Air Quality

PERMIT TO CONSTRUCT

Permittee	**J.R. Simplot Co. - Don Siding Plant**
Permit Number	**P-2012.0001**
Project ID	**60974**
Facility ID	**077-00006**
Facility Location	**1150 W. Hwy 30** **Pocatello, ID 83204**

Permit Authority

This permit (a) is issued according to the *Rules for the Control of Air Pollution in Idaho (Rules)*, IDAPA 58.01.01.200-228; (b) pertains only to emissions of air contaminants regulated by the state of Idaho and to the sources specifically allowed to be constructed or modified by this permit; (c) has been granted on the basis of design information presented with its application; (d) does not affect the title of the premises upon which the equipment is to be located; (e) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (f) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; (g) in no manner implies or suggests that the Department of Environmental Quality (DEQ) or its officers, agents, or employees, assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment. Changes in design, equipment or operations may be considered a modification subject to DEQ review in accordance with IDAPA 58.01.01.200-228.

Date Issued **May XX, 2012**

Darrin Pampaian, P.E., Permit Writer

Mike Simon, Stationary Source Manager

PERMIT SCOPE

Purpose

1. This is a modified permit to construct of a source that is currently permitted by a Tier II permit.

2. Those permit conditions that have been modified or revised by this permitting action are identified by the permit issue date citation located directly under the permit condition and on the right hand margin.

3. This PTC replaces the #400 Sulfuric Acid Plant and Associated Handling Section of Tier II Permit No. 077-00006, issued on December 3, 1999.

4. The emission sources regulated by this permit are listed in the following table.

Table 1 REGULATED SOURCES

Sources	Control Equipment
No. 400 Sulfuric Acid Plant: Installation Date: After August 17, 1971 Max. production: 913,000 T-H_2SO_4/yr	Sulfuric acid mist eliminators
H_2SO_4 Storage Tanks: Total Storage Capacity: XX Vent pressure: XX psig	N/A
Cooling Tower: Manufacturer: TBD Model: TBD Manufacture Date: 2012 Number of Cells: 1 Max. Water Flow Rate: 6,000 gpm Max. TDS: 6,000 ppm	N/A

NO. 400 SULFURIC ACID PLANT

Process Description

5. **Process Description**

The No. 400 Plant uses a double-absorption contact process to produce sulfuric acid (H_2SO_4) from elemental sulfur. The elemental sulfur is burned in a furnace to produce an SO_2-rich gas stream. The SO_2-rich gas stream is then cooled in a waste-heat boiler before being routed to a multi-pass, four-bed catalytic converter where it reacts with oxygen to form sulfur trioxide (SO_3). After the third catalyst bed, the now SO_3-rich gas stream is cooled and sent to an intermediate absorbing tower where much of the SO_3 is absorbed into a concentrated sulfuric acid solution. The exhaust gas from the intermediate absorbing tower is reheated and returned to the catalytic converter where it passes through the fourth and final catalyst bed where most of the remaining SO_2 is converted to SO_3. This gas stream exits the converter, is cooled, and is then routed to the final absorbing tower where virtually all of the remaining gas-phase SO_3 is absorbed into a concentrated sulfuric acid solution. The gas exiting the final absorbing tower passes through a set of mist eliminators which collect most of the residual H_2SO_4 mist. This gas stream, which contains nitrogen, oxygen, a small amount of unreacted SO_2, and NO_X produced from the combustion of sulfur in the furnace, is exhausted through the No. 400 Plant stack.

6. **Control Descriptions**

Table 2 NO. 400 SULFURIC ACID PLANT DESCRIPTION

Emissions Units / Processes	Control Devices	Emission Points
No. 400 Sulfuric Acid Plant	Sulfuric acid mist eliminators	No. 400 Sulfuric Acid Plant Stack
H_2SO_4 Storage Tanks	N/A	Multiple storage tank vents
Cooling Tower	N/A	Cooling Tower Stack

Emission Limits

7. **Emission Limits**

The emissions from the No. 400 Sulfuric Acid Plant stack shall not exceed any emissions rate limit in the following table.

Table 3 NO. 400 SULFURIC ACID PLANT EMISSION LIMITS [a]

Sources	PM_{10} [b]		$PM_{2.5}$ [c]		SO_2		NO_X		H_2SO_4	
	lb/hr[d]	T/yr[e]	lb/hr[d]	T/yr[e]	lb/hr[d]	T/yr[e]	lb/hr[d]	T/yr[e]	lb/hr[d]	T/yr[e]
No. 400 Sulfuric Acid Plant	13.6	59.6	8.3	36.1	208.4	913.0	12.0	48.0	8.6	34.2

a) In absence of any other credible evidence, compliance is assured by complying with permit operating, monitoring, and recordkeeping requirements.
b) Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers, including condensable particulate as defined in IDAPA 58.01.01.006.
c) Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 (2.5) micrometers, including condensable particulate.
d) Pounds per hour, as determined by a test method prescribed by IDAPA 58.01.01.157, EPA reference test method, continuous emission monitoring system (CEMS) data, or DEQ-approved alternative.
e) Tons per any consecutive 12 calendar month period.

[DRAFT]

8. **NSPS SO_2 Emissions Limit**

Emissions of SO_2 from the No. 400 sulfuric acid plant stack shall not exceed 4.0 lb-SO_2/T of 100% sulfuric acid produced on a 3-hour average basis. The CEMS data shall be used to demonstrate compliance with this emissions limit.

9. **Phase 1 SO_2 Emissions Limit**

After the proposed modifications to the No. 400 Sulfuric Acid Plant in Phase 1 have been completed and until completion of the Phase 2 modifications, emissions of SO_2 from the No. 400 sulfuric acid plant stack shall not exceed 2.0 lb-SO_2/T of 100% sulfuric acid produced on a 12-month rolling average basis. The CEMS data shall be used to demonstrate compliance with this emissions limit.

[DRAFT]

10. **Phase 2 SO_2 Emissions Limit**

Upon completion of the No. 400 Sulfuric Acid Plant Phase 2 modifications, emissions of SO_2 from the No. 400 sulfuric acid plant stack shall not exceed 1.7 lb-SO_2/T of 100% sulfuric acid produced on a 12-month rolling average basis. The CEMS data shall be used to demonstrate compliance with this emissions limit.

[DRAFT]

11. **$PM_{2.5}$ Emissions Limit**

Emissions of $PM_{2.5}$ from the No. 400 Sulfuric Acid Plant stack shall not exceed 0.079 lb-$PM_{2.5}$/T of 100% sulfuric acid produced on a 12-month rolling average basis. The performance test data shall be used to demonstrate compliance with this emissions limit.

[DRAFT]

12. **Sulfuric Acid Mist Emissions Limit**

Emissions of sulfuric acid mist from the No. 400 sulfuric acid plant stack shall not exceed 0.075 lb-H_2SO_4/T of 100% sulfuric acid produced on a 3-hour average basis. The performance test data shall be used to demonstrate compliance with this emissions limit.

[DRAFT]

13. **NSPS Opacity Limit**

Emissions from the No. 400 sulfuric acid plant stack shall not exceed 10% opacity (40 CFR 60.83(2)) as determined by following EPA Reference Method 9 (40 CFR 60.11). The opacity standards set forth here shall apply at all times except during periods of startup, shutdown, and malfunction.

Operating Requirements

14. **Sulfuric Acid Production Limit**

After the proposed modifications to the No. 400 Sulfuric Acid Plant in Phase 1 have been completed, the maximum production rate of the No. 400 sulfuric acid plant shall not exceed 913,000 tons of 100% sulfuric acid in any consecutive 12-calendar months.

[DRAFT]

Monitoring and Recordkeeping Requirements

15. **SO_2 Continuous Emissions Monitoring System**

A continuous monitoring system for the measurement of sulfur dioxide shall be installed, calibrated, maintained, and operated by the owner or operator. The pollutant gas used to prepare calibration gas mixtures under Performance Specification 2 and for calibration checks under 40 CFR 60.l3(d), shall be sulfur dioxide. Method 8 shall be used for conducting monitoring system performance evaluations under 40 CFR 60.13(c) except that only the sulfur dioxide portion of the Method 8 results shall be used. The span value shall be set at 1,000 ppm of sulfur dioxide.

The owner or operator shall establish a conversion factor for the purpose of converting monitoring data into units of the applicable standard (kg/metric ton, lb/ton). The conversion factor shall be determined, as a minimum, three times daily by measuring the concentration of sulfur dioxide entering the converter using suitable methods (e.g., the Reich test, National Air Pollution Control Administration Publication No. 999-AP-13) and calculating the appropriate conversion factor for each eight-hour period as follows:

$CF = k \times [(1{,}000 - 0.015 \times r) \div (r - s)]$

Where:

- CF = conversion factor (lb/ton per ppm, kg/metric ton per ppm)
- k = constant derived from material balance. For determining CF in metric units, k=0.0653. For determining CF in English units, k=0.1306
- r = percentage of sulfur dioxide by volume entering the gas converter. Appropriate corrections must be made for air injection plants subject to the Administrator's approval.
- s = percentage of sulfur dioxide by volume in the emissions to the atmosphere determined by the continuous monitoring system required under paragraph (a) of this section.

The permittee shall record all conversion factors and values from which they were computed (i.e., CF, r, and s).

Alternatively, a source that processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen may use the following continuous emission monitoring approach and calculation procedures in determining SO_2 emission rates in terms of the standard. This procedure is not required, but is an alternative that would alleviate problems encountered in the measurement of gas velocities or production rate. Continuous emission monitoring systems for measuring SO_2, O_2, and CO_2 (if required) shall be installed, calibrated, maintained, and operated by the owner or operator and subjected to the certification procedures in Performance Specifications 2 and 3. The calibration procedure and span value for the SO_2 monitor shall be as specified previously in this permit condition. The span value for CO_2 (if required) shall be 10 percent and for O_2 shall be 20.9 percent (air). A conversion factor based on process rate data is not necessary. Calculate the SO_2 emission rate as follows:

- $Es = (C_s \times S) \div [0.265 - (0.0126 \times \%O_2) - (A \times \%CO_2)]$

Where:

Es = emission rate of SO_2, kg/metric ton (lb/ton) of 100% of H_2SO_4 produced

C_s = concentration of SO_2, kg/dscm (lb/dscf)

S = acid production rate factor, 368 dscm/metric ton (11,800 dscf/ton) of 100 percent H_2SO_4 produced

$\%O_2$ = oxygen concentration, percent dry basis

A = auxiliary fuel factor,

= 0.00 for no fuel

= 0.0226 for methane

= 0.0217 for natural gas

= 0.0196 for propane

= 0.0172 for No 2 oil

= 0.0161 for No 6 oil

= 0.0148 for coal

= 0.0126 for coke

$\%CO_2$ = carbon dioxide concentration, percent dry basis

Note: It is necessary in some cases to convert measured concentration units to other units for these calculations. Use the following table for such conversions:

From	to	Multiply by
g/scm	kg/scm	10^{-3}
Mg/scm	kg/scm	10^{-6}
ppm (SO_2)	kg/scm	2.660×10^{-6}
ppm (SO_2)	lb/scf	1.660×10^{-7}

For the purpose of reports under 40 CFR 60.7(c), periods of excess emissions shall be all three-hour periods (or the arithmetic average of three consecutive one-hour periods) during which the integrated average sulfur dioxide emissions exceed the applicable standards in the NSPS SO_2 Emissions Limit permit condition.

16. **Visible Emissions Monitoring**

Opacity shall be determined using the Method 9 procedures contained in IDAPA 58.01.01.625. The permittee shall monitor the visible emissions monthly and keep a record of the observations, complete with conditions of time of observation. A compilation of the most recent five years of records shall be kept on site and shall be made available to DEQ representatives upon request.

17. **Emissions Monitoring**

The permittee shall monitor and record the following information:

- SO_2 emissions in pounds of SO_2 per ton of 100% sulfuric acid produced from the No. 400 sulfuric acid plant stack on a 3-hour average basis.
- SO_2 emissions in pounds of SO_2 per ton of 100% sulfuric acid produced from the No. 400 sulfuric acid plant stack on a 12-month rolling average basis.
- $PM_{2.5}$ emissions in pounds of $PM_{2.5}$ per ton of 100% sulfuric acid produced from the No. 400 sulfuric acid plant stack on a 12-month rolling average basis.
- Sulfuric acid emissions in pounds of H_2SO_4 per ton of 100% sulfuric acid produced from the No. 400 sulfuric acid plant stack on a 12-month rolling average basis.
- The production rate of the No. 400 sulfuric acid plant in tons per any consecutive twelve (12) month period (T/yr).

[DRAFT]

18. **Recordkeeping**

The permittee shall comply with the recordkeeping General Provision requirements.

Performance Testing Requirements

19. **Initial and Annual Performance Tests**

The permittee shall conduct performance tests to demonstrate that the pollution control equipment is capable of achieving pollutant-specific emissions limits. The initial performance test, and any subsequent performance tests conducted to demonstrate compliance, shall be performed in accordance with IDAPA 58.01.01.157 and the requirements outlined in the following subsections. The initial performance test shall be conducted within sixty (60) days after achieving maximum production rate at which the source will operate, but not later than one hundred eighty (180) days after plant modification. The annual compliance tests shall be conducted within thirteen (13) months after the previous initial performance or compliance test.

Sulfur dioxide: The performance test for SO_2 shall be conducted in accordance with 40 CFR 60.8 and 60.85. The test shall use as the reference methods and procedures the test methods described in 40 CFR 60 Appendix A. Method 8 (or an alternative method approved by both the Department in accordance with IDAPA 58.01.01.157 and the Environmental Protection Agency) shall be used to determine the concentration of SO_2. The performance tests shall also include a performance evaluation of the continuous emissions monitoring system.

Sulfuric acid mist: The performance test for H_2SO_4 mist shall be conducted in accordance with 40 CFR 60.8 and 60.85. The test shall use as the reference methods and procedures the test methods described in 40 CFR 60 Appendix A. Method 8 (or an alternative method approved by both the Department in accordance with IDAPA 58.01.01.157 and the Environmental Protection Agency) shall be used to determine the concentration of H_2SO_4.

The permittee shall determine compliance with the SO_2 Emissions Limit, Sulfuric Acid Mist Emissions Limit, and NSPS Opacity Limit permit conditions as follows:

The emission rate (E) of acid mist or SO_2, shall be computed for each run using the following equation:

$E = (CQ_{sd}) \div (PK)$

Where:

E = emission rate of acid mist or SO_2 kg/metric ton (lb/ton) of 100% H_2SO_4 produced

C = concentration of acid mist or SO_2 g/dscm (lb/dscf)

Q_{sd} = volumetric flow rate of the effluent gas, dscm/hr (dscf/hr)

P = production rate of 100% H_2SO_4, metric ton/hr (ton/hr).

K = conversion factor, 1,000 g/kg (1.0 lb/lb)

Method 8 shall be used to determine the acid mist and SO_2 concentrations (C's) and the volumetric flow rate (Q_{sd}) of the effluent gas. The moisture content may be considered to be zero. The sampling time and sample volume for each run shall be at least 60 minutes and 1.15 dscm (40.6 dscf).

Suitable methods shall be used to determine the production rate (P) of 100% H_2SO_4 for each run. Material balance over the production system shall be used to confirm the production rate.

Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity.

The owner or operator may use the following as alternatives to the reference methods and procedures specified in this section:

If a source processes elemental sulfur or an ore that contains elemental sulfur and uses air to supply oxygen, the following procedure may be used instead of determining the volumetric flow rate and production rate:

The integrated technique of Method 3 is used to determine the O_2 concentration and, if required, CO_2 concentration.

The SO_2 or acid mist emission rate is calculated as described in the SO_2 Continuous Emissions Monitoring System permit condition, substituting the acid mist concentration for C's as appropriate.

Oxides of Nitrogen: The performance test for NO_X shall be conducted in accordance with IDAPA 58.01.01.157. The test shall use as the reference methods and procedures the test methods described in 40 CFR 60 Appendix A. Method 7 (or an alternative method approved by the Department in accordance with IDAPA 58.01.01.157) shall be used to determine the concentration of NO_X.

Particulate matter: The performance test for PM_{10} shall use as the reference methods and procedures the test methods described in 40 CFR 51 Appendix M. Method 201a and Method 202 (or alternative methods approved by the department in accordance with IDAPA 58.01.01.157) shall be used to determine the concentration of PM_{10}.

Ammonia: The performance test for NH_3 shall be conducted in accordance with IDAPA 58.01.01.157.

Visible emissions: Visible emissions shall be observed during each performance test run using the methods specified in EPA reference Method 9 and IDAPA 58.01.01.625.

Throughput: The production rate, in pounds per hour (lbs/hr) and tons per day (T/day), and the operating parameters shall be recorded during each performance test.

Reporting Requirements

20. **Phase 1 and Phase 2 Reporting Requirements**

The Permittee shall notify DEQ when the Phase 1 and Phase 2 modifications have been completed at the No. 400 Sulfuric Acid Plant.

21. **Performance Tests Reports**

The results of all emissions tests, visible emissions data, and cylinder gas audits on the continuous emission monitors shall be reported to DEQ in the calendar-quarterly report. The calendar-quarterly report shall be received by DEQ no later than thirty days after each calendar quarter. Continuous emission monitoring data and the production rates, determined during the tests, shall be reported to DEQ with the emissions test data.

22. **SO_2 Emissions Reports**

All three-hour block average sulfur dioxide emissions shall be reported in a calendar-quarterly report. The calendar-quarterly report shall be received by DEQ no later than thirty days after each calendar quarter. All 12-month rolling block average sulfur dioxide emissions shall be reported in an annual report. The annual report shall be received by DEQ no later than thirty days after each calendar year.

23. **SO_2 Continuous Emissions Monitoring System**

All repairs or changes to the SO_2 Continuous Emission Monitoring System and any calibration problems shall be reported within seven days and in the quarterly report.

GENERAL PROVISIONS

General Compliance

24. The permittee has a continuing duty to comply with all terms and conditions of this permit. All emissions authorized herein shall be consistent with the terms and conditions of this permit and the *Rules for the Control of Air Pollution in Idaho*. The emissions of any pollutant in excess of the limitations specified herein, or noncompliance with any other condition or limitation contained in this permit, shall constitute a violation of this permit and the *Rules for the Control of Air Pollution in Idaho,* and the Environmental Protection and Health Act, Idaho Code §39-101, et seq.

[Idaho Code §39-101, et seq.]

25. The permittee shall at all times (except as provided in the *Rules for the Control of Air Pollution in Idaho*) maintain in good working order and operate as efficiently as practicable, all treatment or control facilities or systems installed or used to achieve compliance with the terms and conditions of this permit and other applicable Idaho laws for the control of air pollution.

[IDAPA 58.01.01.211, 5/1/94]

26. Nothing in this permit is intended to relieve or exempt the permittee from the responsibility to comply with all applicable local, state, or federal statutes, rules and regulations.

[IDAPA 58.01.01.212.01, 5/1/94]

Inspection and Entry

27. Upon presentation of credentials, the permittee shall allow DEQ or an authorized representative of DEQ to do the following:

- Enter upon the permittee's premises where an emissions source is located or emissions related activity is conducted, or where records are kept under conditions of this permit;
- Have access to and copy, at reasonable times, any records that are kept under the conditions of this permit;
- Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
- As authorized by the Idaho Environmental Protection and Health Act, sample or monitor, at reasonable times, substances or parameters for the purpose of determining or ensuring compliance with this permit or applicable requirements.

[Idaho Code §39-108]

Construction and Operation

28. This permit shall expire if construction has not begun within two years of its issue date, or if construction is suspended for one year.

[IDAPA 58.01.01.211.02, 5/1/94]

29. The permittee shall furnish DEQ written notifications as follows in accordance with IDAPA 58.01.01.211:

- A notification of the date of initiation of construction, within five working days after occurrence; except in the case where pre-permit construction approval has been granted then notification shall be made within five working days after occurrence or within five working days after permit issuance whichever is later;
- A notification of the date of any suspension of construction, if such suspension lasts for one year or more;

- A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date; and
- A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date.

[IDAPA 58.01.01.211.03, 5/1/94]

Performance Testing

30. If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ, at its option, may have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.

31. All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.

32. Within [30 days, or up to 60 days when requested] following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The written report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.

[IDAPA 58.01.01.157, 4/5/00]

Monitoring and Recordkeeping

33. The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Records of monitoring information shall include, but not be limited to the following: (a) the date, place, and times of sampling or measurements; (b) the date analyses were performed; (c) the company or entity that performed the analyses; (d) the analytical techniques or methods used; (e) the results of such analyses; and (f) the operating conditions existing at the time of sampling or measurement. All monitoring records and support information shall be retained for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Supporting information includes, but is not limited to, all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation and copies of all reports required by this permit. All records required to be maintained by this permit shall be made available in either hard copy or electronic format to DEQ representatives upon request.

[IDAPA 58.01.01.211, 5/1/94]

Excess Emissions

34. The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130-136 for excess emissions due to startup, shutdown, scheduled maintenance, safety measures, upsets and breakdowns.

[IDAPA 58.01.01.130-136, 4/5/00]

Certification

35. All documents submitted to DEQ, including, but not limited to, records, monitoring data, supporting information, requests for confidential treatment, testing reports, or compliance certification shall contain a certification by a responsible official. The certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

[IDAPA 58.01.01.123, 5/1/94]

False Statements

36. No person shall knowingly make any false statement, representation, or certification in any form, notice, or report required under this permit, or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.125, 3/23/98]

Tampering

37. No person shall knowingly render inaccurate any monitoring device or method required under this permit or any applicable rule or order in force pursuant thereto.

[IDAPA 58.01.01.126, 3/23/98]

Transferability

38. This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.209.06.

[IDAPA 58.01.01.209.06, 4/11/06]

Severability

39. The provisions of this permit are severable, and if any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

[IDAPA 58.01.01.211, 5/1/94]