies in accordance with Section XI of Attachment "A".
C. Other reports required in "Monitoring, Recordkeeping and Reporting Requirements" subsections of Attachment "B".

XVII. DUTY TO PROVIDE INFORMATION

[A.A.C. R18-2-304.G and 306.A.8.e]

A. Permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, Permittee shall also furnish to the Director copies of records required to be kept by the permit. For information claimed to be confidential, Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.

B. If Permittee has failed to submit any relevant facts or if Permittee has submitted incorrect information in the permit application, Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

XVIII. PERMIT AMENDMENT OR REVISION

[A.A.C. R18-2-318, 319 and 320]

Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVI, as follows:

A. Administrative Permit Amendment (A.A.C. R18-2-318);

B. Minor Permit Revision (A.A.C. R18-2-319);

C. Significant Permit Revision (A.A.C. R18-2-320).

The applicability and requirements for such action are defined in the above referenced regulations.

XIX. FACILITY CHANGE WITHOUT PERMIT REVISION

[A.A.C. R18-2-317]

A. Permittee may make changes at the permitted source without a permit revision if all of the following apply:

1. The changes are not modifications under any provision of Title I of the Act or under A.R.S. § 49-401.01(19).

2. The changes do not exceed the emissions allowable under the permit whether expressed therein as a

rate of emissions or in terms of total emissions.

3. The changes do not violate any applicable requirements or trigger any additional applicable requirements.

4. The changes satisfy all requirements for a minor permit revision under R18-2-319(A).

5. The changes do not contravene federally enforceable permit terms and conditions that are monitoring (including test methods), recordkeeping, reporting, or compliance certification requirements.

B. The substitution of an item of process or pollution control equipment for an identical or substantially similar item of process or pollution control equipment shall qualify as a change that does not require a permit revision, if it meets all of the requirements of subsections (A) and (C) of this Section.

C. For each such change under subsections A and B of this Section, a written notice by certified mail or hand delivery shall be received by the Director and, for Class I permits, the Administrator, a minimum of 7 working days in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided less than 7 working days in advance of the change but must be provided as far in advance of the change as possible or, if advance notification is not practicable, as soon after the change as possible. Each notification shall include:

1. When the proposed change will occur.

2. A description of each such change.

3. Any change in emissions of regulated air pollutants.

4. The pollutants emitted subject to the emissions trade, if any.

5. The provisions in the implementation plan that provide for the emissions trade with which the source will comply and any other information as may be required by the provisions in the implementation plan authorizing the trade.

6. If the emissions trading provisions of the implementation plan are invoked, then the permit requirements with which the source will comply.

7. Any permit term or condition that is no longer applicable as a result of the change.

XX. PERFORMANCE TESTING REQUIREMENTS [A.A.C. R18-2-312]

A. Permittee shall conduct performance tests as specified in the permit and at such other times as may be required by the Director.

B. Operational Conditions During Testing

Performance tests shall be conducted under such conditions as the Director shall specify to the plant operator based on representative performance of the source. Permittee shall make available to the Director such records as may be necessary to determine the conditions of the performance tests. Operations during start-up, shutdown, and malfunction shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

C. Performance tests shall be conducted and data reduced in accordance with the test method and procedures contained in the Arizona Testing Manual unless modified by the Director pursuant to A.A.C. R18-2-312.B.

D. Performance Test Plan

At least 14 calendar days prior to performing a test, the owner or operator shall submit a test plan to the Director, in accordance with A.A.C. R18-2-312.B and the Arizona Testing Manual. This test plan must include the following:

1. test location(s);
2. test method(s); and
3. source operation and other parameters that may affect test results.

E. Stack Sampling Facilities

Permittee shall provide or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;
2. Safe sampling platforms;
3. Safe access to sampling platforms; and
4. Utilities for sampling and testing equipment.

F. Interpretation of Final Results

Each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted in accordance with the applicable standard and test method. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. If a sample is accidentally lost or conditions occur which are not under the Permittee's control and which may invalidate the run, compliance may, upon the Director's approval, be determined using the arithmetic mean of the other two runs. If the Director, or Director's designee, is present, tests may only be stopped with the Director's or such designee's approval. If the Director or the Director's designee is not present, tests may only be stopped for good cause. Good cause includes, forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions or other conditions beyond the Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test. Supporting documentation which demonstrates good cause must be submitted with the test report.

G. Report of Final Test Results

A written report of the results of all performance tests shall be submitted to the Director within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312.A.

XXI. PROPERTY RIGHTS

[A.A.C. R18-2-306.A.8.d]

This permit does not convey any property rights of any sort, or any exclusive privilege.

XXII. SEVERABILITY CLAUSE

[A.A.C. R18-2-306.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

XXIII. PERMIT SHIELD [A.A.C. R18-2-325]

Compliance with the conditions of this permit shall be deemed compliance with the applicable requirements identified in the portions of this permit subtitled "Permit Shield". The permit shield shall not apply to any changes made pursuant to Section XV.B of this Attachment and Section XVI of this Attachment.

XXIV. ACCIDENTAL RELEASE PROGRAM

If this source becomes subject to the provisions of 40 CFR Part 68, then Permittee shall comply with these provisions according to the timeline specified in 40 CFR Part 68. [40 CFR 68]

XXV. PROTECTION OF STRATOSPHERIC OZONE

If this source becomes subject to the provisions of 40 CFR Part 82, then Permittee shall comply with these provisions accordingly. [40 CFR 82]

ATTACHMENT "B": SPECIFIC CONDITIONS

Air Quality Control Permit No. 1000042
For
ASARCO Incorporated - Ray Complex Hayden Smelter

I. GENERAL

A. Abbreviations

1. "A.A.C. R18-2-xyz" stands for the Arizona Administrative Code, Title 18, Chapter 2, Article x, Section xyz.

2. "A.R.S. §49-xyz" stands for the Arizona Revised Statutes, Title 49, Section xyz.

3. "CFR" means the Code of Federal Regulations, with standard references in this permit by Title and Part, so that "40 CFR 60" means "Title 40 of the Code of Federal Regulations, Part 60."

4. "NSPS" stands for the Standards of Performance for New Stationary Sources required under 40 CFR 60.

5. "COMS" stands for a continuous opacity monitoring system.

6. "CEMS" stands for a continuous emission monitoring system.

7. "ESP" stands for an electrostatic precipitator.

8. "SIP" stands for the state implementation plan.

B. The permit conditions or portions of the permit conditions which are material pursuant to A.A.C. R18-2-331 and A.R.S. §49-464 are indicated by *double underlined and italicized print*.

C. Definitions

1. "Process source" means the last operation or process which produces an air contaminant resulting from either: [A.A.C. R18-2-701(22)]

   a. The separation of the air contaminants from the process material, or
   b. The conversion of constituents of the process materials into air contaminants which is not an air pollution abatement operation.

2. "Fugitive emissions" means those emissions which could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening. [A.A.C. R18-2-101(49)]

3. "Nonpoint source" means a source of air contaminants which lacks an identifiable plume or emission point. [A.A.C. R18-2-101(77)]

4. "High sulfur oil" means fuel oil containing 0.90% or more by weight of sulfur. [A.A.C. R18-2-701(14)]

5. "Low sulfur oil" means fuel oil containing less than 0.90% by weight of sulfur. [A.A.C. R18-2-701(16)]

D. For the purpose of this permit, the EPA Reference Method 9 reading shall be defined as an average of 24 consecutive opacity observations recorded at 15-second intervals. A set is composed of any 24 consecutive observations. Sets need not be consecutive in time and in no case shall two sets overlap. For each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24. [A.A.C. R18-2-306.A.3.c and 40 CFR 60, Appendix A, Method 9, Section 2.5]

E. Unless otherwise specified in the applicable section of this Attachment, Permittee shall only use natural gas fuel for operation of the flash furnace burners, converters, concentrate dryers, and anode furnaces, except for natural gas curtailment periods when the natural gas is not available. During the curtailment periods, Permittee shall be allowed to use low sulfur fuel as emergency backup to firing the concentrate dryers and anode furnaces. For the purpose of this paragraph, the curtailment periods shall not include durations when the natural gas market price is considered high for any reason. [Installation Permit No. 1166]

F. Within 180 days of issuance of this permit, Permittee shall have on staff a person that is certified in EPA Reference Method 9. [A.A.C. R18-2-306.A.3.c]

G. At the time the compliance certifications required by Section VII of Attachment "A" are submitted, Permittee shall submit summary reports of any monitoring required in this Attachment and performed in the six months prior to the date of the report. All instances of deviations from requirements of the permit shall be clearly identified in the reports. [A.A.C. R18-2-306.A.5.a]

II. AFFECTED FACILITIES GOVERNED BY THE NEW SOURCE PERFORMANCE STANDARDS

A. General Provisions of the Section

1. Applicability

   The requirements of this section are applicable to the following affected facilities: Nos. 1 and 2 Fuller fluid bed dryers, and the portion of the Inco oxygen flash furnace that uses the Monsanto sulfuric acid plant to comply with the sulfur dioxide standard set forth in II.B.3 of this section.

2. Definitions

   a. "Startup" means the setting in operation of an affected facility of this section for any purpose. [40 CFR 60.2]

   b. "Shutdown" means the cessation of operation of an affected facility of this section for any purpose. [40 CFR 60.2]

   c. "Malfunction" means any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. [40 CFR 60.2]

3. For the purpose of this permit, compliance with standards in this section, other than opacity standards, shall be determined in accordance with performance tests. The performance tests shall be conducted and data reduced in accordance with the test methods and procedures contained in subsection E of this section, "Performance Testing Requirements". [40 CFR 60.11(a) and 60.8(b)]

4. For the purpose of this permit, compliance with an opacity standard in this section shall be determined by conducting observations in accordance with EPA Reference Method 9 in 40 CFR Part 60, Appendix A, or any alternative method that is approved by the Director, or as provided in paragraph 5 below. [40 CFR 60.11(b)]

5. Permittee may submit, for purposes of compliance with an opacity standard in this section, COMS data results produced during any performance test required under this section in lieu of the Method 9 observation data. Permittee using a COMS for compliance purposes is responsible for demonstrating that the COMS meets the requirements specified in 40 CFR 60.13(c), that the COMS has been properly maintained and operated, and that the resulting data have not been altered in any way. [40 CFR 60.11(e)(5)]

6. Permittee shall maintain and operate any affected facilities of this section, including associated air pollution control equipment, in accordance with the particular requirements specified under subsection II.C, "Air Pollution Control Requirements". Determination of whether acceptable operating and maintenance procedures are being used for these facilities shall be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [40 CFR 60.11(d)]

7. For the purpose of submitting compliance certifications or establishing whether or not Permittee has violated or is in violation of any standard in this section, nothing in this section shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with such standards if the appropriate performance or compliance test or procedure had been performed. [40 CFR 60.11(g)]

B. Emission limits and Standards

1. Furnace/Dryers Visible Emissions Standard

At all times except for periods of startup, shutdown, and malfunction as defined in paragraphs II.A.2.a,b and c of this Section, Permittee shall not cause to be discharged into the atmosphere from the furnace and/or any dryers of this section, any visible emissions which exhibit greater than 20 percent opacity. Opacity readings of portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with the opacity standard.

[40 CFR 60.164(a) and (b), 60.11(c) and 60.11(e)(1)]

2. Dryers Particulate Matter Standard

Permittee shall not cause to be discharged into the atmosphere from any dryer of this section any gases which contain particulate matter in excess of 50 mg/dscm (0.022 gr/dscf). Emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction shall not be considered a violation of the applicable emission limit. [40 CFR 60.8(c) and 60.162(a)]

3. Furnace Sulfur Dioxide Standard

Permittee shall not cause to be discharged into the atmosphere from the Inco oxygen flash furnace any gases which contain sulfur dioxide in excess of 0.065 percent by volume. Emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction shall not be considered a violation of the applicable emission limit. [40 CFR 60.8(c) and 60.163(a)]

C. Air Pollution Control Requirements

1. Particulate Matter Control for Dryers [40 CFR 60.11(d)]

Permittee shall operate the R&R Cottrell ESP. At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, continue to operate and maintain the two Fuller fluid bed dryers, their product baghouses and the R&R Cottrell ESP in a manner consistent with good air pollution control practice for minimizing particulate matter emissions.

2. Sulfur Dioxide Control [40 CFR 60.11(d) and 60.164(b)]

Permittee shall operate the Monsanto sulfuric acid plant to comply with the furnace sulfur dioxide standard of 0.065 percent by volume set forth in II.B.3. At all times, including periods of startup, shutdown, and malfunction, Permittee shall, to the extent practicable, continue to operate and maintain the Inco oxygen flash furnace and the Monsanto sulfuric acid plant in a manner consistent with good air pollution control practice for minimizing sulfur dioxide emissions.

D. Monitoring, Recordkeeping and Reporting Requirements

1. Visible Emissions Monitoring

a. Dryer opacity monitor

Permittee shall operate the R&R flue COMS installed at the outlet of the R&R Cottrell ESP to monitor and record the opacity of gases discharged into the atmosphere from any dryer of this section. The span of this system shall be set at 80 to 100 percent opacity. [40 CFR 60.165(b)(1)]

b. Acid plant tail gas opacity monitor

Permittee shall employ the COMS installed at the acid plant tail gas monitoring station for the purpose of performing periodic monitoring of visible emissions from the Inco oxygen flash furnace. [A.A.C. R18-2-306.A.3.c]

c. All the COMS under this section shall meet 40 CFR 60, Appendix B, "Performance Specification 1 - Specification and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources": [40 CFR 60.13(c) and A.A.C. R18-2-306.A.3.c]
(1) Apparatus
(2) Installation Specifications
(3) Design and Performance Specifications
(4) Design Specifications Verification Procedure
(5) Performance Specifications Verification Procedure
(6) Equations

d. All the COMS under this section shall meet the following quality assurance requirements:

(1) Calibration checks [40 CFR 60.13(d)(1) and A.A.C. R18-2-306.A.3.c]

Permittee shall check the zero (or low-level value between 0 and 20% of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily in accordance with a written procedure prescribed by the manufacturer.

(2) Zero and span drift adjustments [40 CFR 60.13(d)(1) and A.A.C. R18-2-306.A.3.c]

(a) The zero and span shall, as a minimum, be adjusted whenever the 24-hr zero drift or 24-hr span drift exceeds 4% opacity.

(b) The system shall allow for the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified.

(c) The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments, except for systems using automatic zero adjustments.

(d) For systems using automatic zero adjustments, the optical surfaces shall be cleaned when the

cumulative automatic zero compensation exceeds 4% opacity.

(3) System checks [40 CFR 60.13(d)(2) and A.A.C. R18-2-306.A.3.c]

Permittee shall, as minimum procedures, apply a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. All procedures applied shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.

(4) Minimum frequency of operation [40 CFR 60.13(e)(1) and A.A.C. R18-2-306.A.3.c]

Except during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments, the COMS shall be in continuous operation and shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(5) Data reduction procedures [40 CFR 60.13(h) and A.A.C. R18-2-306.A.3.c]

(a) Permittee shall reduce all data from the COMS to 6-minute averages. Six-minute opacity averages shall be calculated from 36 or more data points equally spaced over each 6-minute period.

(b) Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under the previous paragraph. An arithmetic or integrated average of all data may be used.

2. Tail Gas Sulfur Dioxide Monitoring

a. Permittee shall operate the SO_2 CEMS installed at the acid plant tail gas monitoring station to monitor and record SO_2 emissions discharged into the atmosphere from the Inco oxygen flash furnace. The span of this system shall be set at a sulfur dioxide concentration of 0.20 percent by volume. [40 CFR 60.165(b)(2)]

b. Permittee shall, on a daily basis, calculate and record six-hour average sulfur dioxide concentrations for the four consecutive 6-hour periods of each operating day. Each six-hour average shall be determined as the arithmetic mean of the appropriate six contiguous one-hour average sulfur dioxide concentrations provided by the SO_2 CEMS of paragraph a above. [40 CFR 60.165(c)]

c. Permittee shall determine compliance with the SO_2 emission standard of 0.065 percent by volume specified in paragraph II.B.3 of this section, using the SO_2 CEMS of paragraph a above to determine the SO_2 concentrations on a dry basis. The sampling time for each run shall be 6 hours, and the average SO_2 concentration shall be computed for the 6-hour period as in paragraph b above. The monitoring system drift during the run shall not exceed 2 percent of the span value. [40 CFR 60.166(b)(2)]

d. The SO_2 CEMS shall meet 40 CFR Part 60, Appendix B, "Performance Specification 2 - Specifications and Test Procedures for SO_2 and NOx Continuous Emission Monitoring Systems in Stationary Sources": [40 CFR 60.13(a)]

(1) Installation and Measurement Location Specifications
(2) Performance and Equipment Specifications
(3) Performance Specification Test Procedure
(4) The CEMS Calibration Drift Test Procedure

(5) Relative Accuracy Test Procedure
(6) Equations

e. Permittee shall develop and implement a quality control (QC) program for the SO_2 CEMS. As a minimum, the QC program shall include written procedures which should describe in detail, complete, step-by-step procedures and operations for each of the following activities:
[A.A.C. R18-2-312.H.3 and 40 CFR 60, Appendix F.3]

(1) Calibration of CEMS.
(2) Calibration drift determination and adjustment of CEMS.
(3) Preventive maintenance of CEMS (including spare parts inventory).
(4) Data recording, calculations, and reporting.
(5) Accuracy audit procedures including sampling and analysis methods.
(6) Program of corrective action for malfunctioning CEMS.

f. The SO_2 CEMS shall meet the following quality assurance requirements:

(1) Calibration drift checks

Permittee shall check the zero (or low-level value between 0 and 20% of span value) and span (50 to 100 percent of span value) calibration drifts (CD) at least once daily in accordance with a written procedure prescribed by the manufacturer. The pollutant gas used to prepare the calibration gas mixtures for the calibration drift checks shall be sulfur dioxide.
[40 CFR 60.13(d)(1) and 165(b)(2)(ii)]

(2) Zero and span drift adjustments

(a) The zero and span shall, as a minimum, be adjusted whenever the 24-hr zero drift or 24-hr span drift exceeds 100 ppm. [40 CFR 60.13(d)(1)]

(b) The SO_2 CEMS shall allow for the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified. If the data are automatically adjusted to the corrected calibration values (e.g., microprocessor control), Permittee shall program the SO_2 CEMS to record the unadjusted concentration measured in the calibration drift prior to resetting the calibration, if performed, or record the amount of adjustment.
[A.A.C. R18-2-312.H.3, 40 CFR 60.13(d)(1), 166(b) and Appendix F.4.2]

(c) If the SO_2 CEMS is out-of-control in terms of the CD exceedance as defined in 40 CFR 60, Appendix F.4.3, Permittee shall take necessary corrective action. Following corrective action, Permittee shall repeat the CD checks as described in paragraph II.D.2.f.(1).
[A.A.C. R18-2-312.H.3, 40 CFR 60.166(b) and Appendix F.4.3]

(3) Minimum frequency of operation [40 CFR 60.13(e)(2)]

Except during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments, the SO_2 CEMS shall be in continuous operation and shall complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute period.

(4) Data reduction procedures [40 CFR 60.13(h)]

(a) Permittee shall reduce all data from the SO_2 CEMS to 1-hour averages. The 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period.

(b) Data recorded during periods of continuous system breakdowns, repairs, calibration checks,

and zero and span adjustments shall not be included in the data averages computed under the previous paragraph. An arithmetic or integrated average of all data may be used. The data may be recorded in reduced or non-reduced form (e.g., ppm pollutant and percent O_2 or ng/J of pollutant).

(5) Excessive audit inaccuracy

If the SO_2 CEMS is out-of-control in terms of the excessive audit inaccuracy as defined in 40 CFR Part 60, Appendix F.5.2.3, Permittee shall take necessary corrective action to eliminate the problem. Following corrective action, Permittee shall audit the CEMS with a relative accuracy test audit, cylinder gas audit, or relative accuracy audit, as prescribed in II.E.3 of this section, to determine if the CEMS is operating within the performance specifications referenced in paragraph II.D.2.d. [A.A.C. R18-2-312.H.3, 40 CFR 60.166(b) and 40 CFR Part 60, Appendix F.5.2]

(6) Repeated excessive inaccuracy

Whenever excessive inaccuracies as defined in 40 CFR Part 60, Appendix F.5.2.3 occur for two consecutive quarters, Permittee shall revise the written procedures as described in II.D.2.e, or modify or replace the SO_2 CEMS to correct the deficiency causing the repeated excessive inaccuracy. [A.A.C. R18-2-312.H.3, 40 CFR 60.166(b) and 40 CFR Part 60, Appendix F.5.3]

3. Dryers Particulate Matter Monitoring

Permittee shall evaluate opacity measurements from the R&R flue COMS on a 24-hour rolling average excluding periods of startup, shutdown, and malfunction. If the 24-hour rolling average opacity exceeds 15 percent, Permittee shall initiate investigation of the relevant controls or equipment within 24 hours of the first discovery of the high opacity incident and, if necessary, take corrective action as soon as practicable to adjust or repair the controls or equipment to reduce the opacity average to below the 15 percent level. [A.A.C. R18-2-306.A.3.c]

4. Recordkeeping and Reporting Requirements

a. Permittee shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility under this Section; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative. [40 CFR 60.7(b)]

b. Permittee shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this section recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurements, maintenance, reports and records. [40 CFR 60.7(f) and A.A.C. R18-2-306(A)(4)(b)]

c. Quarterly excess emissions and monitoring systems performance reports

(1) Permittee shall submit an excess emissions and monitoring systems performance (MSP) report and/or a summary report form to the Department for every calendar quarter, unless the total duration of excess emissions for the reporting period is less than 1 percent of the total operating time for the reporting period and the continuous monitoring system downtime for the reporting period is less than 5 percent of the total operating time for the reporting period, in which case only the summary report form shall be submitted and the excess emissions report need not be

submitted unless requested by the Department. All quarterly reports shall be postmarked by the 30th day following the end of each calendar quarter. [40 CFR 60.7(c) and (d)]

(2) The summary report form submission required in the preceding paragraph (1) shall be in the format specified in 40 CFR 60.7(d). Each excess emission and MSP report shall include the following information: [40 CFR 60.7(c)]

(a) The magnitude of excess emissions computed, any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period.

(b) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

(c) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

(d) When no excess emissions have occurred or the continuous monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

(3) Definitions

Periods of excess emissions that shall be reported under II.D.4.c(1) and (2) above are defined as follows:

(a) Opacity

Opacity excess emissions are defined as any six-minute period during which the average opacity, as measured by the COMS as in paragraph II.D.1.a and/or paragraph II.D.1.b, exceeds the 20 percent opacity standard, as specified in paragraph II.B.1.
[40 CFR 60.165(d)(1) and A.A.C. R18-2-306.A.3.c]

(b) Sulfur Dioxide

SO_2 excess emissions are defined as any six-hour period during which the average SO_2 emissions, as measured by the SO_2 CEMS as in paragraph II.D.2.a, exceed the level of the standard of 0.065 percent by volume, as specified in paragraph II.B.3. The Director shall not consider emissions in excess of the level of the standard for less than or equal to 1.5 percent of the six-hour periods during the quarter as indicative of a potential violation of paragraph II.A.6, provided the affected facilities of this section, including air pollution control equipment, are maintained and operated in a manner consistent with good air pollution control practice for minimizing emissions during these periods. Emissions in excess of the level of the standard during periods of startup, shutdown, and malfunction shall not be included within the 1.5 percent. [40 CFR 60.165(d)(2)]

d. Data Assessment Report [A.A.C. R18-2-312.H.3 and 40 CFR Part 60, Appendix F.7]

Along with the quarterly reporting submittal described in subsection II.D.4.c, Permittee shall also report the drift and accuracy information as a Data Assessment Report (DAR), and include one copy of this DAR for each quarterly audit for the SO_2 CEMS. The DAR shall, as a minimum, contain the following information:

(1) Permittee name and address.

(2) Identification and location of monitors in the CEMS.

(3) Manufacturer and model number of each monitor in the CEMS.

(4) Assessment of CEMS data accuracy and date of assessment as determined by a relative accuracy test audit (RATA), relative accuracy audit (RAA), or cylinder gas audit (CGA) required under subsection II.E.3 including the relative accuracy for the RATA, accuracy of the CEMS for the RAA or CGA, reference method results, cylinder gases certified values, CEMS responses, and calculations results as defined in 40 CFR Part 60, Appendix F, Section 6. If the accuracy audit results show the CEMS to be out-of-control as described in paragraph II.D.2.f(5), Permittee shall report both the audit results showing the CEMS to be out-of-control and the results of the audit following corrective action showing the CEMS to be operating within specifications.

(5) Results from EPA performance audit samples and the applicable reference methods.

(6) Summary of all corrective actions taken when CEMS was determined out-of-control, as described in paragraphs II.D.2.f(2)(c) and II.D.2.f(5).

e. Permittee shall log in ink or electronic format and maintain a record of 24-hour opacity measurements performed in accordance with II.D.3 and corrective actions taken, if any. A record of corrective actions taken shall include the date and time during which the 24-hour rolling average opacity exceeded 15 percent and the date, time and type of the corrective actions. [A.A.C. R18-2-306.A.3.c]

f. Emission deviations reporting requirements

In addition to the quarterly reporting required under subsection II.D.4.d of this section, Permittee shall report emissions exceeding an emission limitation or standard as deviations in accordance with Section XI.B of Attachment "A" of this permit. [A.A.C. R18-2-306.A.5.b]

E. Performance Testing Requirements

1. Furnace/Dryers Opacity Observation

Permittee shall perform an annual opacity observation of emissions from the Inco oxygen flash furnace and Nos. 1 and 2 fluid bed dryers in accordance with EPA Reference Method 9 to determine compliance with the visible emission standard of 20 percent opacity specified in paragraph II.B.1.
[40 CFR 60.166(b)(3)]

2. Dryers Particulate Matter Emissions Testing

Permittee shall determine compliance with the dryer particulate matter standard of 0.022 gr/dscf in paragraph II.B.2, using EPA Reference Method 5 testing annually at R&R flue to determine the particulate matter concentration. The sampling time and sample volume for each run shall be at least 60 minutes and 0.85 dscm (30 dscf). [40 CFR 60.166(b)(1)]

3. SO_2 CEMS Auditing

Permittee shall conduct audits for the SO_2 CEMS of paragraph II.D.2.a, at least once each calendar quarter. Successive quarterly audits shall occur no closer than 2 months. The audits shall be conducted as follows: [A.A.C. R18-2-312.H.3, 40 CFR 60.166(b) and 40 CFR 60, Appendix F.5.1]

a. Relative accuracy test audit (RATA) [40 CFR 60.165(b)(2)(ii) and Appendix F.5.1.1]

Permittee shall conduct the RATA at least once every four calendar quarters in accordance with the relative accuracy test procedures specified in 40 CFR 60, Appendix B, Performance Specification 2, Section 7. EPA Reference Methods 3B, 4, and 6, or their approved alternatives, shall be used in conducting the RATA tests. In addition, Permittee shall analyze the appropriate performance audit samples received from EPA as described in the Method 6.

b. Cylinder gas audit (CGA) [40 CFR 60, Appendix F.5.1.2]

Permittee shall conduct a CGA in three of four calendar quarters, but in no more than three quarters in succession in accordance with the procedures as specified in 40 CFR 60, Appendix F.5.1.2.

c. Relative accuracy audit (RAA) [40 CFR 60, Appendix F.5.1.3]

As an alternative to CGA, Permittee may conduct the RAA in three of four calendar quarters, but in no more than three quarters in succession. To conduct a RAA, Permittee shall follow the relative accuracy test procedures as specified in 40 CFR 60, Appendix B, Performance Specification 2, Section 7, except that only three sets of measurement data are required. Analyses of EPA performance audit samples are also required. Audit samples are available upon request.

F. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: 40 CFR 60.7(b), 40 CFR 60.7(c), 40 CFR 60.7(d), 40 CFR 60.7(f), 40 CFR 60.8(b), 40 CFR 60.8(c), 40 CFR 60.11(a), 40 CFR 60.11(b), 40 CFR 60.11(c), 40 CFR 60.11(d), 40 CFR 60.11(e)(1), 40 CFR 60.11(e)(5), 40 CFR 60.11(g), 40 CFR 60.13(a), 40 CFR 60.13(d), 40 CFR 60.13(e)(1), 40 CFR 60.13(e)(2), 40 CFR 60.13(h), 40 CFR 60.162(a), 40 CFR 60.163(a), 40 CFR 60.164(a), 40 CFR 60.164(b), 40 CFR 60.165(b), 40 CFR 60.165(c), 40 CFR 60.165(d), 40 CFR 60.166, and A.A.C. R18-2-312.H.3.

III. PROCESS SOURCES GOVERNED BY THE MULTI-POINT ROLLBACK RULE

A. General Provisions of the Section

1. Applicability

The requirements of this section are applicable to the sulfur dioxide emissions plant wide.

2. Definitions

a. An "operating day", for the purpose of this section, means any day in which sulfur containing feed is introduced into the smelting process. [A.A.C. R18-2-715.01(J)]

b. "Compliance period", for the purposes of this section, means the 365 calendar days immediately preceding the end of each day of the month being reported unless that period includes less than 300 operating days. In such case the number of days preceding the last day of the compliance period shall be increased until the compliance period contains 300 operating days. [A.A.C. R18-2-715.01(J)]

B. Emission Limitations and Standards

1. Annual average sulfur dioxide emissions [A.A.C. R18-2-715(F)(2)(a)]

Annual average SO_2 emissions shall not exceed 9,521 pounds per hour.

2. Allowable sulfur dioxide emissions profile [A.A.C. R18-2-715(F)(2)(b)]

The number of three-hour average emissions shall not exceed n cumulative occurrences in excess of E, the emission level, shown in Table III-B-1 in any compliance period:

Table III-B-1. Allowable SO_2 emissions profile

Occurrences, n	Emission Level, E (lbs/hr)	Occurrences, n	Emission Level, E (lbs/hr)
0	38,000	180	20,500
1	36,000	245	19,300
2	34,000	330	18,500
4	32,000	435	17,500
7	30,500	560	16,700
12	28,800	710	16,000
20	27,300	890	15,000
32	26,000	1100	14,200
48	25,000	1340	13,500
68	23,800	1610	12,800
94	22,700	1910	12,200
130	21,500	2240	11,500

3. Sulfur dioxide fugitive emissions control [A.A.C. R18-2-306.01.A and 715.02.C]

Permittee shall maintain and *operate the following emission control equipment* and other relevant facilities with good housekeeping and operational practices to insure the maximum capture of fugitive SO_2 emissions from the converter building, furnace building, and/or anode building:

a. *ESPs*;
b. Settling chambers;
c. *Monsanto acid plant*;
d. *Primary hoods for the converters*;
e. *Secondary hoods for the converters*;
f. *Secondary hoods baghouse for the converter building*;
g. *Furnace vent hoods*; and
h. Furnace wet gas handling system.

C. Monitoring, Recordkeeping and Reporting Requirements

1. Sulfur Balance

As a means of determining total overall emissions, Permittee shall perform material balances for sulfur in accordance with the procedures prescribed in the Attachment D of this permit.
[A.A.C. R18-2-715.01(O)]

2. For purposes of determining compliance with the cumulative occurrence and emission limits contained in paragraphs III.B.1 and 2 of this section, Permittee shall continue to calibrate, maintain, and operate

a measurement system for continuously monitoring sulfur dioxide concentrations and stack gas volumetric flow rates of the following: [A.A.C. R18-2-715.01(K), (K)(1) and (K)(2)]

a. gaseous stream at main flue of the five Pierce Smith converter secondary hoods;
b. vent gas of fugitive emissions captured by all the slag tapping hoods, matte tapping hoods, and slag return hoods;
c. main gaseous stream to the center of the one-thousand-foot stack.

3. Quality control and assurance requirements for the continuous monitoring systems

a. All the stack gas volumetric flow rate measurement systems shall meet 40 CFR Part 60, Appendix B, "Performance Specification 6 - Specifications and Test Procedures for Continuous Emission Rate Monitoring Systems in Stationary Sources": [A.A.C. R18-2-715.01(K)(5)(a)]

(1) Performance and Equipment Specifications
(2) CD Test Procedure
(3) RA Test Procedure

b. The SO_2 CEMS shall meet 40 CFR Part 60, Appendix B, "Performance Specification 2 - Specifications and Test Procedures for SO_2 and NOx Continuous Emission Monitoring Systems in Stationary Sources": [A.A.C. R18-2-715.01(K)(5)(b)]

(1) Installation and Measurement Location Specifications
(2) Performance and Equipment Specifications
(3) Performance Specification Test Procedure
(4) The CEMS Calibration Drift Test Procedure
(5) Relative Accuracy Test Procedure
(6) Equations

c. Permittee shall conduct the demonstrations of measurement systems performance required by the preceding paragraphs a and b in accordance with 40 CFR 60, Appendix F. [A.A.C. R18-2-312.H.3 and 715.01(K)(5)(c)]

d. Location change of all sampling points for monitoring sulfur dioxide concentrations and stack gas volumetric flow rates shall be approved in writing by the Director. [A.A.C. R18-2-715.01(K)(5)(d)]

e. The measurement systems in use shall be subject to the manufacturer's recommended zero adjustment and calibration procedures at least once per 24-hour operating period unless the manufacturer specifies or recommends calibration at shorter intervals, in which case 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. [A.A.C. R18-2-715.01(K)(5)(e)]

f. Failure to measure at least 95 percent of the hours during which emissions occurred in any month, using the continuous monitoring systems, shall constitute a violation. [A.A.C. R18-2-715.01(L)]

g. Failure to measure any 12 consecutive hours of emissions in accordance with the requirements in this subsection shall constitute a violation. [A.A.C. R18-2-715.01(M)]

h. Permittee shall maintain on hand and ready for immediate installation sufficient spare parts or duplicate systems for the continuous monitoring equipment required by this subsection to allow for the replacement within six hours of any monitoring equipment part which fails or malfunctions during operation. [A.A.C. R18-2-715.01(N)]

4. For purposes of this subsection, continuous monitoring means the taking and recording of at least one measurement of sulfur dioxide concentration and stack gas flow rate reading from the effluent of each affected stack, outlet or other approved measurement location in each 15-minute period. An hour of smelter emissions will be considered to have been continuously monitored if the emissions from all monitored stacks, outlets or other approved measurement locations are measured for at least 45 minutes of any hour in accordance with the requirements of this subsection. [A.A.C. R18-2-715.01(K)(4)]

5. For purposes of determining compliance with the cumulative occurrence and emission limits contained in paragraphs III.B.1 and 2 of this section, the annual average emissions and three-hour emissions shall be determined as follows:

   a. Permittee shall, at the end of each day, calculate annual average SO_2 emissions by averaging the SO_2 emissions for all hours measured during the compliance period ending on that day. [A.A.C. R18-2-715.01(C)(1)]

   b. Permittee shall, at the end of each clock hour, calculate three-hour SO_2 emissions averages by averaging the hourly SO_2 emissions for the preceding three consecutive hours whenever each such hour was measured in accordance with the requirements contained in this subsection. [A.A.C. R18-2-715.01(C)(2)]

   c. The actual cumulative occurrence and emission level shall be determined using the sum total of sulfur dioxide emissions from the smelter processing units and sulfur dioxide control and removal equipment. The captured fugitive emissions shall be included as part of the total plant emissions, but not the uncaptured fugitive emissions and those emissions due solely to the use of fuel for space heating or steam generation. [A.A.C. R18-2-715.01(A) and 715.01(K)(2)]

   d. Periods of malfunction, startup, shutdown or other upset conditions shall be included in the determination. [A.A.C. R18-2-715.01(B)]

6. Violation Determination

   For purposes of this section, the following scenarios shall be considered violations of the cumulative occurrence and/or emission limits contained in paragraphs III.B.1 and 2:

   a. An annual emissions average in excess of the allowable annual average emission limit given in paragraph III.B.1 of this section shall be considered a violation if either: [A.A.C. R18-2-715.01(C)(1)]

      (1) The annual average is larger than the annual average computed for the preceding day; or
      (2) The annual averages computed for the five preceding days all exceed the allowable annual average emission limit.

   b. A three-hour emissions average in excess of an emission level (E) will be considered to violate the associated cumulative occurrence limit (n) listed in Table III-B-1 of this section if both:

      (1) The number of all three-hour emissions averages measured during the compliance period in excess of that emission level exceeds the cumulative occurrence limit associated with the emission level; and

      (2) The average was measured during the last operating day of the compliance period being reported. [A.A.C. R18-2-715.01(E)]

   c. A three-hour emissions average can only violate the cumulative occurrence limit (n) of an emission level (E) in the day containing the last hour in the average. [A.A.C. R18-2-715.01(F)]

d. Multiple violations of a cumulative occurrence limit in the same day and violations of different cumulative limits in the same day shall constitute a single violation. [A.A.C. R18-2-715.01(G)]

e. The violation of any cumulative occurrence limit and an annual average emission limit in the same day shall constitute only a single violation. [A.A.C. R18-2-715.01(H)]

f. Multiple violations of a cumulative occurrence limit by different three-hour emissions averages containing any common hour shall constitute a single violation. [A.A.C. R18-2-715.01(I)]

7. Recordkeeping and Reporting Requirements

a. Permittee shall maintain a record of all average hourly emissions measurements required to be measured by this section in accordance with the requirements specified in Section XII, Attachment "A" of this permit. [A.A.C. R18-2-715.01(P)]

b. Monthly reporting requirements

All of the following measurement results shall be expressed as pounds per hour of sulfur dioxide and shall be summarized monthly and submitted to the Director within 20 days after the end of each month: [A.A.C. R18-2-715.01(P)]

(1) For all periods described in III.C.5 of this subsection, the annual average emissions (expressed in pounds per hour) as calculated at the end of each day of the month;

(2) The total number of hourly periods during the month in which measurements were not taken and the reason for loss of measurement for each period;

(3) The number of three-hour emissions averages which exceeded each of the applicable emissions levels listed in Table III-B-1 for the compliance periods ending on each day of the month being reported;

(4) The date on which a cumulative occurrence limit listed in Table III-B-1 was exceeded if such exceedance occurred during the month being reported.

c. Bypass reporting requirements

At each point in the permitted smelter facility where a means exists to bypass the sulfur removal equipment, such bypass shall be instrumented and monitored to detect and record all periods that the bypass is in operation. Permittee shall report to the Director, not later than the 15th day of each month, the information required to be recorded by this Section. Such report shall include an explanation for the necessity of the use of the bypass. [A.A.C. R18-2-715.01(T)]

D. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: A.A.C. R18-2-715.F.2, A.A.C. R18-2-715.01.A, A.A.C. R18-2-715.01.B, A.A.C. R18-2-715.01.C, A.A.C. R18-2-715.01.E, A.A.C. R18-2-715.01.F, A.A.C. R18-2-715.01.G, A.A.C. R18-2-715.01.H, A.A.C. R18-2-715.01.I, A.A.C. R18-2-715.01.J, A.A.C. R18-2-715.01.K, A.A.C. R18-2-715.01.L, A.A.C. R18-2-715.01.M, A.A.C. R18-2-715.01.N, A.A.C. R18-2-715.01.O, A.A.C. R18-2-715.01.P, and A.A.C. R18-2-715.01.T.

IV. MORE REQUIREMENTS FOR FURNACE AND CONVERTERS OPERATION

A. Applicability

The requirements of this section are applicable to the following process sources: the Inco oxygen flash furnace and Nos. 1-5 Pierce Smith converters.

B. Emission limits and Standards

1. Opacity Standard

Permittee shall not cause, allow or permit to be emitted into the atmosphere any plume or effluent from operation of any converters and/or the portion of furnace not associated with the Monsanto sulfuric acid plant, the opacity of which exceeds 20 percent. Where the presence of uncombined water is the only reason for the exceedance of the visible emissions requirement, such exceedance shall not constitute a violation. [A.A.C. R18-2-702(C) and 715(D)]

2. Furnace Particulate Matter Standard [40 CFR 52.126(b) and A.A.C. R18-2-701(23), 701(24), 702(E) and 715(A)]

Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere from the furnace operation in total quantities in excess of the amount calculated by one of the following equations and rounded off to two decimal places:

a. For the furnace operation having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions from the furnace shall be determined by the following equation:

$$E_f = 3.59\ P_f^{0.62}$$

Where
E_f = Furnace maximum allowable particulate emissions rate in pounds-mass per hour.
P_f = Total furnace process weight rate in tons-mass per hour, which is the total weight rate of all materials introduced into the Inco oxygen flash furnace, including fuels, where these contribute to generation of particulate matters. It shall be the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.

b. For the furnace operation having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions from the furnace shall be determined by the following equation:

$$E_f = 17.31\ P_f^{0.16}$$

Where "E_f" and "P_f" are defined as indicated in IV.B.2.a.

3. Converter Particulate Matter Standard
[40 CFR 52.126(b) and A.A.C. R18-2-701(23), 701(24), 702(E), 715(C) and 715(A)]

Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere from all the converters in operation in total quantities in excess of the amount calculated by one of the following equations and rounded off to two decimal places:

a. For the converters operation having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions from all the converters in operation shall be

determined by the following equation:

$E_c = 3.59\ P_c^{0.62}$

Where

E_c = Maximum allowable particulate emissions rate of all the converters in operation in pounds-mass per hour.

P_c = Total converters process weight rate in tons-mass per hour, which is the total weight rate of all materials introduced into all the converters in operation, including fuels, where these contribute to generation of particulate matters. The process weight for each converter shall be the total process weight for a period which covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such period. In addition, for purposes of this section, the total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter for that process.

b. For the converters operation having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions from all the converters in operation shall be determined by the following equation:

$E_c = 17.31\ P_c^{0.16}$

Where "E_c" and "P_c" are defined as indicated in IV.B.3.a.

C. Air Pollution Control Requirements

1. Particulate Matter Control for Flash Furnace Vent Gas

Permittee shall operate the R&R Cottrell ESPs to treat all captured fugitive gases from matte tapping and slag skimming stations at the flash furnace for particulate matter removal prior to discharge to the atmosphere. [Installation Permit No. 1166, Condition 7]

2. Particulate Matter Control for Secondary Hoods Vent Gas

Permittee shall operate and maintain *the converter secondary hoods baghouse* to minimize particulate emissions from the secondary hoods. [A.A.C. R18-2-317 Change to Operating Permit No. 0308-85]

D. Monitoring, Recordkeeping and Reporting Requirements

1. Converter Secondary Hoods Baghouse COMS [A.A.C. R18-2-306.A.3.c]

a. Unless the alternative methods and procedures as provided in subsection IV.D.4 below are implemented, *Permittee shall, within 180 days from the effective date of this permit, install*, calibrate, maintain, and operate *a COMS downstream of the converter secondary hoods baghouse* to monitor the baghouse outlet flue gas opacity.

b. The converter secondary hoods baghouse COMS shall comply with the same performance, quality assurance, recordkeeping, and reporting requirements as specified in II.D.1 and 4 of this attachment for the R&R Cottrell ESP COMS.

2. Permittee shall weigh the material entering the Inco flash furnace with a weightometer and shall count the number of ladles carrying material to the converters to determine the process weight rates in tons-mass per hour to the furnace and converters. [A.A.C. R18-2-306.A.3.c]

3. Particulate Matter Monitoring for Acid Plant Tailgas and Converter Secondary Hoods

a. In conjunction with the monitoring performed under paragraph II.D.3 of this attachment, Permittee shall also evaluate opacity measurements from the converter secondary hoods baghouse COMS described in paragraph IV.D.1 and the main flue COMS described in paragraph II.D.1.b on a 24-hour rolling average. If the 24-hour rolling average opacity exceeds 15 percent, Permittee shall initiate investigation of the relevant controls or equipment within 24 hours of the first discovery of the high opacity incident and, if necessary, take corrective action as soon as practicable to adjust or repair the controls or equipment to reduce the opacity average to below the 15 percent level.
[A.A.C. R18-2-306.A.3.c]

b. Permittee shall log in ink or electronic format and maintain a record of 24-hour opacity measurements performed in accordance with paragraph a above and any corrective actions taken, if any. A record of corrective actions taken shall include the date and time during which the 24-hour rolling average opacity exceeded 15 percent and the date, time and type of the corrective action.
[A.A.C. R18-2-306.A.3.c]

4. Alternative Monitoring Requirements

Permittee may apply the following baghouse leak detection approach as the alternative to the COM requirements set forth in paragraph IV.D.1 above:

a. *Permittee shall, within 180 days from the effective date of this permit, install,* calibrate, maintain, and continuously operate *a bag leak detection system at the converter secondary hoods baghouse* to monitor the baghouse performance. For the purpose of this subsection, the bag leak detection system means an instrument that is capable of monitoring particulate matter loadings in the exhaust of the secondary hoods baghouse in order to detect bag failures. The bag leak detection shall include, but is not limited to, an instrument that operates on triboelectric, light scattering, or other principle to monitor relative or absolute particulate matter loadings. [A.A.C. R18-2-306.A.3.c and 312.H.3]

b. The converter secondary hoods baghouse leak detection system required by the paragraph IV.D.4.a above shall comply with the following specifications and requirements: [A.A.C. R18-2-306.A.3.c]

(1) *The bag leak detection system shall be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations that can effectively discern any dysfunctional leaks of the secondary hoods baghouse.*

(2) The bag leak detection system sensor shall provide output of relative or absolute particulate matter loadings.

(3) The bag leak detection system shall be equipped with an alarm system that will sound automatically when an increase in relative particulate emissions over a preset level is detected. The alarm shall be located where it is easily heard by plant operating personnel.

(4) The bag leak detection system shall be installed downstream of the converter secondary hoods baghouse.

(5) The bag leak detection system shall be installed, operated, calibrated, and maintained in a manner consistent with the manufacturer's written specifications and recommendations. The calibration of the system shall, at a minimum, consist of establishing the relative baseline output level by adjusting the sensitivity and the averaging period of the device, and establishing the alarm set points and the alarm delay time.

c. If the bag leak detection system alarms, Permittee shall initiate investigation of the secondary hoods baghouse within 24 hours of the first discovery of the alarming incident and, if necessary, take corrective action as soon as practicable to adjust or repair the baghouse to minimize possible exceedances of the particulate standard established in paragraphs IV.B.3 of this section. [A.A.C. R18-2-306.A.3.c]

d. Permittee shall log in ink or electronic format and maintain a record of installation, calibration, maintenance, and operation of the bag leak detection system in accordance with Section XII, Attachment "A" of this permit. In the case of any alarming incident, the record shall include an identification of the date and time of all bag leak detection alarms, their cause, and an explanation of the corrective actions taken, if any. [A.A.C. R18-2-306.A.3.c]

E. Performance Testing Requirements [A.A.C. R18-2-715(E)]

1. Performance Testing Methods and Frequency

Permittee shall conduct performance tests at least once every year with the following reference methods to determine compliance with the particulate matter emissions standard set forth in IV.B.2 and 3 of this section for the one-thousand-foot stack:

a. Reference Method 1 for sample and velocity traverses;
b. Reference Method 2 for volumetric flow rate;
c. Reference Method 3 for gas analysis;
d. Arizona Testing Method A1 or Reference Method 5 for concentration of particulate matter and associated moisture content.

2. Sampling Location

The performance tests shall be conducted at and samples be withdrawn contemporaneously from the following locations:

a. R&R ESP outlet flue;
b. Secondary Hoods Baghouse outlet flue; and
c. Monsanto Acid Plant outlet flue.

3. Compliance Demonstration

Permittee shall demonstrate compliance by comparing the sum total of all emissions from each sampling location as determined under IV.E.1 and 2 above with the sum total of all the maximum allowable particulate emissions rates set forth in IV.B.2 and 3.

F. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: 40 CFR 52.126(b), A.A.C. R18-2-715.A, A.A.C. R18-2-715.C, A.A.C. R18-2-715.D, A.A.C. R18-2-715.E, and Installation Permit No. 1166, Condition 7.

V. CONVERTERS ARSENIC CHARGING RATE MONITORING

A. General Provisions of the Section

1. The requirements of this section apply to any copper converter under this permit where the total arsenic charging rate for the copper converter department averaged over a 1-year period is less than 75 kg/hr.

At such time that Permittee becomes aware of the 1-year period average total equal to or greater than 75 kg/hr, Permittee shall submit an application for permit revision in accordance with Section XV, Attachment "A". [40 CFR 61.172(a)]

2. Arsenic charging rate means the hourly rate at which arsenic is charged to the copper converters based on the arsenic content of the copper matte and of any lead matte that is charged to the copper converters. [40 CFR 61.171]

B. Monitoring Requirements [40 CFR 61.174(f)]

Permittee shall determine the converter arsenic charging rate as follows:

1. Collect daily grab samples of copper matte and any lead matte charged to the copper converters.

2. Each calendar month, from the daily grab samples collected under paragraph 1 above, put together a composite copper matte sample and a composite lead matte sample. Analyze the composite samples individually using Method 108A, 108B, or 108C to determine the weight percent of inorganic arsenic contained in each sample.

3. Calculate the converter arsenic charging rate once per month using the following equation:

$$R_c = \sum_{i=1}^{n} \frac{A_c W_{ci} + A_l W_{li}}{100 H_c}$$ Where:

R_c = Converter arsenic charging rate (kg/h).
A_c = Monthly average weight percent of arsenic in the copper matte charged during the month (%) as determined under paragraph b above.
A_l = Monthly average weight percent of arsenic in the lead matte charged during the month (%) as determined under paragraph b above.
W_{ci} = Total weight of copper matte charged to a copper converter during the month (kg).
W_{li} = Total weight of lead matte charged to a copper converter during the month (kg).
H_c = Total number of hours the copper converter department was in operation during the month (h).
n = Number of copper converters in operation during the month.

4. Determine an annual arsenic charging rate for the copper converter department once per month by computing the arithmetic average of the 12 monthly converter arsenic charging rate values (R_c) for the preceding 12-month period.

C. Recordkeeping and Reporting Requirements [40 CFR 61.174(f)]

1. Permittee shall maintain at the source for a period of at least 2 years and make available to the Director upon request the following records:

   a. For all converters, a monthly record of the weight percent of arsenic contained in the copper matte and lead matte as determined under V.B of this section. [40 CFR 61.176(c)(2)]

   b. For all converters, the monthly calculations of the average annual arsenic charging rate for the preceding 12-month period as determined under V.B of this section. [40 CFR 61.176(c)(3)]

2. Permittee shall submit annually a written report to the Director that includes the monthly computations of the average annual converter arsenic charging rate as calculated under V.B.4 of this section. The annual report shall be postmarked by the 30th day following the end of each calendar year. [40 CFR 61.177(f)]

D. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: 40 CFR 61.172(a), 40 CFR 61.174(f), 40 CFR 61.176(c)(2), 40 CFR 61.176(c)(3), and 40 CFR 61.177(f).

VI. MATERIAL STORAGE FACILITIES

A. Affected Facilities

The affected facilities under this section shall include the following:

1. 200-Ton West Wet Bin #1
2. 200-Ton West Wet Bin #2
3. 200-Ton Dry Bin #1
4. 200-Ton Dry Bin #2
5. 200-Ton Dry Bin #3
6. 200-Ton Dry Bin #4
7. 30-Ton Dust Bin #1
8. 30-Ton Dust Bin #2
9. WTP Lime Silo

B. Emission limits and Standards

1. Visible Emissions

Permittee shall not cause, allow or permit to be emitted into the atmosphere any plume or effluent from any material storage facilities under this section, the opacity of which exceeds 20 percent. Where the presence of uncombined water is the only reason for the exceedance of the visible emissions requirement, such exceedance shall not constitute a violation. [A.A.C. R18-2-702(c) and 715(D)]

2. Particulate Matter Standard [40 CFR 52.126(b) and A.A.C. R18-2-701(23), 701(24), 702(E), 715(A) and 715(C)]

Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere from any affected material storage facilities under this section in total quantities in excess of the amount calculated by one of the following equations and rounded off to two decimal places:

a. For the material storage facilities having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$E = 3.59\ P^{0.62}$ Where:

E = Maximum allowable particulate emissions rate in pounds-mass per hour.
P = Total process weight rate in tons-mass per hour, which is the total weight rate of all materials introduced into the bin, where these contribute to generation of particulate matters. It shall be the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof. In addition, for purposes of this section, the total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter for that process.

b. For the material storage facilities having a process weight rate greater than 60,000 pounds per hour

(30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 17.31 P^{0.16}$

Where "E" and "P" are defined as indicated in the preceding equation in VI.B.2.a.

C. Air Pollution Control Requirements

Permittee shall operate baghouses associated with the material storage facilities subject to the requirements of this Section. [A.A.C. R18-2-317 Change to Operating Permit No. 0308-85]

D. Monitoring, Recordkeeping and Reporting Requirements [A.A.C. R18-2-306.A.3.c]

1. A trained observer shall conduct a bi-weekly (once in every two weeks) visual survey of visible emissions from stacks of the associated baghouses under this section when the material feeding is in process, using USEPA Reference Method 22.

2. If any of the stacks is observed having a visible emission that lasts longer than six minutes, Permittee shall commence corrective action as necessary to adjust or repair the associated baghouse.

3. Permittee shall log in ink or electronic format and maintain a record of visible emission observations including the name of the observer, the date and time on which the observation was made, and the results of the observation. Permittee shall also keep a record of corrective action taken, if any.

E. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: 40 CFR 52.126(b), A.A.C. R18-2-715.A, A.A.C. R18-2-715.C, and A.A.C. R18-2-715.D.

VII. REVERT CRUSHING PLANT

A. Applicability

The revert crushing plant under this section shall include the following affected facilities:

1. Primary jaw crusher;
2. Vibrating screen;
3. Cone crusher; and
4. 4 conveyor belt transfer points, i.e., from primary crusher to 1st conveyor, from 1st conveyor to screen, from screen to 2nd conveyor, and from cone crusher to 2nd conveyor.

B. Emission limits and Standards

1. Visible Emissions

Permittee shall not cause to be discharged into the atmosphere from the revert crushing plant any stack emissions that exhibit greater than 20 percent opacity and/or any process fugitive emissions that exhibit greater than 40 percent opacity. Where the presence of uncombined water is the only reason for the exceedance of the visible emissions requirement, such exceedance shall not constitute a violation.
[A.A.C. R18-2-702(B) and (C) and 715(D)]

2. Particulate Matter Standard [40 CFR 52.126(b) and A.A.C. R18-2-701(23), 701(24), 702(E), and 715(A)]

Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere from the revert crushing plant under this section in total quantities in excess of the amount calculated by one of the following equations and rounded off to two decimal places:

a. For the revert crushing operation having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$E = 3.59\ P^{0.62}$ Where:

E = Maximum allowable particulate emissions rate in pounds-mass per hour.
P = Total process weight rate in tons-mass per hour, which is the total weight rate of all materials introduced into the revert crushing plant, where these contribute to generation of particulate matters. It shall be the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.

b. For the revert crushing operation having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 17.31\ P^{0.16}$

Where "E" and "P" are defined as indicated in the preceding equation in VII.B.2.a.

3. The amount of material processed at the revert crushing plant shall not exceed 42,000 tons per year without prior approval from the Director. [Installation Permit No. 1215, Condition 8]

C. Air Pollution Control Requirements

1. *Permittee shall operate a baghouse associated with the revert crushing plant* subject to the requirements of this section with rated efficiency no lower than 99%. [Installation Permit No. 1215, Conditions 2 and 3]

2. Particulates captured in the control facilities shall be handled and disposed in a manner which prevents re-entrainment into the atmosphere. [Installation Permit No. 1215, Condition 5]

3. All conveyor transfer points shall be enclosed. [Installation Permit No. 1215, Condition 6]

4. Spray bars shall be used at every dumping and conveyor transfer point, as necessary to minimize the particulate matter emissions. [Installation Permit No. 1215, Condition 7]

D. Monitoring, Recordkeeping and Reporting Requirements

1. Permittee shall record the date, hours of operation and process weight rate in tons-mass per hour to the revert crushing system. [A.A.C. R18-2-306.A.3.c]

2. Monthly monitoring for opacity/particulate matter emissions from the revert crushing plant baghouse

a. Baseline establishment [A.A.C. R18-2-306.A.3.c]

Within 180 days of issuance of this permit, Permittee shall conduct at least one certified method 9 performance test in accordance with section XVII of attachment "A" for the revert crushing plant baghouse while it is operating at normal representative working conditions, to establish a baseline

opacity level. Within 30 days of establishing the baseline opacity, Permittee shall report the results to the Director.

b. Monthly monitoring [A.A.C. R18-2-306.A.3.c]

(1) A certified Method 9 observer shall conduct a monthly (once in every month) visual survey of visible emissions from the subject baghouse when it is in operation. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

(2) If the observer sees a plume from the subject baghouse that on an instantaneous basis appears to exceed the baseline opacity level, then the observer shall take a six-minute Method 9 observation of the plume. If conditions prevent the observation, the observer shall document these conditions.

(3) If the six-minute opacity of the plume is less than the baseline level, Permittee shall make a record of the following:

(a) name of the observer;
(b) date, and time of the test; and
(c) the results of the method 9 observation.

(4) If the six-minute opacity of the plume exceeds the baseline level but is less than the 20 percent opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline level. Permittee shall also make a record of the following:

(a) name of the observer;
(b) date, and time of the test;
(c) the results of the method 9 observation; and
(d) corrective action taken.

(5) If the six-minute opacity of the plume exceeds both the baseline level and the 20 percent opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the baseline level and report the incident as an excess emission for opacity. Permittee shall also make a record of the following:

(a) name of the observer;
(b) date, and time of the test;
(c) the results of the method 9 observation;
(d) corrective action taken; and
(e) excess emission report.

c. Baseline re-establishment [A.A.C. R18-2-306.A.3.c]

If necessitated by the results of the monthly monitoring, Permittee may re-establish the baseline opacity level. Re-establishment of the baseline shall be performed utilizing the same procedures used in setting up the initial baseline level. Within 30 days of re-establishing the baseline opacity, Permittee shall report the results to the Director. The report shall also contain a description of the need for re-establishing the baseline(s).

3. Monthly monitoring for opacity of process fugitive emissions [A.A.C. R18-2-306.A.3.c]

a. A certified Method 9 observer shall conduct a monthly (once in every month) visual survey of all

process fugitive emissions from the revert crushing plant when it is in operation.

b. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the 40 percent opacity standard, then the observer shall record his/her name, the date on which the observation was made, and the results of the observation.

c. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the 40 percent opacity standard, then the observer shall take a six-minute Method 9 observation of the plume. If conditions prevent the observation, the observer shall document these conditions.

d. If the six-minute opacity of the plume is less than the 40 percent opacity standard, Permittee shall make a record of the following:

(1) name of the observer;
(2) source, date, and time of the test; and
(3) the results of the method 9 observation.

e. If the six-minute opacity of the plume exceeds the 40 percent opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below 40 percent opacity and report the incident as excess emissions. Permittee shall also make a record of the following:

(1) name of the observer;
(2) source, date, and time of the test;
(3) the results of the method 9 observation;
(4) corrective action taken; and
(5) excess emission report.

E. Performance Testing Requirements

Permittee shall determine compliance with the particulate matter standards set forth in VII.B.2 of this section by conducting performance tests, at least once during the permit term, at the revert crushing ventilation baghouse, using EPA Reference Method 5 or 17 to determine the particulate matter concentration. The sample volume for each run shall be at least 1.70 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F)) in order to prevent water condensation on the filter.

[Installation Permit No. 1215, Condition 2 and A.A.C. R18-2-312.A]

F. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the applicable requirements set forth in Installation Permit No. 1215 in effect on the date of permit issuance.

VIII. FUEL BURNING EQUIPMENT

A. General Provisions of this Section

1. The requirements of this section are applicable to the following affected facilities: the acid plant preheater, the anode steam boiler, all the anode launder burners, all the anode ladle burners, and the oxygen plant boiler. [A.A.C. R18-2-724(A)]

2. For purposes of this Section, the heat input shall be the aggregate heat content of all fuels whose

products of combustion pass through a stack or other outlet. Compliance tests shall be conducted during operation at the nominal rated capacity of each unit. The total heat input of all fuel-burning units on a plant or premises shall be used for determining the maximum allowable amount of particulate matter which may be emitted. [A.A.C. R18-2-724(B)]

B. Emission Standards and Limitations

1. Visible Emissions

a. Permittee shall not cause, allow or permit to be emitted into the atmosphere any plume or effluent from the acid plant preheater, the anode steam boiler, and/or the oxygen plant boiler, the opacity of which exceeds 15 percent. [A.A.C. R18-2-724(J)]

b. Permittee shall not cause, allow or permit to be emitted into the atmosphere any plume or effluent from the anode launder burners and/or the anode ladle burners, the opacity of which exceeds 40 percent, as determined by Reference Method 9 in 40 CFR 60, Appendix A. [A.A.C. R18-2-702(B)]

c. Where the presence of uncombined water is the only reason for the exceedance of any visible emissions requirements above, such exceedance shall not constitute a violation. [A.A.C. R18-2-702(C)]

2. Particulate Matter

a. Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel from operation of the acid plant preheater, the anode steam boiler, and/or the oxygen plant boiler, in excess of the amount calculated by the following equation:

$E = 1.02\ Q^{0.769}$ where:

E = The maximum allowable particulate emissions rate in pounds-mass per hour.
Q = The heat input in million Btu per hour.

[A.A.C. R18-2-724(C)(1)]

b. Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any 1 hour from any anode launder burners and/or any anode ladle burners under this section in total quantities in excess of the amounts calculated by 1 of the following equations:

(1) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$E = 3.59\ P^{0.62}$ where:

E = The maximum allowable particulate emissions rate in pounds-mass per hour.
P = The process weight rate in tons-mass per hour. For purposes of this section, the total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emission of particulate matter.

(2) For process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$E = 17.31\ P^{0.16}$

Where "E" and "P" are defined as indicated in (1) above.

[40 CFR 52.126(b), A.A.C. R18-2-730(A)(1) and 730(B)]

3. Sulfur Dioxide [A.A.C. R18-2-730(A)(2)]

Permittee shall not cause, allow or permit the emission of sulfur dioxide from any anode launder burners and/or any anode ladle burners under this section at rates greater than 600 parts per million.

4. Nitrogen Oxides [A.A.C. R18-2-730(A)(3)]

Permittee shall not cause, allow or permit the emission of nitrogen oxides from any anode launder burners and/or any anode ladle burners under this section at rates greater than 500 parts per million, expressed as NO_2.

5. Fuel Limitation [A.A.C. R18-2-306.A.2]

Permittee shall only use natural gas as fuel in all the affected units under this Section.

C. Monitoring, Recordkeeping and Reporting Requirements

1. Visible Emissions

a. A certified EPA Reference Method 9 observer shall conduct a monthly survey of visible emissions emanating from the stacks of the acid plant preheater, the anode steam boiler, and/or the oxygen plant boiler. If the opacity of the emissions observed appears to exceed the 15 percent standard specified in VIII.B.1.a, the observer shall conduct a certified EPA Reference Method 9 observation. The results of the Method 9 observation shall be maintained. [A.A.C. R18-2-306.A.3.c]

b. For the purpose of reports under excess emissions reporting required by Section XI.A, Attachment "A" of this permit, Permittee shall report all six-minute periods in which the opacity of any plume or effluent from the acid plant preheater, the anode steam boiler, and/or the oxygen plant boiler of this section exceeds 15 percent. [A.A.C. R18-2-724.J]

2. Particulate Matter and Sulfur Dioxide Emissions [A.A.C. R18-2-306.A.3.c]

a. Permittee shall maintain a vendor-provided copy of that part of the Federal Energy Regulatory Commission (FERC) approved Tariff agreement that contains the sulfur content and the lower heating value of the natural gas fuel in use.

b. Permittee shall maintain a record of the fuel firing rate (cubic feet per hour of natural gas) for each affected facility under this section.

c. Permittee shall use the natural gas fuel records described in paragraphs a and b above and the latest edition of AP-42 formulas for fossil-fuel fired equipment to determine on a monthly basis the particulate matter and sulfur dioxide emissions from the acid plant preheater, the anode steam boiler, and the oxygen plant boiler of this section.

D. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: A.A.C. R18-2-724.B, A.A.C. R18-2-724.C.1, and A.A.C. R18-2-724.J.

IX. VISIBLE FUGITIVE EMISSIONS FROM PROCESS SOURCES

A. Affected Facilities

The provisions of this Section apply to fugitive emissions from the following affected facilities: the dump hopper with unloading conveyors, the tripper car and belt separator, the bedding area with vibrating screen/grizzley, the reclaim hopper and feeder, #2 main incline conveyor, #3 inclined conveyor, the delumper at oxygen furnace charge system, #4 horizontal conveyor, the wet bin conveyors, the dry screw conveyors #1-8, the feed screw conveyors #10-16, the hammer mill, the blow tank pneumatic conveyor, the converter silica conveying system, the R & R ESP screw conveyors, the R & R ESP bucket elevator, the reverts screen #1 and #2, the anode furnace #1, #2 and #3, the furnace building, and the converter building. The fugitive emissions are those emissions as defined in paragraph I.C.2 of this Attachment.

B. Opacity Standard

Permittee shall not cause, allow or permit to be emitted into the atmosphere any plume or effluent from any affected facilities under this Section, the opacity of which exceeds 40 percent, measured in accordance with EPA Reference Method 9. Where the presence of uncombined water is the only reason for the exceedance of the visible emissions requirement, such exceedance shall not constitute a violation.

[A.A.C. R18-2-702(B) and (C)]

C. Monitoring, Recordkeeping and Reporting

[A.A.C. R18-2-306.A.3.c]

1. A certified Method 9 observer shall conduct a bi-weekly (once in every two weeks) visual survey of visible fugitive emissions for each affected facility under this Section when the facility is in operation.

2. If the observer, during the visual survey, does not see any plume from any fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall record his/her name, the date on which the observation was made, and the results of the observation.

3. If the observer sees a plume from a fugitive source that on an instantaneous basis appears to exceed the opacity standard, then the observer shall take a six-minute Method 9 observation of the plume. If conditions prevent the observation, the observer shall document these conditions.

4. If the six-minute opacity of the plume is less than the opacity standard, Permittee shall make a record of the following:

   a. name of the observer;
   b. source, date, and time of the test; and
   c. the results of the method 9 observation.

5. If the six-minute opacity of the plume exceeds the opacity standard, Permittee shall adjust or repair the controls or equipment to reduce opacity to below the opacity standard and report the incident as excess emissions. Permittee shall also make a record of the following:

   a. name of the observer;
   b. source, date, and time of the test;
   c. the results of the method 9 observation;
   d. corrective action taken; and
   e. excess emission report.

D. Alternate Operating Scenario for the Anode Furnaces

Permittee may operate any of the three anode furnaces under this section, provided only two furnaces can be in operation at a time.

E. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the applicable requirements set forth in A.A.C. R18-2-702.B and A.A.C. R18-2-702.C in effect on the date of permit issuance.

X. NON-POINT SOURCES

A. Emission Limits and Standards

1. Open Areas, Roadways & Streets, Storage Piles, and Material Handling

   a. Permittee shall not cause, allow or permit visible emissions from open areas, roadways and streets, storage piles or material handling in excess of 40% opacity measured in accordance with the Arizona Testing Manual, Reference Method 9. Open fires permitted under A.A.C. R18-2-602 are exempt from this requirement. [A.A.C. R18-2-610]

   b. Permittee shall employ the following reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne:

      (1) Keep dust and other types of air contaminants to a minimum in an open area where construction operations, repair operations, demolition activities, clearing operations, leveling operations, or any earth moving or excavating activities are taking place, by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means; [A.A.C. R18-2-604.A]

      (2) Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by wetting, or by paving, or by barring access to the property, or by other acceptable means; [A.A.C. R18-2-604.B]

      (3) Keep dust and other particulates to a minimum by employing dust suppressants, temporary paving, detouring, wetting down or by other reasonable means when a roadway is repaired, constructed, or reconstructed; [A.A.C. R18-2-605.A]

      (4) Take reasonable precautions, such as wetting, applying dust suppressants, or covering the load when transporting material likely to give rise to airborne dust; [A.A.C. R18-2-605.B]

      (5) Take reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods when crushing, handling, or conveying material likely to give rise to airborne dust; [A.A.C. R18-2-606]

      (6) Take reasonable precautions such as chemical stabilization, wetting, or covering when organic or inorganic dust producing material is being stacked, piled, or otherwise stored; [A.A.C. R18-2-607.A]

      (7) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material, or with the use of spray bars and wetting agents; [A.A.C. R18-2-607.B]

(8) Take reasonable precautions such as wetting or applying dust suppressants before the cleaning of site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means; or [A.A.C. R18-2-804.B]

(9) Any other method as proposed by Permittee and approved by the Director. [A.A.C. R18-2-306.A.3.c]

2. Open Burning [A.A.C. R18-2-602]

Except as provided in A.A.C. R18-2-602.C(1), C(3), and C(4), and except when permitted to do so by either ADEQ or the local officer delegated the authority for issuance of open burning permits, Permittee shall not conduct open burning.

B. Monitoring, Recordkeeping and Reporting Requirements

1. Open Areas, Roadways & Streets, Storage Piles and Material Handling

a. Bi-weekly Monitoring Requirement [A.A.C. R18-2-306.A.3.c]

(1) A certified Method 9 observer shall conduct a bi-weekly (once in two weeks) visual survey of visible emissions from all non-point sources plant wide when they are in operation. Permittee shall keep a record of the name of the observer, the date on which the observation was made, and the results of the observation.

(2) If the observer sees a plume from a non-point source that on an instantaneous basis appears to exceed 40%, then the observer shall, if possible, take a six-minute Method 9 observation of the plume. If conditions prevent the observation, the observer shall document these conditions.

(3) If the six-minute opacity of the plume is less than 40%, the observer shall make a record of the following:
(a) Location, date, and time of the observation, and the name of the observer; and
(b) The results of the Method 9 observation.

(4) If the six-minute opacity of the plume exceeds 40%, then Permittee shall do the following:
(a) Adjust or repair the controls or equipment to reduce opacity to below 40%; and
(b) Report it as an excess emission under Section XI.A of Attachment "A".

b. Permittee shall maintain records of the dates on which any of the activities listed in X.A.1.b(1) through (9) of this section were performed and control measures adopted. [A.A.C. R18-2-306.A.3.c]

2. Open Burning

The monitoring requirements for Section X.A.2 of this attachment may be complied with by maintaining copies of all open burning permits on file. [A.A.C. R18-2-306.A.3.c]

C. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: A.A.C. R18-2-602, A.A.C. R18-2-604.A, A.A.C. R18-2-604.B, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-610, and A.A.C. R18-2-804.B.

XI. OTHER PERIODIC ACTIVITIES

A. Emission Limits/Standards

1. Abrasive Blasting [A.A.C. R18-2-726]

   a. Permittee shall not cause or allow sandblasting or other abrasive blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include, but are not limited to:

      (1) wet blasting;
      (2) effective enclosures with necessary dust collecting equipment.

   b. Permittee shall not cause, allow or permit visible emissions from sandblasting or other abrasive blasting operations in excess of 40% opacity, measured in accordance with EPA Reference Method 9. Where the presence of uncombined water is the only reason for the exceedance of any visible emissions requirements, such exceedance shall not constitute a violation. [A.A.C. R18-2-702.B and C]

2. Use of Paints

   While performing spray painting operations Permittee shall comply with the following requirements:

   a. Permittee shall not conduct or cause to be conducted any spray painting operation without minimizing organic solvent emissions. Such operations other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray. [A.A.C. R18-2-727.A]

   b. Permittee or his designated contractor shall not either: [A.A.C. R18-2-727.B]

      (1) Employ, apply, evaporate or dry any architectural coating containing photo-chemically reactive solvents for industrial or commercial purposes; or

      (2) Thin or dilute any architectural coating with a photochemically reactive solvent.

   c. For the purposes of parts b. and e. of this condition, a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in paragraphs (1) through (3) of this subsection, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent: [A.A.C. R18-2-727.C]

      (1) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation - hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones: five percent

      (2) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: eight percent

      (3) A combination of ethylbenzene, ketones having branched structures, trichloro-ethylene or toluene: 20 percent

   d. Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups or organic compounds described in XI.A.2.c(1) through (3), it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents. [A.A.C. R18-2-727.D]

e. Permittee shall not dispose by evaporation more than 1.5 gallons of photo-chemically reactive solvent in any one day. [SIP Provision R9-3-527.C]

f. Visible emissions from spray painting operations shall not have an opacity greater than 40%, measured in accordance with by EPA Reference Method 9. Where the presence of uncombined water is the only reason for the exceedance of any visible emissions requirements, such exceedance shall not constitute a violation. [A.A.C. R18-2-702.B and C]

3. Roadway and Site Cleaning Machinery

Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40 percent. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. [A.A.C. R18-2-804.A]

4. Demolition/Renovation

Permittee shall comply with all of the requirements of 40 CFR 61, Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos). [A.A.C. R18-2-1101.A.8]

5. Nonvehicle Air Conditioner Maintenance and/or Services

Permittee shall comply with the applicable requirements of 40 CFR 82 - Subpart F (Protection of Stratospheric Ozone - Recycling and Emissions Reduction). [40 CFR 82, Subpart F]

6. Gaseous or Odorous Materials
Permittee shall not emit gaseous or odorous materials from equipment, operations or premises under his control in such quantities or concentrations as to cause air pollution. [A.A.C. R18-2-730.D]

7. Solvent Degreasing

Permittee shall process, store, use, and transport materials including solvents or volatile compounds in such a manner and by such means that they will not evaporate, leak, escape, or be otherwise discharged into the atmosphere so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage, or discharge, the installation and usage of such control methods, devices, or equipment shall be mandatory. [A.A.C. R18-2-730.F]

B. Monitoring, Recordkeeping and Reporting Requirements [A.A.C. R18-2-306.A.3.c]

1. Abrasive Blasting

Each time an abrasive blasting project is conducted, Permittee shall log in ink or in an electronic format, a record of the following:

a. The date the project was conducted;
b. The duration of the project; and
c. Type of control measures employed.

2. Use of Paints

a. Each time a spray painting project is conducted, Permittee shall log in ink or in an electronic format, a record of the following:

(1) The date the project was conducted;
(2) The duration of the project;
(3) Type of control measures employed; and
(4) Material Safety Data Sheets for all paints and solvents used in the project.

b. Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of part a. above.

3. Roadway and Site Cleaning Machinery

Permittee shall keep a record of all emission related equipment maintenance activities performed on roadway and site cleaning machinery stationed at the facility as per manufacturer's specifications.

4. Demolition/Renovation

As a means of demonstrating compliance with condition XI.A.4 of this Attachment, Permittee shall keep a record of all relevant paperwork on file. The relevant paperwork shall include but not be limited to the "NESHAP Notification for Renovation and Demolition Activities" form, and all supporting documents.

5. Nonvehicle Air Conditioner Maintenance and/or Services

As a means of demonstrating compliance with condition XI.A.5 of this Attachment, Permittee shall keep a record of all relevant paperwork to the applicable requirements of 40 CFR 82 - Subpart F on file.

C. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: SIP Provision R9-3-527.C, A.A.C. R18-2-702.B, A.A.C. R18-2-702.C, A.A.C. R18-2-726, A.A.C. R18-2-727, A.A.C. R18-2-730.D, A.A.C. R18-2-730.F, A.A.C. R18-2-804.A, A.A.C. R18-2-1101.A.8, and 40 CFR 82 (Subpart F).

XII. AMBIENT SULFUR DIOXIDE MONITORING

A. Ambient Sulfur Oxides (Sulfur Dioxide) Standards

1. The primary ambient air quality standards for sulfur oxides, measured as sulfur dioxide, are:

a. 80 micrograms per cubic meter (0.03 ppm) -- annual arithmetic mean.
b. 365 micrograms per cubic meter (0.14 ppm) -- maximum 24-hour concentration not to be exceeded more than once per year.

[A.A.C. R18-2-202.A]

2. The secondary ambient air quality standard for sulfur oxides, measured as sulfur dioxide, is 1300 micrograms per cubic meter (0.5 ppm) -- maximum 3-hour concentration not to be exceeded more than once per year. [A.A.C. R18-2-202.B]

3. Violations

a. Each exceedance of the annual SO_2 standard, as specified in paragraph A.1.a above, at each monitoring site, as described in Table C-4, Attachment "C" of this permit, shall constitute a violation of the standard. [A.A.C. R18-2-219(C)(1)]

b. One exceedance per year of the SO_2 standards prescribed in paragraphs A.1.b and A.2 above shall be allowed at each monitoring site listed under Table C-4, Attachment "C" of this permit. Each additional exceedance of the standards at each site shall constitute a violation of the standards. [A.A.C. R18-2-219(A) and (B)]

B. Monitoring, Recordkeeping and Reporting Requirements

1. Permittee shall continue to calibrate, maintain and operate any ambient sulfur dioxide monitoring equipment listed in Table C-4, Attachment "C" of the permit that is owned by the Permittee and in operation within the area of the smelter enclosed by a circle with 10-mile radius as calculated from a center point which shall be the point of the smelter's greatest sulfur dioxide emissions. [A.A.C. R18-2-715.02.E]

2. Only those methods which have been either designated by USEPA as reference or equivalent methods or approved by the Director shall be used to monitor ambient air. [A.A.C. R18-2-215(A)]

3. Quality assurance, monitor siting, and sample probe installation procedures shall be in accordance with procedures described in the Appendices to 40 CFR 58. [A.A.C. R18-2-215(B)]

4. The Director may approve other procedures upon a finding that the proposed procedures are substantially equivalent or superior to procedures in the Appendices to 40 CFR 58. [A.A.C. R18-2-215(C)]

5. Unless otherwise specified, interpretation of all ambient air quality standards contained in subsection XII.A of this Section shall be in accordance with 40 CFR 50. [A.A.C. R18-2-216(A)]

6. The evaluation of air quality data in terms of procedure, methodology, and concept is to be consistent with methods described in A.A.C. R18-2, Appendix 10, "Evaluation of Air Quality Data". [A.A.C. R18-2-216(B)]

7. Monthly reporting requirements [A.A.C. R18-2-715.02.E and Operating Permit No. 0308-85]

   Permittee shall, within twenty (20) calendar days after the end of each month, submit to the Director a report regarding the operation of the ambient sulfur dioxide monitors owned by the Permittee as listed in Table C-4, Attachment "C" of the permit. The monthly report shall contain the data and information as follows:

   a. For each ambient air monitor (concentrations in micrograms per cubic meter):

      (1) Cumulative average concentration of sulfur dioxide in the ambient air;

      (2) Monthly average concentration of sulfur dioxide in the ambient air;

      (3) Maximum 3-hour average concentration of sulfur dioxide in the ambient air, and date and time of occurrence;

      (4) Number of times the 3-hour ambient sulfur dioxide standard was exceeded and the date, time, and concentration of each such occurrence;

      (5) Maximum 24-hour average concentration of sulfur dioxide in the ambient air, and date and time of occurrence;

      (6) Number of times the 24-hour ambient sulfur dioxide standard was exceeded, and the date and concentration of each such occurrence; and

(7) Monthly data recovery (to the nearest tenth of a percent) and time periods when valid data is unavailable.

b. For any exceedance of the 3-hour average sulfur dioxide concentration standard of XII.A.2:

(1) Average hourly concentrations in micrograms per cubic meter at the affected monitoring site(s) for the period three hours prior to the exceedance, three hours during the exceedance, and three hours after the exceedance of the 3-hour standard; and

(2) Hourly emission rates in pounds per hour of sulfur dioxide for all points of emissions to the atmosphere being permanently monitored. Hourly emission rates shall be submitted for the period three hours prior to the exceedance, three hours during the exceedance, and three hours after the exceedance of the 3-hour standard.

c. For any exceedance of the 24-hour average sulfur dioxide concentration standard of XII.A.1.a:

(1) Average hourly concentrations in micrograms per cubic meter at the affected monitoring site(s) for the period 24 hours prior to the exceedance, 24 hours during the exceedance, and 24 hours after the exceedance of the 24-hour standard; and

(2) Hourly emission rates in pounds per hour of sulfur dioxide for all points of emissions to the atmosphere being permanently monitored. Hourly emission rates shall be submitted for the period 24 hours prior to the exceedance, 24 hours during the exceedance, and 24 hours after the exceedance of the 24-hour standard.

C. Permit Shield

Compliance with the terms of this section shall be deemed compliance with the following applicable requirement(s) in effect on the date of permit issuance: A.A.C. R18-2-202, A.A.C. R18-2-215, A.A.C. R18-2-216, A.A.C. R18-2-219.A, A.A.C. R18-2-219.B, A.A.C. R18-2-219.C.1, and A.A.C. R18-2-715.02.E.

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ATTACHMENT "C": EQUIPMENT LIST

Air Quality Control Permit No. 1000042
for
ASARCO Incorporated Ray Complex - Hayden Smelter

Table C-1. Process and Control Equipment Description

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
Sampling and Unloading Operations:								
Dump hopper	1	Linkbelt	stainless steel lining	n/a	1983	12'x28.6'	175 tph, 1,533,000 tpy	Existing
Unloading conveyors	3	Linkbelt	n/a			60"x17'8"	175 tph, 1,533,000 tpy	Existing
Tripper car & belt separator	2	Linkbelt	51M	n/a	1964/1968	cars: 30"x20'	175 tph, 1,533,000 tpy	Existing
Bedding area - 4 storage bins	4	Concrete	n/a	n/a	1964/1968	220'x40'x20'	30,000 wet tons, 26,000 dry tons	Existing
Bedding area - Vibrating screen/ grizzly	1	Ty-rock	I-surface/F300	7308	1967	4' x 8'	n/a	Existing
Reclaim hopper & feeder	1	Feeder Belt, Rex Chainbelt Inc.	n/a	n/a	1968	Hopper: 20 cy Belt feeder: 42" wid. x 20' centers	150 tph, 1,533,000 tpy	Existing
No. 2 main inclined conveyor	1	n/a	50 HP motor	n/a	1982	24" width by 625' length	300 tph, 2,628,000 tpy	Existing
No. 3 inclined conveyor	1	Boston Dulon 600	3 -ply	n/a	1982	30" width by 439' length	300 tph, 2,628,000 tpy	Existing
Delumper at oxygen furnace charge system	1	Jeffrey Manufacturing Division	Jeffrey 5WR5 /Reversible impactor	13492	1982	n/a	300 tph, 2,628,000 tpy	Existing

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
No. 4 Horizontal Conveyor	1	Boston Dulon 600	4-ply	n/a	1982	42" width by 139' length	300 tph, 2,628,000 tpy	Existing
Flash Furnace Building Operations:								
Wet bin conveyors, dryer feed & weigh belts	4	ASARCO design	n/a	n/a	1983	30" width	85 tph, 744,600 tpy	Existing
Hammer Mill	1	Pennsylvania Crusher Corporation	GRT#1	n/a	1983	42" x 12" x 31"	6tph, 52,560 tpy	Existing
Nos. 1 & 2 Fluid bed dryers with burners	2	Fuller	11-81-20337-106 Farrier natural gas burners	n/a	1983	11'3" diameter (ID shell) x 26' high	Production: 64 wet ton/hr, 560,640 tpy Burner firing gas: 38,000 CFH x 2 burners Burner firing oil: 270 gph x 2 burners Maximum dryer usage: 6,915 hours per year	New
Blow tank pneumatic conveyor (hammer mill feeds surge bin then material drops into line with air blown to dry dust bin)	1	Fuller/Abresist	n/a	n/a	1983	4"	4.2 tph, 36,792 tpy	Existing
Fluid bed dryer product baghouse Nos. 1 & 2	2	Peabody Process Systems, Inc.	PMTR-10-1692 TW Pulse	n/a	1982	n/a	Gas flow rate: 55,000 ACFM	New
Dry screw conveyors #1-8, furnace charge system	8	FMC	n/a	n/a	1983	16" and 9" width	56.9 tph, 498,444 tpy	Existing
Feed screw conveyors #10-16, furnace charge system	7	FMC	n/a	n/a	1983	12" width	n/a	Existing

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
200-ton west wet bins nos. 1 & 2	2	n/a	n/a	n/a	1983	n/a	n/a	Existing
200-ton dry bins nos. 1 through 4, each served by one ventilation baghouse	4	DCE Vokes	DLM V10/10 F3 20 envelope filter bags	n/a	1983	Cloth area: 105 sq. ft.	1050 acfm	Existing
30-ton dust bin no. 1 served by a ventilation baghouse	1	BHA	4 Cartridge Filters	n/a	1998	Cloth area: 480 sq. ft.	1200 acfm	Existing
30-ton flux bin no. 3 served by a ventilation baghouse	1	Fuller	Pulse	n/a	1983	Cloth area: 166 sq. ft.	1200 acfm	Existing
Oxygen flash furnace with burner (smelter)	1	Inco	with oxygen burner	n/a	1983	24 ft. x 80 ft.	24,000 tpd concentrates When process is down, furnace is kept hot with up to 4 natural gas burners. Maximum gas usage is 91,113 CFH.	New
WGHS Venturi Scrubber	1	Swemco Inc.	SW-A-138696 Variable throat	14520	August, 1997	42" inlet diameter	flow rate 62,913 acfm	n/a
WGHS Disengagement vessel	1	Swemco Inc.	SW-A-138696	14525-100	August, 1997	5' diameter inlet	flow rate 62,913 acfm	n/a
WGHS Condensing Heat Exchanger	1	Fleck, Ltd.	95-336 Shell & tube	1781	1997	8' diameter vessel	80 MBtu/hr heat exchange	n/a
WGHS Saturation Tower	1	Structural Steel and Fabrication Company	Refractory lined wet tower	n/a	fourth quarter 1997	25' high x 8' dia.	125,168 acfm	n/a
WGHS Stripping Tower	1	Structural Steel and Fabrication Company	Disk and Do-nut	n/a	fourth quarter 1997	34' high x 3' dia.	1,032 acfm	n/a

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
Revert Crushing System:								
Feeder	1	Kue-Ken	Hydro stroke feeder	270	1980	n/a	200 tph, 42,000 tpy	New
Jaw Crusher	1	Kue-Ken	n/a	11011781	1980	25' x 42'	200 tph, 42,000 tpy	New
Vibrating screen	1	Tyler Industry	R1204X	502626	1980	n/a	200 tph, 42,000 tpy	New
Cone crusher	1	Kue-Ken	n/a	3095132	1980	n/a	200 tph, 42,000 tpy	New
Belt conveyors	2	Kue-Ken	BC-203 and BC-206	n/a	1980	n/a	200 tph, 42,000 tpy	New
Revert crushing baghouse	1	Peabody Process Systems, Inc.	PMTR-10-592W pulse	01-5011-01	1989	6,974 sq. ft.	32,000 acfm	New
Converter Building:								
Converters	5	n/a	Pierce Smith Each converter has a natural gas burner to keep vessel heated during holding fire.	n/a	1969	one with 13'x35', one with 13'x30' and three with 13'x33'	100 tons copper per cycle 170 tons matte per cycle 40 tons cold dope per cycle Maximum gas usage: 17,695.8 CFHx1.5 converters	Existing
Converter silica conveying system	1	B.F. Goodrich for belts	Consists of three unloading hoppers with conveying belts	n/a	1968	24" belts 44.3' length	60 tph, 525,600 tpy	Existing
Converter primary hooding	5	ASARCO design	Steel	n/a	1999/2000	length 10.28 feet	n/a	Existing
Converter cyclones	10	Ducon	Model 1000 with high efficiency duclones	n/a	1966 and 1968	1000	n/a	Existing
Converter spray chamber	1	ASARCO	Spray	n/a	1973	n/a	n/a	Existing

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
Converter secondary hooding	1	ASARCO design	n/a	n/a	1979	n/a	n/a	Existing
Secondary hoods baghouse	1	Hosakawa Mikropul	1000 J-10-30-TRH pulse type	950281 H1-H7	1996	Seven modules with 11,780 sq. ft. per module	300,000 acfm total working volume, 0.1158 gr/dscf maximum dust loading, and 0.0861 gr/dscf inlet loading	n/a
Gas Cleaning Plant:								
Process gas precipitators	4	Chemiebau	Four train	n/a	1969	n/a	200,000 scfm	n/a
Gas Scrubbers	5	Rust Engineering	Open towers (3) and packed (2)	n/a	1961	n/a	n/a	n/a
Mist precipitators	8	ASARCO design	Mist wet ESP Gas flows through 4 parallel trains, each 2 units deep, thus 4 inlets and 4 outlets	n/a	1983	180 tubes 15 foot length	n/a	n/a
Gas cleaning plant pugmill	1	ASARCO	n/a	n/a	1967	n/a	n/a	n/a
Acid Plant:								
Acid plant	1	Monsanto	double contact	n/a	1983	n/a	2,820 STPD (100% acid basis) as 93% H_2SO_4 using 12.4% SO_2 24,703,200 STPY	n/a
Acid plant preheater	1	Thermal Transfer Corporation	Natural gas fired	n/a	1983	22.75'x8' O.D. shell	40,000 scfm of start up air 107,925 CFH max. fuel input	Existing
Anode Plant:								
Anode furnaces #1 & #2 with burners, Anode furnace #3 with burners (spare)	3	n/a	Fuller Co. Natural gas fired	n/a	1971	13'x35'	330 ton per furnace Gas usage for both furnace: 648 cfm max. measured and 736.7 cfm (402 gph) max. estimated	Existing

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
Anode steam boiler	1	Parker	Packaged boiler horizontal drum, natural gas fired	n/a	1995	90 HP	3,780,000 Btu/hr	Existing
Anode casting wheels, north & south	2	Stearns-Rodgers Corporation	n/a	n/a	1972	29' diameter	24 mold	Existing
Anode launder burners	6	Hauck	RFS 1120A Natural gas fired	n/a	1972	2"	n/a	Existing
Anode ladle burners	3	ASARCO	Natural gas fired	n/a	1972	4"	n/a	Existing
Oxygen Plant:								
Oxygen plant boiler	1	General Electric	CB Packaged Boiler 700X-300, natural gas fired	L-75227	1982	n/a	8,740,000 Btu/hr 8,740 CFH designed natural gas usage	Existing
Oxygen plant	1	Air Products	Consists of main air compressor, oxygen compressor, direct contact after cooler, liquid oxygen storage tank and cooling tower	n/a	1983	n/a	650 tpd gaseous oxygen 5,694,000 tpy	Existing
Furnace Ventilation Gas Control:								
R & R Electrostatic precipitator	1	ASARCO Inc.	Plate wire	n/a	built in 1961 and expanded in 1968	62'x76'	43,350 dscfm	n/a
R & R ESP screw conveyors #1-15, 17, 18	17	Screw Conveyor Corporation	n/a	n/a	1968	#1-15: 9" #17, 18: 12"	12 tph, 105,120 tpy	Existing
R & R ESP Bucket Elevator	1	Automation Supply	3-SA	n/a	1975	48' center to center	35 tph, 306,600 tpy	Existing

Equipment	Quantity	Manufacturer	Model/Type	Serial No.	Date Installed or modified	Size	Rated Capacity	New or Existing
R & R ESP Pugmill	1	Automation Supply & Engineering	Double shaft	n/a	1968	n/a	15 ton storage	Existing
Other Processes:								
Reverts (matte & slag) Screen #1, south of acid tanks	1	Screen USA	BF35E2/two deck 4'x8' for closed single deck and 12'x14' for open single deck	3011096	1996	4'x8' and 12'x14'	100 tph, 44,000 tpy	New
Reverts (matte & slag) Screen #2, south of converter isle	1	Grizzly	Open single deck	n/a	1994	10'x15' 33/34" openings	200 tph, 40,000 tpy	New
WTP lime silo	1	Portec	850-QLH/Steel	n/a	1983	n/a	150 ton	Existing
WTP lime silo baghouse	1	Portec	DF-44	n/a	1983	1 HP	1,176 cfm	n/a
0.5 million gallon diesel storage tank	1	Garland Steel Company	steel	n/a	fourth quarter 1971	500,000 gallons diameter 52 feet height 32 feet	n/a	Existing

Table C-2. Stack Information

Identification	Description	Building Size	Exit Gas Temperature	Exit Gas Velocity	Height	Inside Dimensions
HP-1	Acid plant (main stack core)	n/a	303 °F	19 fps	1000 feet	17 foot diameter
HP-2	Main stack annulus (ventilation gases)	n/a	135 °F	34 fps	920 feet	432 sq. ft.
HP-4	Revert crusher baghouse stack	n/a	99 °F	42 fps	46 feet	3.83 foot diameter
HP-26	#2 acid plant preheater	n/a	n/a	n/a	65 feet	5.42 foot diameter
HP-28	Oxygen plant boiler	n/a	346 °F (estimated)	1,650 scfm (estimated)	22 feet	1.66 foot diameter

Identification	Description	Building Size	Exit Gas Temperature	Exit Gas Velocity	Height	Inside Dimensions
HP-32	200 ton dry #1 bin ventilation baghouse (located inside furnace building)	n/a	Unknown	Capacity 1050 acfm	6 feet	0.5' x 0.5'
HP-33	200 ton dry #2 bin ventilation baghouse (located inside furnace building)	n/a	Unknown	Capacity 1050 acfm	6 feet	0.5' x 0.5'
HP-34	200 ton dry #3 bin ventilation baghouse (located inside furnace building)	n/a	Unknown	Capacity 1050 acfm	6 feet	0.5' x 0.5'
HP-35	200 ton dry #4 bin ventilation baghouse (located inside furnace building)	n/a	Unknown	Capacity 1050 acfm	6 feet	0.5' x 0.5'
HP-38	30 ton dust bin ventilation baghouse #1 (part of pneumatic conveying system)	n/a	Ambient	Capacity 480 acfm	12.25 feet	0.68' x 0.66'
HP-39	30 ton dust bin ventilation baghouse #2 (part of pneumatic conveying system)	n/a	Ambient	Capacity 480 acfm	12.25 feet	0.68' x 0.66'
HP-50	Anode steam boiler	n/a	n/a	n/a	32 feet	20 inch diameter

Table C-3. Continuous Emission Monitoring Systems Information

Type	**Manufacturer**	**Model**	**Serial No.**	**Range**	**Location**
Acid Plant Tail Gas SO_2 Monitor	Ametek	4600B - Analyzer 4000 - Control Station	6146	0-0.20% SO_2	At the acid plant exit prior to the merging with the main flue to stack
Acid Plant Tail Gas Flow Monitor	EMRC/Rosemount	Mark 5/ 3051CD1A22A1AB4M5	0306343	0-2.5 "H_2O Dp S-Type Pitot	At the acid plant exit prior to the merging with the main flue to stack
Acid Plant Tail Gas Opacity Monitor	Lear Ziegler	1100M	0833	0-100% opacity	At the acid plant exit prior to the merging with the main flue to stack
R & R Flue Opacity Monitor	Monitor Labs	550	5500157	0-100% opacity	At outlet flue of the R & R Cottrell ESP prior to the merging with the secondary hoods off-gas flue
Converter Secondary Hoods Off-gas SO_2 Monitor	Ametek	4600B - Analyzer 4000 - Control Station	5289	0-1.0% SO_2	At the secondary hooding flue before baghouse

Type	Manufacturer	Model	Serial No.	Range	Location
Converter Secondary Hoods Off-gas Flow Monitor	EMRC/Rosemount	Mark 5/ 3051CD1A22A1AB4M5	86585	0-2.5 "H_2O Dp S-Type Pitot	At the secondary hooding flue before baghouse
Furnace Ventilation Gas SO_2 Monitor	Ametek	4600B - Analyzer 4000 - Control Station	6274	0-0.4% SO_2	At the furnace vent flue prior to the merging with dryer exhaust gases
Furnace Ventilation Gas Flow Monitor	EMRC/Rosemount	Mark 5/ 3051CD1A22A1AB4E5	0538569	0-2.5 "H_2O Dp S-Type Pitot	At the furnace vent flue prior to the merging with dryer exhaust gases

Table C-4. Ambient Sulfur Dioxide Analyzers in the Hayden Area

Identifier	Unit	Make/Model	Owned and Operated by	Location
MT0	Montgomery Ranch	Thermo Environmental pulsed fluorescent Model 43B	ASARCO	2.52 miles northwest of ASARCO
JL	Jail - ASARCO	Thermo Environmental pulsed fluorescent Model 43C	ASARCO	0.58 miles west of ASARCO
HJ0	Hayden Junction	Thermo Environmental pulsed fluorescent Model 43B	ASARCO	2.00 miles west of ASARCO
GA	Garfield Avenue	Thermo Environmental pulsed fluorescent Model 43C	ASARCO	0.56 miles south of ASARCO
GH0	Globe Highway	Thermo Environmental pulsed fluorescent Model 43B	ASARCO	0.50 miles east of ASARCO
JL	Jail - ADEQ	Thermo Electron pulsed fluorescent (TECO) Model 40	ADEQ	0.58 miles west of ASARCO

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ATTACHMENT "D": SULFUR BALANCE PROGRAM

Air Quality Control Permit No. 1000042
for
ASARCO Incorporated Ray Complex - Hayden Smelter

Appendix D-A. Procedures for Utilizing the Sulfur Balance Method for Determining Sulfur Emissions

I. Determination of sulfur emissions for the smelter as a whole shall be subject to the following conditions:

A. The emissions sum shall apply to all process sulfur emitted into the ambient air from smelter processing units and sulfur control and removal equipment associated with the smelting process. The total monthly amount of sulfur emissions is equal to the weight of the total sulfur introduced into the smelting process in any calendar month minus the weight of all the sulfur removed from the smelting process streams in that month in any physical form. Removed sulfur shall include, but not be limited to, sulfur contained in slag, anodes, sulfuric acid, flue dust, precipitator dust, WTP filter cake, cone settler overflow (CSO), reverts and miscellaneous hyproducts. All unaccounted for sulfur, including fugitive sulfur emissions, shall be considered as emissions to the ambient air.

B. Material balances for sulfur described in I.A. above shall be obtained in accordance with the procedures listed in this Appendix which are equivalent to Appendix 8 to A.A.C. Title 18, Chapter 2.

C. Average daily emissions are to be determined by dividing the total monthly emissions by the number of operating days in the particular month.

II. Calculating input sulfur

Total sulfur input is the sum of the product of the weight of each sulfur bearing material introduced into the smelting process as calculated in II.B. below multiplied by the fraction of sulfur contained in that material as calculated in II.C. below plus the amount of sulfur contained in fuel utilized in the smelting process as calculated in A.3 below.

A. Material weight

All sulfuric bearing materials, other than fuels, introduced into the smelting process shall be weighed. Such weighing shall be subject to the following conditions:

1. Weight shall be determined on a belt scale, rail or truck scales, or other weighing device.

2. Weight shall be determined within an accuracy of ±5 percent.

3. All devices or scales used for weighing are to be calibrated to manufacturer's specifications. Scales will be calibrated at least quarterly.

4. Sulfuric bearing materials subject to being weighed shall include, but not be limited to, concentrate, reverts which are not part of the internal circulating load, precipitates and miscellaneous outside products. Materials such as limestone and silica flux which are mixed with a charge of sulfur bearing materials shall be weighed and reported.

B. Sulfur content

The sulfur content of all sulfur bearing materials introduced into the smelting process shall be calculated using the following steps:

1. Sampling - The procedure to be followed in sampling is dependent upon the input vehicles for the sulfur bearing material.

   a. Railcar - The smelter operator shall collect a sample using the auger method. Six to nine holes per car will be taken and combined with the total sample. One to twenty cars from the same source will be combined into one lot.

   b. Truck - The smelter operator shall collect a 12 to 15 pound sample from each truckload. Samples are to be taken from one to six points using the auger method. Samples will be combined into lots from trucks delivering material from the same source. For fluxes, one truckload per day will be sampled.

2. Sample preparation - each total sample shall be prepared for analysis in the following manner:

   a. If necessary, the sample shall be crushed to minus quarter inch particles.

   b. Each sample is to be thoroughly blended in a roto-cone blender or similar device.

   c. A blended composite sample is to be prepared based on individual sample weight and moisture. Material to be used in the composite sample is to be cut with a sample scoop or knife and used to make a 1800 gram composite sample for each lot.

   d. Each dry composite sample is pulverized to minus 100 mesh using a roto-disc pulverizer or similar equipment and then blended in a roto-cone blender or similar equipment.

   e. A 200 gram portion is to be cut from the composite sample for analysis.

3. Sample analysis

   a. The sample shall be analyzed to determine sulfur content using LECO Sulfur Analyzer. The accuracy of such an analysis will be within a range of ±1 percent.

4. Sulfur determination

   The sulfur content of all feed material treated per month will be determined by month and physical inventories in conjunction with certified scales for bed contents. Physical inventory determines beginning and ending bed contents for each month and all bed contents processed during the month, together with inventory changes for secondaries. Based upon individual lot numbers for each material processed (i.e. concentrates, reverts, purchased secondaries, and fluxes) the composite analysis will be used to determine sulfur input.

C. Fuel sulfur content

Sulfur in fuels shall be calculated by multiplying the amount of fuel delivered to the process by the fraction of sulfur in the fuel as reported to the smelter operator by the fuel's supplier. The sulfur content determination shall be accurate to within ±5 percent.

III. Calculating removed sulfur

Total removed sulfur is the sum of the sulfur removed in each of the following products as determined by each process set forth below.

A. Furnace slags

1. The weight of the slag shall be determined using a count of furnace slag ladles. The weight used for slag ladles will be determined periodically.

2. A sample will be collected from each slag ladle during tapping operations.

3. The sample shall be prepared and analyzed for sulfur. The sample will be dried, pulverized using a roto-disc pulverizer, then a 200 gram sample will be split out using a Jones Splitter, or equivalent.

4. The sample will be analyzed as in B.3 above.

B. Scrubber blowdown

1. Scrubber blowdown is collected (as a slurry), thickened and drum filtered. The filter cake is collected on a solar drying pad. An average truck payload weight is determined for all filter cake recycled onsite. When shipped, all railcars are weighed. The filter cake that is recycled onsite is stockpiled and sampled (minimum two holes, ten pounds). For shipment offsite, all railcars are sampled (three holes per car to make one composite for all cars). The sample will be prepared and analyzed for sulfur and copper using the procedures in II.A.3 and II.B.3 above.

2. If filter cake is managed in a manner other than as set forth in III.B.1 above, it shall be quantified, sampled, and analyzed pursuant to generally acceptable methods.

C. Strong acids

1. An inventory of strong acids shall be taken daily. The inventory shall be increased by the amounts of acid shipped or otherwise transferred during that day.

2. The daily inventory will be accurate to within ±5 percent.

3. Strong acid analysis both at the acid plant and the laboratory is performed with a sonic analyzer that measures the velocity of sound in the acid. A temperature correction and the velocity are then used to determine the acid concentration. Samples are taken every two hours to compare to the on-stream analyzers.

4. The product sample will be sent to the laboratory for daily analysis.

5. All flow meters, density gauges, sonic sensors, pressure sensors, etc., used in determining the sulfur balance will be calibrated according to manufacturer's specifications or as needed.

D. Weak acids

1. The amount of weak acid discharged from the acid plant and scrubber systems is to be determined through flow meters.

2. Flow meters will be calibrated as in C.5 above.

3. A 100 ml sample of weak acid shall be collected daily and combined in a sample container to form a monthly composite sample which is analyzed monthly for sulfur content using the Barium Sulfate Gravimetric Method.

4. Weak acid railcars are loaded to a mark (20,125 gallons) and the total volume is determined by the number of railcars shipped.

E. Sulfur in copper production

1. The weight of copper produced is to be determined by weight of copper cast to an accuracy of within ±5 percent.

2. The weight and number of castings shall be recorded.

3. Three samples per copper anode charge are to be obtained at the beginning, middle, and end of each pour. A portion (approximately 1 gram) from each sample becomes part of a monthly composite which is analyzed for sulfur content using a LECO Sulfur Analyzer with an induction furnace to volatilize the sulfur and measure the resultant compound using a titration method to an accuracy of within ±50 percent.

F. Materials in process

1. Total tonnage of materials in process shall be determined by physical inventory on the first day of each month.

2. A monthly change of in-process inventory shall be calculated for each material in process by taking the difference between the inventory from each material in process on the first day of the preceding month and multiplying that difference by the monthly composite sulfur assay for that material.

3. The change of monthly in-process inventory must be accurate to within ±50 percent.

IV. General provisions

A. The processes and procedures specified in the Appendix shall be available for inspection, review, and verification by the Department at all reasonable times.

B. The sulfur capture and/or monitoring equipment may be replaced or changed from time to time without a permit revision to the extent such changes comply with A.A.C. R18-2-317 (facility allowed without permit revisions).

Appendix D-B. ASARCO Hayden Laboratory QA/QC Plan for Sulfur Analyses
Sulfuric Acid - Shipments and Production

section: _____
revision: _____
date: _____
page: _____

1. Operation: The Sulfuric Acid Analyzer will be operated as per manufacturer's instructions.

2. Blank Analyses: A blank analysis consisting of deionized water will be analyzed daily. This will be compared to the velocity of sound in water and must fall within ± 5% of the published value.

3. Calibration Verification Sample: A standard sample will be analyzed with each set of samples. The Calibration Verification Sample must fall within ± 2% of its control value. The results of the analysis will be plotted on a control chart to indicate the control value is within three (3) standard deviations.

4. Duplicates: Every twentieth (20) sample, or one sample from each analytical set, will be analyzed in duplicate. The relative standard deviation will be calculated and must fall within ± 20%.

5. Quality Control Sample: A quality control sample will be analyzed quarterly. The analysis will compare within ± 10%. (blind note: JTBaker Sulfuric acid 9681-02)

6. Quality Assurance: When control limits are exceeded, the analysis will be repeated. If necessary, a supervisory chemist will be notified and the necessary steps will be taken to bring the analysis within control. No analyses will be reported or used as valid data, until the method is found to be under control.

Appendix D-C. ASARCO Hayden Laboratory QA/QC Plan for Sulfur Analyses
LECO Sulfuric Analyzer - Concentrates and By-Products

section: _____
revision: _____
date: _____
page: _____

1. Operation: The LECO Sulfur Analyzer will be operated as per manufacturers instructions.

2. Blank Analyses: A blank analysis consisting of the crucible accelerator and cover will be analyzed with each set of samples. The blank value will be calculated assuming a 0.500 gm weight. Blanks that are above 0.10% must be replaced and the analysis repeated.

3. Calibration Verification Sample: A standard sample will be analyzed with each set of samples. The Calibration Verification Sample must fall within ± 10% of its control value. The results of the analysis will be plotted on a control chart to indicate the control value is within three (3) standard deviations.

4. Duplicates: All samples will be analyzed in duplicate. The relative standard deviation will be calculated and must fall within ± 20%.

5. Quality Control Sample: A quality control sample will be analyzed quarterly. The analysis will compare within ± 10%.

6. Quality Assurance: When control limits are exceeded, the analysis will be repeated. If necessary, a supervisory chemist will be notified and the necessary steps will be taken to bring the analysis within control. No analyses will be reported or used as valid data, until the method is found to be under control.

Appendix D-D. ASARCO Hayden Laboratory QA/QC Plan for Sulfur Analyses
Weak Acid Solutions - Process Solutions

section: _____
revision: _____
date: _____
page: _____

1. Method: ASARCO Standard Method No. 63, Sulfate in Water Samples. (Barium Sulfate Gravimetric Method)

2. Blank Analyses: A blank analysis consisting of deionized water will be analyzed with each set of analyses. Blanks that are above 100 ppm must be replaced and the analysis repeated. The blank will be calculated for a 50 ml sample.

3. Calibration Verification Sample: A standard sample will be analyzed with each set of samples. The Calibration Verification Sample must fall within ± 10% of its calculated control value. A 1.0000 gm sample of Anhydrous Sodium Sulfate will be used as the Calibration Verification sample. The calculated value of the sample will be 13545.7 x purity of reagent. The Barium Sulfate residue will be calculated for a 50 ml sample. The results of the analysis will be plotted on a control chart to indicate the control value is within three (3) standard deviations.

4. Duplicates: All samples will be analyzed in duplicate. The relative standard deviation will be calculated and must fall within ± 20%.

5. Quality Control Sample: A quality control sample will be analyzed quarterly. The analysis will compare within ± 10%. (Blind note: JTBaker 0.2N Sulfuric acid 5960-02)

6. Quality Assurance: When control limits are exceeded, the analysis will be repeated. If necessary, a supervisory chemist will be notified and the necessary steps will be taken to bring the analysis within control. No analyses will be reported or used as valid data, until the method is found to be under control.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY CONTROL
PERMIT NUMBER 1000042

COPY

Has been issued to **ASARCO - Ray Complex Hayden Smelter**

P.O. Box 8

Hayden, AZ 85235

For operation of **Copper Smelter**

Subject to terms and conditions therein and all applicable Arizona Revised Statutes and the Arizona Administrative Code.

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Number: 1000042

Issued: October 9, 2001

Expires: October 9, 2006

Nancy C. Wrona, Director, Air Quality Division

TO BE FRAMED AND DISPLAYED IN A CONSPICUOUS PLACE