

# **Statement of Basis**

**Tier I Operating Permit No. T1-2014.0001**

**Project ID 61319**

**P4 Production L.L.C.**

**Soda Springs, Idaho**

**Facility ID 029-00001**

**Final**

**February 11, 2016**

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The purpose of this Statement of Basis is to set forth the legal and factual basis for the Tier I operating permit terms and conditions, including references to the applicable statutory or regulatory provisions for the terms and conditions, as required by IDAPA 58.01.01.362

<b>1.</b>	<b>ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE.....</b>	<b>3</b>
<b>2.</b>	<b>INTRODUCTION AND APPLICABILITY .....</b>	<b>4</b>
<b>3.</b>	<b>FACILITY INFORMATION .....</b>	<b>5</b>
<b>4.</b>	<b>APPLICATION SCOPE AND APPLICATION CHRONOLOGY .....</b>	<b>8</b>
<b>5.</b>	<b>EMISSIONS UNITS, PROCESS DESCRIPTION(S), AND EMISSIONS INVENTORY .....</b>	<b>8</b>
<b>6.</b>	<b>EMISSIONS LIMITS AND MRRR.....</b>	<b>23</b>
<b>7.</b>	<b>REGULATORY REVIEW .....</b>	<b>33</b>
<b>8.</b>	<b>PUBLIC COMMENT .....</b>	<b>35</b>
<b>9.</b>	<b>EPA REVIEW OF PROPOSED PERMIT .....</b>	<b>35</b>

APPENDIX A – EMISSIONS INVENTORY

APPENDIX B – FACILITY COMMENTS FOR DRAFT PERMIT

## 1. ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

acfm	actual cubic feet per minute
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
BMP	best management practices
Btu	British thermal unit
CAA	Clean Air Act
CAM	Compliance Assurance Monitoring
CEMS	continuous emission monitoring systems
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CI	compression ignition
CMS	continuous monitoring systems
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent emissions
COMS	continuous opacity monitoring systems
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
GHG	greenhouse gases
gph	gallons per hour
gpm	gallons per minute
gr	grains (1 lb = 7,000 grains)
HAP	hazardous air pollutants
HHV	higher heating value
hp	horsepower
hr/yr	hours per consecutive 12 calendar month period
ICE	internal combustion engines
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
iwg	inches of water gauge
km	kilometers
lb/hr	pounds per hour
m	meters
MACT	Maximum Achievable Control Technology
mg/dscm	milligrams per dry standard cubic meter
MMBtu	million British thermal units
MMscf	million standard cubic feet
MRRR	Monitoring, Recordkeeping and Reporting Requirements
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>2</sub>	nitrogen dioxide
NO <sub>x</sub>	nitrogen oxides
NSPS	New Source Performance Standards
O&M	operation and maintenance
O <sub>2</sub>	oxygen
PC	permit condition
PM	particulate matter
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers

PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTC	permit to construct
PTE	potential to emit
PW	process weight rate
RICE	reciprocating internal combustion engines
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
scf	standard cubic feet
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
SO <sub>x</sub>	sulfur oxides
T/day	tons per calendar day
T/hr	tons per hour
T/yr	tons per consecutive 12 calendar month period
T1	Tier I operating permit
T2	Tier II operating permit
TAP	toxic air pollutants
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
ULSD	ultra low sulfur diesel
U.S.C.	United States Code
VOC	volatile organic compound

## 2. INTRODUCTION AND APPLICABILITY

P4 Production LLC (P4) is a manufacturer of elemental phosphorus, and is located at two miles north of Soda Springs, Idaho on Highway 34. The facility is classified as a major facility, as defined by IDAPA 58.01.01.008.10.c, because it emits or has the potential to emit PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>2</sub>, and CO above the major source threshold of 100 tons-per-year. At the time of this permitting action, the facility is not a major source of HAP emissions. As a major facility, P4 is required to apply for a Tier I operating permit pursuant to IDAPA 58.01.01.301. The application for a Tier I operating permit must contain a certification from P4 as to its compliance status with all applicable requirements (IDAPA 58.01.01.314.09).

IDAPA 58.01.01.362 requires that as part of its review of the Tier I application, DEQ shall prepare a technical memorandum (i.e. statement of basis) that sets forth the legal and factual basis for the draft Tier I operating permit terms and conditions including reference to the applicable statutory provisions or the draft denial. This document provides the basis for the draft Tier I operating permit for P4.

The format of this Statement of Basis follows that of the permit with the exception of the facility's information discussed first followed by the scope, the applicable requirements and permit shield, and finally the general provisions.

P4's Tier I operating permit is organized into sections. They are as follows:

### **Section 2 - Tier I Operating Permit Scope**

The scope describes this permitting action.

### **Section 3 - Facility-Wide Conditions**

The Facility-wide Conditions section contains the applicable requirements (permit conditions) that apply facility-wide. Where required, monitoring, recordkeeping and reporting requirements sufficient to assure compliance with each permit condition follows the permit condition.

**Sections 4 through 9 – Phosphate Ore Nodulizing Kiln and Cooler, Material Handling and Drying, Nodule Crushing and Screening, Furnaces No. 7, No. 8, and No. 9, Natural Gas-Fired Boiler (A/U Boiler), and Optimization Projects**

The emissions unit-specific sections of the permit contain the applicable requirements that specially apply to each regulated emissions unit. Some requirements that apply to an emissions unit (e.g. opacity limits) may be contained in the facility-wide conditions. As with the facility-wide conditions, monitoring, recordkeeping and reporting requirements sufficient to assure compliance with each applicable requirement immediately follows the applicable requirement.

**Section 10 - Compliance Assurance Monitoring**

This section describes the devices used to control emissions from CAM applicable emissions sources and the applicable requirements that apply.

**Section 11 - Non-applicable Requirements and Insignificant Activities**

This section lists those requirements that the applicant has requested as non-applicable, and DEQ proposes to grant a permit shield in accordance with IDAPA 58.01.01.325.

If requested by the applicant, this section also lists emissions units and activities determined to be insignificant activities based on size or production as allowed by IDAPA 58.01.01.317.01.b.

**Section 12 - General Provisions**

The final section of the permit contains standard terms and conditions that apply to all major facilities subject to IDAPA 58.01.01.300. This section is the same for all Tier I sources. These conditions have been reviewed by EPA and contain all terms required by IDAPA 58.01.01 et al as well as requirements from other air quality laws and regulations. Each general provision has been paraphrased so it is more easily understood by the general public; however, there is no intent to alter the effect of the requirement. Should there be a discrepancy between a paraphrased general provision in this statement of basis and the rule or permit, the rule or permit shall govern.

**3. FACILITY INFORMATION**

**3.1 Facility Description**

P4 Production operates a phosphorus production facility in Soda Springs. Coke, quartzite, phosphate ore, and cement clinker are brought to the site by truck or railcar. The coke and quartzite are dried, if needed, and screened. Nodules are generated by processing phosphate ore in a rotary kiln. The kiln's exhaust is routed through four parallel hydrosonic scrubbing systems. The coke, quartzite, and nodules are then combined and heated in three electric furnaces. Particulate emissions from the furnaces are controlled by electrostatic precipitators. The cleaned gases are sent through water spray condensers where the gases are cooled, condensing the phosphorus, which is then pumped to settling/storage tanks. The stored phosphorus is loaded into water-sealed railroad cars for shipment. Slag and ferrophosphorus from the furnaces are stockpiled on site.

**3.2 Facility Permitting History**

Tier I Operating Permit History - Previous 5-year permit term July 14, 2009 to July 14, 2014

The following information is the permitting history of this Tier I facility during the previous five-year permit term which was from to July 14, 2009 to July 14, 2014. This information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

July 14, 2009      T1-2009.0121, renewed Title V operating permit, Permit status (S)

March 24, 2011    T1-2009.0121, amended Title V operating permit, Permit status (A)

Underlying Permit History - Includes every underlying permit issued to this facility

The following information is the comprehensive permitting history of all underlying applicable permits issued to this Tier I facility. This information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

- July 18, 1979      Monsanto was issued operating permit No. 13-0420-0001-00 for (S):
- Natural gas-fired boiler
  - Phosphate ore-nodulizing kiln and cooler
  - Crushing and screening with emissions controlled by a venturi scrubber
  - Coke and quartzite handling and storage with emissions controlled by four baghouses
  - Coke dryer and quartz dryer with emissions controlled by a scrubber
  - Proportioning of phosphate ore
  - Coke and quartzite and stocking area over furnaces
  - Scale room transfer points controlled by a scrubber
  - No. 7 electric arc furnace with emissions from the furnace tapping operations controlled by a scrubber
  - No. 8 electric arc furnace with emissions from the furnace tapping operations controlled by a scrubber
  - No. 9 electric arc furnace with emissions from the furnace tapping operations controlled by a scrubber
- August 13, 1981      Part IV of the operating permit issued July 18, 1979, was amended to give Monsanto a compliance extension for installation of dust control equipment on its stocking system. (A)
- November 7, 1985      A permit to construct was issued to Monsanto for the coke fines electric furnace addition system. This permit, and other permits, were appealed on May 13, 1986. Additional information was submitted, and a draft permit was issued on August 26, 1986. The draft was revised and reissued on November 18, 1986 as another draft permit. This permit action was combined with others and was issued as Permit No. 0420-0001 on April 3, 1990. (S)
- November 19, 1985      Monsanto was issued the following modified pages of operating permit No. 420-0001 for a pot tapping emission reduction credit:
- Page 8 of 15, No.7 electric arc furnace, slag tapping to pots, pot hauling, pot dumping to the slag pile and ESP dust oxidation; with emissions from the tapping and ESP dust oxidation controlled by a venturi scrubber;
  - Page 9 of 15, No.8 electric arc furnace, slag tapping to pots, pot hauling, pot dumping to the slag pile and ESP dust oxidation; with emissions from the tapping and ESP dust oxidation controlled by a venturi scrubber;
  - Page 10 of 15, No, 9 electric arc furnace, slag tapping to pots, pot hauling, pot dumping to the slag pile and ESP dust oxidation; with emissions from the tapping and ESP dust oxidation controlled by a venturi scrubber; and
  - Page 10a of 15, fugitive emissions from slag piles and plant property and roads.
- (Voided on May 15, 1987)

- November 25, 1985 DEQ issued Monsanto a certificate for banked emission reduction credits of 780.0 tons per year for fugitive particulate emissions. The emissions reductions were the result of Monsanto's construction of a slag handling system (pot tapping) in 1980 which eliminated particulate-laden steam. (Voided May 15, 1987)
- November 25, 1985 DEQ issued Monsanto a certificate for banked emission reduction credits of 2.4 T/yr for fugitive particulate emissions. The emissions reductions were the result of Monsanto's paving of a 502-foot dirt road (Phos Avenue) in 1981. (Expired October 1, 1991)
- April 15, 1986 A PTC was issued to Monsanto for the new coke and quartzite dryer. This permit, and other permits, were appealed on May 13, 1986. Additional information was submitted, and a draft permit was issued on August 26, 1986. The draft was revised and reissued on November 18, 1986 as another draft permit. This permit action was combined with others and issued as Permit No. 0420-0001 on April 3, 1990. (S)
- May 15, 1987 The emission reduction credit for pot tapping, issued on November 25, 1985, was voided, Pages 8 through 10a of the operating permit issued November 19, 1985, which contained the enforceable limits on the emission reduction credit, were also voided. (Permit voided)
- May 1, 1989 Monsanto was issued a PTC for the dust slurry system. (Permit canceled)
- April 3, 1990 An operating permit was issued to Monsanto for emission reductions scaleroom scrubber shutdown. (S)
- April 3, 1990 A PTC was issued to Monsanto for the new coke and quartzite dryer. (S)
- September 12, 1991 DEQ canceled the dust slurry system PTC after receiving notification from Monsanto that the dust slurry system was permanently shut down. (Permit canceled)
- November 25, 1997 On October 8, 1997, DEQ received a letter from P4 Production stating that Monsanto Company had entered into a joint venture with Solutia, Inc., to form a new company called P4 Production, LLC. The letter requested that the PTCs held by Monsanto for the Enoch Valley Mine and the Soda Springs facility be reissued to P4 Production. The permits were issued on the basis that no modifications or emissions increases resulted from the transition and were issued solely to reflect a change of ownership of the permitted emissions units. (S)
- The coke fines and electric furnace addition system permit was reissued to P4 Production.
- The new coke quartzite dryer permit was reissued to P4 Production.
- October 19, 2000 The new coke quartzite dryer and coke fines and electric furnace addition system permits were amended to replace pound per hour fugitive emission limits with reasonable control requirements. The permit number also changed to 029-00001 on November 1, 2000, which superseded the permit issued on October 19, 2000, but the permit pages still contain the October 19, 2000 date on each page. (A)
- October 23, 2000 The emission reductions-scaleroom scrubber shutdown operating permit was amended to replace pound per hour fugitive emission limits with reasonable control requirements. The permit number also changed to 029-00001 on November 1, 2000, which superseded the permit issued on October 23, 2000, but the permit pages still contain the October 23, 2000 date on each page. This permit expired on October 23, 2005. Although it is expired, it is still active. (A)
- November 17, 2009 T2-2009.0109, Established permit requirements in 40 CFR 51.308(e) and IDAPA 58.01.01.668 for Best Available Retrofit Technology (BART), Permit status (A)
- October 1, 2010 P-030316, Facility-wide permit to resolve past PSD issues, Permit status (S)

March 4, 2014	T2-2012.0016, Established a Mercury Best Available Control Technology (MBACT) emission standard, Permit status (A)
June 23, 2014	P-2012.0055, Modification of P-030316 to install and operate a new screening system, Permit status (S)
April 20, 2015	P-2012.0055, Increase the stated amount of CO in the thermal oxidizer and clarify temperature measurement, Permit status (A)

## 4. APPLICATION SCOPE AND APPLICATION CHRONOLOGY

### 4.1 Application Scope

This permit is the renewal of the facility's currently effective Tier I operating permit.

Changes from the previous permit include:

- Permit conditions modified in P-2012.0055, issued April 20, 2015
- Incorporation of T2-2009.0109, issued November 17, 2009
- Compliance Assurance Monitoring (CAM) limits modified

### 4.2 Application Chronology

January 14, 2014	DEQ received an application.
March 13, 2014	DEQ determined that the application was complete.
March 25, 2014	DEQ received supplemental information from the applicant.
September 21, 2015	DEQ made available the draft permit and statement of basis for peer and regional office review.
October 26, 2015	DEQ made available the draft permit and statement of basis for applicant review.
November 19 – December 21, 2015	DEQ provided a public comment period on the proposed action.
December 23, 2015	DEQ provided the proposed permit and statement of basis for EPA review.
February 11, 2016	DEQ issued the final permit and statement of basis.

## 5. EMISSIONS UNITS, PROCESS DESCRIPTION(S), AND EMISSIONS INVENTORY

This section lists the emissions units, describes the production or manufacturing processes, and provides the emissions inventory for this facility. The information presented was provided by the applicant in its permit application. Also listed in this section are the insignificant activities based on size or production rate.

### 5.1 Process No. 1 – Phosphate Ore Nodulizing Kiln and Cooler

Table 5.1 lists the emissions units and control devices associated with the phosphate ore nodulizing kiln and cooler.

**Table 5.1 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION**

Emissions Unit Description	Control Device (if applicable)
Kiln	Dust knockout chamber North spray tower Four parallel cyclonic separator pairs Four parallel Hydro-Sonic scrubbers Demisters LCDA SO <sub>2</sub> scrubbing system
Nodule Cooler	Cooler spray tower and demisters

Phosphate ore must be nodulized in a rotary kiln in preparation for use in the furnace feedstock. Blended ore is added to the kiln where it is heated to the point of incipient fusion. The tumbling action of the kiln causes the ore to agglomerate into balls referred to as raw nodules. These raw nodules pass through a cooling and crushing process. A portion of the resulting raw nodules is routed directly into the nodule crushing and screening process while the remainder of the raw nodules is stockpiled for future use. The kiln's exhaust gas is routed through an emission control system that includes a dust knockout chamber for large particulate removal, a spray tower used to capture soluble gases and fine particulate matter, and four parallel Hydro-Sonic scrubbing systems that remove submicron dust particles and entrained particulate-laden water. The nodule cooling process generates both point and fugitive particulate matter that is controlled by a wet scrubbing system.

The kiln is fueled by carbon monoxide (CO) from the furnaces, coal, and natural gas.

## 5.2 Process No. 2 – Material Handling and Drying

Table 5.2 lists the emissions units and control devices associated with material handling and drying.

**Table 5.2 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION**

Emissions Unit Description	Control Device (if applicable)
Ore to belt 104	Baghouse 104
SDM to belt 104	
UFS to belt 104	
Belt 104 emissions to baghouse	
Belt 104 ore, SDM, UFS to grizzly	
Belt 111 ore, SDM, UFS	
Belt 300 nodules to raw nodule storage	Nodule reclaim baghouse
Raw nodule dump to reclaim hopper	
SDM blow to hopper	SDM vent filter
855 dryer feed belt – dried coke, quartzite, and coke fines	Dryer baghouse 836
Dryer – dried coke, quartzite, and coke fines	
Dryer – combustion	
835 dryer discharge belt loading - dried coke, quartzite, and coke fines	Baghouse 105
835 dryer discharge belt unloading – dried coke, quartzite, and coke fines	
Q2 belt loading – dried quartzite	
Q1 belt loading and unloading - dried quartzite	
105 belt loading – dried coke and coke fines	
105 vibrating pan feeder - undried coke, quartzite, and coke fines	Coke bunker baghouse (Coke baghouse)
Coke railroad car unloading	
Coke fines railroad car unloading	
Coal railroad car unloading	

Emissions Unit Description	Control Device (if applicable)
Vactor truck station unloading	
Coke conveying	
Coke screens – dried and undried coke	
Coke screens – dried and undried coke fines	
Bins 8, 9, and 10 loading – dried and undried coke	
Fine coke to belt 827 – dried and undried coke	Coke handling baghouse
Fine coke to belt 827 – dried and undried coke fines	
Bin 11 (fine coke) loading – dried and undried coke	
Bin 11 (fine coke) loading – dried and undried coke fines	
Belt 827 to belt 828 – dried and undried coke fines	
Bin 1 weighing	
Bin 1 loading to belt 416	
Bins 2 and 3 weighing	
Bins 2 and 3 loading to belt 416	
Bins 4 and 5 weighing	
Bins 4 and 5 loading to belt 416	
Bins 6 and 7 weighing	
Bins 6 and 7 loading to belt 416	Scaleroom baghouse
Bins 8 and 9 weighing	
Bins 8 and 9 loading to belt 416	
Bin 10 weighing	
Bin 10 loading to belt 416	
Bin 11 weighing	
Bin 11 loading to belt 416	
Furnace No. 7 stock bins and transfer points	
672 distributor to bins 701-704	
South twin belt to bin 705	No. 7 CO baghouse
South twin belt to bin 706	
Bins 701-706	
No. 8 furnace stock bins and transfer points	
E/W pivot belt to bins 801-812	No. 8 CO baghouse
Bins 801-812	
Furnace No. 9 stock bins and transfer points	
E/W 420 pivot belt to bins 901-912	No. 9 CO baghouse
Bins 901-912	
Transfer points and CO baghouses	
Belt 416 burden to 421 distributor	Main furnace stocking system baghouse (Main stock baghouse)
421 distributor to belt 417	
421 distributor to belt 418	
421 distributor to belt 419	
417 burden belt	
418 burden belt	
419 burden belt	
Belt 417 feed to 672 distributor	

Emissions Unit Description	Control Device (if applicable)
672 distributor to south twin belt	
672 distributor to north twin belt	
Belt 418 Feed to E/W pivot belt	
E/W pivot belt	
Belt 419 to E/ 420 pivot belt	
E/W 420 pivot belt	
Fine coke storage bin from belt 828 – dried coke fines	
Fine coke storage bin from belt 828 – undried coke fines	
Coke fines screens (2)	
Bulk storage bin	
Coke fines injection to feed bin 304	No. 304 coke fines bin vent filter
Coke fines injection to feed bin 305	No. 305 coke fines bin vent filter
Coke fines injection to feed bin 306	No. 306 coke fines bin vent filter
Coke fines injection to feed bin 307	No. 307 coke fines bin vent filter
Coke fines injection to feed bin 308	No. 308 coke fines bin vent filter
Coke fines injection to feed bin 309	No. 309 coke fines bin vent filter
Sandblasting of process equipment	Decon baghouse (Decon building baghouse)

### *Phosphate Ore Handling Operations*

Phosphate ore and underflow solids (UFS) are reclaimed from the ore stockpile by loader and transported to the ore hopper by haul trucks and/or loaders. Separator discharge material (SDM) is also reclaimed from stockpiles and processed using a separate hopper. Phosphate ore, SDM, and UFS drop from the hoppers to belt 104 which transfers through a grizzly screen to belt 111. Belt 111 transfers material to belt 110. Belt 110 feeds a distributor in the Raw Ore Building which distributes the material to bins within the building. Phosphate ore feeders from the bins drop ore blends onto belt 115, which has a belt scale. Belt 115 transfers ore to belt 101 which transfers to belt 114. Material from belt 114 drops into the kiln feed pipe. The 104 Baghouse collects particulate matter (PM) from the tail and head-end of 104 belt, and tail-end of 111 belt.

### *Nodule Preparation*

The blended phosphate ore, UFS and SDM are fed to the rotary kiln by a belt conveyor. Phosphate ore dust from the kiln's drop-out chamber is collected and recycled back to the kiln. Also, the UFS from the scrubber clarifier are dewatered and recycled to the kiln. The rotary kiln produces hardened nodules that allow for proper operation of the electric reduction furnaces. The rotary kiln raises the ore temperature to its point of incipient fusion and the tumbling action causes the ore to agglomerate into the desired nodular form. The rotary kiln is fueled with carbon monoxide (generated in the electric reduction furnace operation), natural gas, and supplemental coal. The hot nodules pass through a cooler and chunk breaker with a separate off-gas treatment system before being conveyed to the sizing/screening operation.

The raw nodules produced by the rotary kiln fall from the discharge end of the kiln onto a traveling-grate cooler. These nodules then fall from the cooler outlet onto a metal pan conveyor. Raw nodule production is split, with part going directly into the crushing and screening process and the rest is conveyed to the raw nodule stockpile by belt 300.

The nodule reclaim, crushing, and screening process combines fresh (hot) and reclaimed (cooler) nodules from the reclaim hopper, in the proportions necessary to achieve the desired temperature and quantity of coarse, medium, and fine-sized nodules. Nodule sizing is accomplished by using vibrating screens. The oversize material from these screens is routed to a crusher and then recycled for re-screening. The SDM is air conveyed into a storage tank and heavy mobile equipment is used to stockpile it for recycling through the kiln. The coarse, medium, and fine nodule size fractions are routed to scaleroom bins 2 through 7. *The Nodule Reclaim Baghouse collects PM from the tail and head-end of belt 300, and the raw nodule dump to reclaim hopper. SDM Bin Vent collects PM from the SDM bin.*

#### *Coke Drying and Associated Handling*

Coke is reclaimed from the coke stockpile by loader and dumped to the dryer feed hopper, which feeds the vibrating pan feeder. Coke falls from the vibrating pan feeder to belt 855, which feeds coke and quartzite to dryer 851. Dried coke falls from dryer 851 to belt 835 (coke and quartzite share this equipment to this point), and then to belt 105. Coke is fed from belt 105 to one of two coke screens. Sized coke falls from the coke screen to belt 106, and then fed to the coke distributor which fills scaleroom coke bin 8, coke bin 9, or coke bin 10. Sized coke can also be directed to belt 827, and then to scaleroom coke bin 11. Coke fines falls through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills scaleroom coke bin 11, or feeds belt 828 which fills the bulk coke fines storage bin.

The Dryer Baghouse collects PM from the tail and head-end of the 855 belt, the dryer, and the tail-end of the 835 belt. The 105 Baghouse is described below.

#### *Quartzite Drying and Associated Handling*

Quartzite is reclaimed from the raw quartzite stockpile by loader and dumped to the dryer feed hopper, which feeds the vibrating pan feeder. Quartzite falls from the vibrating pan feeder to belt 855, which feeds coke and quartzite dryer 851. Dried quartzite falls from dryer 851 to belt 835 (coke and quartzite share this equipment to this point), and then to belt Q1. Quartzite transfers from belts Q1 to Q2, which feed either the north quartzite screen or the south quartzite screen. Fine quartzite falls through the north quartzite screen and/or south quartzite screen, through the silica mixers, and into the quartzite fines bunker. All other screened quartzite falls from the north quartzite screen and/or south quartzite screen into the scaleroom quartzite bin (Bin #1). The Dryer Baghouse collects PM from the tail and head-end of the 855 belt, the dryer, and the tail-end of the 835 belt. The 105 Baghouse collects PM from the head-end of the 835 belt, tail and head-end of the Q1 belt, and the tail-end of the Q2 belt.

#### *Undried coke unloading from railroad cars or trucks*

Coke brought in by railroad cars and trucks is unloaded at hopper 105. From hopper 105 the coke is fed to a truck loadout chute where it is then taken to the coke stockpile. Coke brought in by semi-trucks can be unloaded into the coke storage tent or deposited directly onto the coke stockpile. The Coke Bunker will be kept operational for infrequent events when a coke car has to be dumped and the 105 belt to truck loadout is unavailable. The Coke Bunker Baghouse will control emissions from unloading coke into the bunker.

#### *Undried coke handling to screening and storage*

Undried coke is unloaded from railroad cars or semi-trucks to hopper 105. Undried coke falls from the hopper to belt 105. Coke falls from belt 105 to one of two coke screens. Sized coke falls from the coke screen to the coke distributor which fills scaleroom coke bin 8, coke bin 9, or coke bin 10. Sized coke can also be directed to belt 827, and then to scaleroom coke bin 11. Coke fines fall through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills scaleroom coke bin 11, or feeds belt 828 which fills the bulk coke fines storage bin. The 105 Baghouse collects PM from the head-end of the 835 belt, tail and head-end of the Q1 belt, the tail-end of the Q2 belt, and tail-end of the 105 belt. The Coke Handling Baghouse collects PM from the head-end of belt 105, tail and head-end of the bucket elevators, coke screens, tail and head-end of belt 106, bypass and fines loadout bin discharge spouts, the fines loadout bin vent, and tail and head-end of belt 827. The Scaleroom Baghouse collects PM from all scaleroom bins unloading to belt 416.

### *Undried quartzite handling to screening and storage*

Quartzite is reclaimed from the raw quartzite stockpile by loader and dumped to the quartzite hopper. Quartzite falls from the hopper to belt Q2, and then feeds either the north quartzite screen or the south quartzite screen. Fine material falls through the north quartzite screen and/or the south quartzite screen into a silica fines mixer, and then to the quartzite fines bunker. All other screened quartzite falls from the north quartzite screen and/or south quartzite screen into the scaleroom quartzite bin (Bin #1). The Nodule Crushing and Screening Scrubber collects PM from the head-end of the Q2 belt and is regulated in another section of this permit.

The scaleroom process is a computer-controlled batch process. The scaleroom bins (containing nodules, quartzite, and coke) are positioned linearly above conveyor belt 416, also known as the long belt. When making a batch, the desired quantity of quartzite is automatically layered onto the moving long belt, followed by the nodules and then the coke.

Material is fed from 11 scaleroom bins (1 containing quartzite, 6 containing phosphate ore nodules, and 4 containing coke) to 11 weigh bins which proportion material onto belt 416 in the scaleroom. Material is carried by this belt to the top of (north) furnace building 7, and falls by way of rotary distributor 421 to one of three belts (belt 417 for furnace 7, belt 418 for furnace 8, and belt 419 for furnace 9). Material falls from belt 417 to rotary stock diverter 672 which feeds belt 713, feeds belt 714, or fills four stock bins. Belt 713 and belt 714 each fill one other stock bin. Material falls from belt 418 to furnace 8 stock diverter which feeds belt 12W or belt 12E. Belts 12W and 12E each fill six stock bins. Material falls from belt 419 to furnace 9 stock diverter which feeds belt 420W or 420E. Belts 420W and 420E each fill six stock bins. The material in each bin is gravity fed to the furnaces. Dust collection from all stock bins is controlled by #7, #8, and #9 CO dust collectors. Dust collection from all other transfer points in the furnace stocking area is controlled by the main furnace stocking baghouse. The Scaleroom Baghouse collects PM from the 11 scaleroom bins, and tail-end of the 416 belt. #7 CO Baghouse collects PM from the head and tail-end of belts 713 and 714, from rotary stock diverter 672 to the #7 Furnace stock bins, and the #7 Furnace stock bins. #8 CO Baghouse collects PM from the head and tail-end of belts 12W and 12E to the #8 Furnace stock bins, and the #8 Furnace stock bins. #9 CO Baghouse collects PM from head and tail-end of belts 420W and 420E to the #9 Furnace stock bins, and #9 Furnace stock bins. The Main Baghouse collects PM from the head-end of belt 416, head and tail-end of belts 713, 714, 12W, 12E, 420W, and 420E, and various points along belts 713, 714, 12W, 12E, 420W, and 420E. Dust from the #7, #8, #9 CO Baghouses is pneumatically conveyed to the Main Baghouse.

### *Coke fines handling from railcars to the stockpile*

Coke fines are unloaded from railcars to hopper 105 and fed to belt 105. Belt 105 feeds coke fines to a truck loadout chute and the coke fines are then hauled to the coke fines stockpile. The Coke Bunker will be kept operational for infrequent events when a coke car has to be dumped and the 105 belt to truck loadout is unavailable. The Coke Bunker Baghouse will control emissions from unloading coke into the bunker.

### *Coke fines screening and handling from the stockpile or railcars to the bulk storage bin*

Coke fines are reclaimed from the coke fines stockpile by loader and dumped to hopper 105. Coke fines are also unloaded from railcars directly to hopper 105. Coke fines fall from hopper 105 onto belt 105 and are fed to one of two coke screens. Coke fines fall through the coke screens to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills coke bin 11 or feeds belt 828. Belt 828 fills the bulk coke fines storage bin.

### *Coke fines drying, screening, and handling from the stockpile to the bulk storage bin*

Coke fines are reclaimed from the coke fines stockpile by loader and dumped to dryer feed hopper 853 which feeds vibrating pan feeder 854. Coke fines fall from vibrating pan feeder 854 to belt 855 which feeds coke and quartzite dryer 851. Dried coke fines fall from dryer 851 to belt 835 and then to belt 105 (coke, quartzite, and coke fines share this equipment to this point). Coke fines are fed from belt 105 to one of two coke screens. Sized coke in the fines falls from the coke screen to the mid-sized coke distributor which fills either coke bin 8, bin 9, or bin 10. Sized coke can also be directed to belt 827, and then to scaleroom coke bin 11.

Coke fines fall through the coke screen to a loadout bin. From the loadout bin, coke fines can be sent back through a bypass around the coke screens to belt 106 and fed to belt 827 which fills coke bin 11 or feeds belt 828. Belt 828 fills the bulk coke fines storage bin. The Coke Handling Baghouse collects from the tail and head-end of belt 827, tail and head-end of belt 828, bulk coke fines storage bin, and moving coke fines from the bulk storage bin to the first air conveyor.

*Coke fines screening, crushing, and handling from the bulk storage bin to the furnace feed bins*

Coke fines are transferred from the bulk storage bin to the coke-fines screen. Oversized coke fines fall through the screen to the over-sized coke surge pile. Contaminated or wet coke fines may be unloaded from the bulk coke fines storage bin through a reject chute to the ground. Under-sized coke fines are fed from the coke-fines screen to the second air conveyor, which pneumatically conveys the coke fines either to fines bins 304 or 305 (which feed furnace 7), to fines bins 306 or 307 (which feed furnace 8), or to fines bins 308 or 309 (which feed furnace 9). The 304, 305, 306, 307, 308, and 309 Furnace Feed Bin Vents collect *dust from conveying coke fines from the second air conveyor to fines bins 304, 305, 306, 307, 308, and 309.*

*Maintenance Activities*

Sandblasting of process equipment for reuse in the manufacturing process takes place in the Decon Building. The Decon Building Baghouse collects dust/particulate from the sandblasting process.

**5.3 Process No. 3 – Nodule Crushing and Screening**

**Error! Reference source not found.** lists the emissions units and control devices associated with nodule crushing and screening.

**Table 5.3 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION**

Emissions Unit Description	Control Device (if applicable)
North and south dried quartzite screens	Nodule crushing and screening scrubber
North and south undried quartzite screens	
Bin 1 dried quartzite Loading	
Bin 1 undried quartzite Loading	
Q2 belt unloading – dried quartzite	
Q2 belt unloading – undried quartzite	
Dried quartzite fines to conveyor belt loading	
Undried quartzite fines to conveyor belt loading	
Dried quartzite fines unloading to fines silo	
Undried quartzite fines unloading to fines silo	
Belt 265 nodules to distributor (300, 289)	
Reclaim hopper to belt 882	
Coarse gundlach crusher	
273 gundlach crusher	
Belt 888 pan discharge	
289, 882 and 881 (reclaim) elevator to top screen splitter	
East and west top sizing screens	
Nodules to 290 elevator	
Nodules to 291 elevator	
Nodules to splitters	
North and south quad deck screens	
North and south fine to belt 880	
North and south medium to belt 879	
North and south coarse to belt 878	

Emissions Unit Description	Control Device (if applicable)
Fine nodules to bins 4 and 5	Nodule crushing and screening scrubber
Medium nodules to bins 2 and 3	
Coarse nodules to bins 6 and 7	
SDM to blow tank	
SDM silo unloading spout	
SDM overflow/bypass bunker	

The nodule-crushing and screening scrubber, also known as the nodule scrubber, venturi scrubber, or nodule reclaim venturi scrubber, is used to control emissions from the transfers associated with moving quartzite from the Q2 belt to the quartzite screens and scaleroom quartzite bin, and emissions from the transfer points associated with nodule conveying, sizing, crushing, and screening.

#### 5.4 Process No. 4 – Furnaces No. 7, No. 8, and No. 9

**Error! Reference source not found.**4 lists the emissions units and control devices associated with furnaces No. 7, No. 8, and No. 9.

**Table 5.4 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION**

Emissions Unit Description	Control Device (if applicable)
Furnaces Nos. 7, 8, and 9	Electrostatic precipitators Spray towers CO flare for furnaces Nos. 7 and 8 CO flare for Furnaces Nos. 7, 8, and 9 Balanced CO Gas Operation method, or Thermal Oxidizer, or both
FeP Slag Tapping	No. 7 THFC
Calcium Silicate (CaSi) Slag Tapping	
No. 7 Treater doghouses	
PRV vent gases	No. 8 THFC
FeP slag tapping	
CaSi slag tapping	
No. 8 treater doghouses	
PRV vent gases	No. 9 THFC
FeP slag tapping	
CaSi slag tapping	
No. 9 treater doghouses	
PRV vent gases	No. 9 THFC with No. 7 or No. 8 THFC backup
Acid water tank seal pot	
Wastewater tank seal pot	
Clarifier tank seal pot	
No. 7 collection tank seal pot	
No. 8 collection tank seal pot	
No. 9 collection tank seal pot	
East mud tank seal pot	Vented to atmosphere
West mud tank seal pot	
CO phos trap seal pot	No. 9 THFC with No. 7 or No. 8 THFC backup
554/508 mud tank seal pot	
Phosphorus loading leg	Vented to atmosphere

Emissions Unit Description	Control Device (if applicable)
Phosphorus loading sump	

### *CO Flares*

Feedstock is gravity fed from burden bins into three electric reduction furnaces (No. 7, No. 8, and No. 9). Electrical power is used to generate the heat required to drive the reduction of phosphate (from the nodules) to elemental phosphorus. This reaction results in the evolution of phosphorus gas, carbon monoxide gas, and molten calcium silicate and ferrophosphorus slag. The furnace gases, composed of mainly carbon monoxide and phosphorus, are drawn through electrostatic precipitator dust collectors where particulate matter is removed. The cleaned gases are then sent through water spray condensers which have an associated external cooling system where the gases are cooled, condensing the phosphorus. After removal of phosphorus, the furnace off gas, composed primarily of CO, water, and trace quantities of fluoride, phosphorus, phosphorus compounds, and particulate matter, is sent to the kiln where the CO is used as fuel for the kiln. During normal operations, the CO gas produced will be balanced by the kiln fuel demand and/or the thermal oxidizer. During periods of startup, shutdown, scheduled maintenance, safety measures, upset, and breakdown when the CO gas cannot be sent to either the kiln or the thermal oxidizer, the gas is sent to flares. Flaring is minimized by controlling the CO produced in the furnaces to match the amount of CO that the kiln is able to use as fuel and/or by using the thermal oxidizer when CO production exceeds the amount that can be used by the kiln.

Each furnace (No. 7, No. 8, and No. 9) has an electrostatic precipitator (treater) and spray tower to control particulate emissions. There are three furnaces, three electrostatic precipitators, and three spray towers.

### *No. 7, No. 8, and No. 9 Tap Hole Fume Collectors*

These are also known as tap hole fume collectors (THFC) or Venturi Scrubbers. The furnaces are periodically tapped to remove accumulated molten slag and ferrophosphorus (FeP). Slag taps occur about 40-45 times per day per furnace and last about 10-15 minutes per tap. The ferrophosphorus is tapped once or twice per day per furnace. The tapping gases pass through a high-energy venturi scrubber equipped with a cyclonic separator before discharge to the atmosphere. This is the tap hole fume collector process and equipment.

The following requirements apply to emissions from slag tapping, PRV vent gases, and electrostatic precipitator dust oxidation from the No. 7, No. 8, and No. 9 furnaces, which are each controlled by a cyclonic separator pair and venturi scrubber known as the No. 7, No. 8, and No. 9 tap hole fume collectors (THFC). Normally, the No. 9 THFC also controls emissions from the seal pots. The No. 7 and No. 8 THFC may be used to control emissions from the seal pots when the No. 9 THFC is down.

### *Phosphorus Storage*

Note: All emission limits, monitoring, and recordkeeping requirements are contained in the facility's Tier I operating permit. Phosphorus storage and loading operations emissions are controlled by the No. 9 THFC with the No. 7 THFC as a backup.

## **5.5 Process No. 5 – Natural Gas-Fired Boiler (A/U Boiler)**

**Error! Reference source not found.**5 lists the emissions units and control devices associated with natural gas-fired boiler (A/U boiler).

**Table 5.5 EMISSIONS UNITS, CONTROL DEVICE, AND DISCHARGE POINT INFORMATION**

Emissions Unit Description	Control Device (if applicable)
A/U boiler, 50,000 lb/hr steam	None

The A/U boiler is used to provide steam to various processes at the facility. The primary steam source for the plant is the waste heat boiler on the kiln discharge and the A/U boiler is the secondary source. The A/U boiler is the primary source of steam when the kiln is down and/or maintenance is being performed on the waste heat boiler. The AU boiler is normally in a hot standby mode on minimum fire. It is rated for 50,000 lb/hr of steam. It was constructed prior to June 8, 1989.

## 5.6 Process No. 6 – Optimization Projects

There are several projects designed to improve the efficiency of operation which are allowed by this permit.

### *Furnace power control improvement*

P4 will change the programming which controls the furnace power controls to reduce “peaks” and “valleys” associated with the power consumed by the furnaces. This will reduce variation in furnace power and result in a more constant flow of CO gas to be burned in the kiln and/or the thermal oxidizer. The effort will involve power control system logic improvements, possible automatic control of furnace power input voltage, and other possible equipment needed to reduce variations of furnace power. The project is intended to reduce variation in peak load while maintaining the same average furnace load.

### *Furnace feed variability reduction*

The proposed improvement would better blend raw materials prior to “charging” the feed to the furnace. The benefits of a more stable chemical and physical furnace charge are in improved yields and recovery. This equates directly to a more stable and constant CO flow to the kiln and/or the thermal oxidizer (thereby improving its efficiency and reliability), as well as potentially reducing the loss of phosphorus to the slag. The effort will involve optimizing equipment and control systems, and the criteria and decision process used to make furnace charge adjustments.

### *Increase furnace tapping frequency*

Increasing the frequency of tapping is expected to reduce furnace production variability. The benefits are a more stable furnace offgas flow that will reduce furnace temperature peaks and particulate entrainment. This will allow for more efficient electrostatic precipitator operation, which will reduce phosphy mud and precipitator dust generation and result in safety improvements in the handling of recycle material. Additionally, a more stable offgas flow relates to a more stable CO flow to the kiln and/or the thermal oxidizer. Currently, one source of process variation occurs as the molten material accumulates inside the furnace between tapping operations. The effort would involve tapping (removing slag from the furnace) approximately twice the current frequency of four times per hour, thus reducing the slag accumulation in the furnace. The tapping would be of approximately half the duration so there would be no increase in emissions.

### *Kiln feed variation reduction*

The proposed improvement would better blend ore prior to “charging” the feed to the nodulizing kiln. This project would upgrade the ore stacker itself to be able to move on a continuous basis, and related ore handling equipment to optimize blending. Additional blending of ore may reduce sulfur and carbon peaks to the kiln, resulting in more efficient SO<sub>2</sub> scrubbing at the kiln discharge and more predictable CO consumption at the kiln.

### *Furnace vent gas pollution control improvements*

P4 will complete a project to route the furnace PRV vent gases through the THFC scrubbers for scrubbing particulate from the vent gas stream.

## 5.7 Insignificant Emissions Units Based on Size or Production Rate

No emissions unit or activity subject to an applicable requirement may qualify as an insignificant emissions unit or activity. As required by IDAPA 58.01.01.317.01.b, insignificant emissions units (IEU's) based on size or production rate must be listed in the permit application.

Table 5.6 lists the IEU's identified in the permit application. Also summarized is the regulatory authority or justification for each IEU.

**Table 5.6 INSIGNIFICANT EMISSION UNITS AND REGULATORY AUTHORITY/JUSTIFICATION**

<b>Location of the Emissions Unit</b>	<b>Description</b>	<b>Emission Point</b>	<b>Insignificant activities IDAPA citation Section 317.01(b)</b>
303.00, Hydroclarifier	Sodium hydrosulfide unloading	Fug, lime slaker building	b19, Aqueous solution of an inorganic salt
304.00, Underflow solids	Sodium hydrosulfide addition	Fug, belt filter building	b19, Aqueous solution of an inorganic salt
318.00, Kiln	Diesel tanks (auxiliary)	Fug, outside	b3, Diesel storage tanks, 250 gallons each
560.15, Furnace No. 7	Flare stack igniter	Pt, No. 7 & No. 8 co Flare stack	b5, Natural gas, 0.15 MMBtu/hr
560.50, Furnace No. 7	No. 7 hearth fan gasoline fuel tank	Fug, inside building	b3, Gasoline storage tank, 25 gallons
560.55, Furnace No. 7	No. 7 hearth fan fuel backup motor (Gasoline driven)	Pt, inside building	b6, Gasoline, 65 hp = 0.165 MMBtu/hr
560.60, Furnace No. 7	Gasoline tank (shell motor pump – No. 7&8)	Fug, inside building	b3, Gasoline storage tank, 40 gallons
560.65, Furnace No. 7	Shell motor pump No. 7&8 (Gasoline driven)	Pt, outside building	b6, Gasoline, 192 hp = 0.488 MMBtu/hr
584.50, Furnace No. 8	No. 8 hearth fan diesel fuel tank	Fug, inside building	b3, Diesel storage tank, 200 gal
584.55, Furnace No. 8	No. 8 hearth fan fuel electrical backup motor (Diesel driven)	Pt, inside building	b7, Gasoline, 65 hp = 0.165 MMBtu/hr
608.15, Furnace No. 9	Flare stack igniter	Pt, No. 9 Co flare	b5, Natural gas, 0.15 MMBtu/hr
608.50, Furnace No. 9	No. 9 hearth fan diesel fuel tank	Fug, inside building	b3, Diesel storage tank, 58 gal
608.55, Furnace No. 9	No. 9 hearth fan fuel electric backup motor (diesel driven)	Pt, inside building	b7, Diesel, 192 hp = 0.488 MMBtu/hr
608.80, Furnace No. 9	Diesel tank (No. 9 oil seal fire system)	Fug, inside building	b3, Diesel storage tank, 200 gal
608.85, Furnace No. 9	No. 9 oil seal fire system pump (Diesel driven)	Fug, inside building	b7, Diesel (No. 2 fuel oil) 0.51 MMBtu/hr
608.90, Furnace No. 9	Gasoline tank (No. 9 furnace shell motor pump)	Fug, outside	b3, Gasoline storage tank, 25 gal
608.95, Furnace No. 9	No. 9 furnace shell pump motor (Gasoline driven)	Pt, inside building	b6, Gasoline, 192 hp = 0.488 MMBtu/hr
805.10, Boiler house	Diesel tank	Fug, inside building	b3, Diesel storage tank, 50 gal
805.20, Boiler house	Emergency diesel electric engine	Pt, wall vent	b7, Diesel (No. 2 fuel oil) 0.51 MMBtu/hr
807.00, Machine shop	Gas heaters (2)	Pt, roof vents	b5, b18, Natural gas, 0.030 MMBtu/hr each
812.00, Tank car repair building	Gas heaters (2)	Pt, roof vents	b5, b18, Natural gas, 0.16 MMBtu/hr each
814.00, Training building	Gas Furnace	Pt, roof vent	b5, 18, Natural gas, 0.125 MMBtu/hr
817.00, South shop	Gas heaters (2)	Pt, roof vents	b5, b18, Natural gas, 0.16 MMBtu/hr each
819.00, North shop	Gas heaters (3)	Pt, roof vents	b5, b18, Natural gas, 0.14 MMBtu/hr each
821.00, North shop	Jet washer	Fug, inside building	b26, Electric washer using hot water

Location of the Emissions Unit	Description	Emission Point	Insignificant activities IDAPA citation Section 317.01(b)
822.00, Electric shop	Gas heaters (3)	Pt, roof vents	b5, b18, Natural gas, 0.10 MMBtu/hr each
823.00, Electric shop	Jet washer	Fug, inside building	b26, Electric washer using hot water
827.00, sandblasting area	Propane storage tank	Fug, outside	b4, Propane storage tank, 500 gal
829.00, salvage hill	Kerosene tank	Fug, outside	b3, Kerosene storage tank, 250 gal
829.10, salvage hill	Propane heaters (10)(10)(20)(12)	Fug, inside building	b5, 18, Propane, (10) 0.15 MMBtu/hr each, (10) 0.08 MMBtu/hr each, (20) 0.09 MMBtu/hr each, (12) 0.40 MMBtu/hr each
830.00, salvage hill	Stoddard solvent tank	Fug, outside	b3, Stoddard solvent storage tank, 500 gallons
832.00, Maintenance building	Welding	Fug, inside	b9, Small amount of Welding rod used per day (<<1 ton/day)
833.00, Maintenance building	Propane heaters (10)(10)(20)(12)	Pt, roof vents	b5, 18, Propane, 0.03 MMBtu/hr
835.00, Heavy duty building	Steam parts cleaner	Fug, inside	b26, Cleaning equipment using Steam
838.00, Heavy duty building	Jet washer	Fug, inside	b26, Electric washer using hot water
841.00, Heavy duty building	Gas heaters (13)(1)	Pt, roof vents	b5, 18, Natural gas, (13) 0.20 MMBtu/hr each, (1) 0.032 MMBtu/hr
843.00, Mark III shop	Welding	Fug, inside	b9, Small amount of Welding rod used per day (<<1 ton/day)
844.00, Mark III shop	Gas heaters (3)	Pt, roof vents	b5, 18, Natural gas, 0.20 MMBtu/hr each
845.00, Mark III shop	Jet washer	Fug, inside	b3, Diesel storage tank, 500 gallons
846.00, materials handling shop	Gas furnace (2)	Pt, roof vent	b3, Gasoline storage tanks, 1200 gallons each
848.10, Fuel storage tank	Low sulfur diesel tank	Fug, outside	b3, Diesel storage tank, 500 gallons
849.00, Fuel storage tank	Gasoline storage tanks (3)	Fug, outside	b3, Gasoline storage tanks, 1200 gallons each
852.00, Main control lab	Auto fluxer (glass beading Machine)	Pt, roof vent	b5, Natural gas, 0.30 MMBtu/hr
853.00, Main control lab	Ambient air pre-heater	Pt, roof vent	b5, 18, Natural gas, 0.20 MMBtu/hr each
855.30, Main control lab	Oil filter bath tank	Fug, outside	b3, low volatility oil tank, 15 gallons
856.00, Pump repair shop	Water heater	Pt, roof vent	b5, 18, Natural gas, 0.178 MMBtu/hr
918.10, Phossey water ponds	Sulfuric acid dispensing	Fug, acid addition building	b19, 97% H <sub>2</sub> SO <sub>4</sub>
927.20, Slag handling	Coating mixing tank	Pt, exhaust vent	b26, Slurry tank, 400 gallons
927.30, Slag handling	High moisture coating station	Fug, outside	b25, Surface coating using aqueous mixture
961.00, Pump repair	Jet washer	Pt, wall duct	b26, Electric washer using hot

Location of the Emissions Unit	Description	Emission Point	Insignificant activities IDAPA citation Section 317.01(b)
shop			water
962.00, Inert Gas generator	Generator fugitives	Fug, outside	b5, Natural gas, 0.50 MMBtu/hr
965.00, Sub-station	Transformer oil tank	Fug, outside	b3, Oil storage tank, 2,060 gallons
966.10, Plant well 1-4	Backup diesel pumps	Pt, outside	b7, Diesel, 192 hp = 0.488 MMBtu/hr
1025.00, Portable welders	Exhaust	Mobile, tailpipe	b7, Diesel (No. 2 fuel) 150 hp = 0.38 MMBtu/hr
1025.10, Portable equipment	Portable propane tanks (4)	Fug, outside	b4, Propane storage tanks, (2) 172 gal, (2) 176 gal
557.00	No. 7 Treater heat vent	Pt, outside	b30, Natural gas-fired
581.00	No. 8 Treater heat vent	Pt, outside	b30, Natural gas-fired
605.00	No. 9 Treater heat vent	Pt, outside	b30, Natural gas-fired
711.10, Phosphorus storage	Railcar cleanout leg	Fug, outside	b30, No significant emissions
720.10, Phosphorus storage	Phosphorus RR tank cars	Pt, outside	b30, Unloading is a closed Loop system, no emissions should occur
720.20, Phosphorus storage	Phosphorus ISO tanks	Pt, outside	b30, Unloading is a closed Loop system, no emissions should occur
801.00, Store room	Starting fluid, spot check	Fug, inside	b30, Minor emissions
803.00, Store room	Solvent storage cabinet	Fug, inside	b30, Stored Sealed, solvent use accounted for elsewhere
806.00, Machine shop	Welding snorkle vents	Pt, duct vent	b30, Primarily Welding emissions (insignificant activity)
808.10, Machine shop	Flammable storage cabinet	Fug, inside building	b30, Stored Sealed, solvent use accounted for elsewhere
809.00, Tank car repair building	Welding snorkle vents	Pt, duct vent	b30, Primarily Welding emissions (insignificant activity)
810.00, Tank car repair building	Plasma cutter	Fug, inside building	b30, Low usage, negligible amount of emissions
811.00, Tank car repair building	Acetylene cutter	Fug, inside	b30, Low usage, negligible amount of emissions
815.00, South shop	Welding snorkle vents	Pt, duct vent	b30, Primarily Welding emissions (insignificant activity)
816.00, South shop	Forge	Pt, roof vent	b30, Low usage, negligible amount of emissions
820.00, North shop	Welding snorkle vents	Pt, duct vent	b30, Primarily Welding emissions (insignificant activity)
826.10, Sandblasting area	Plasma cutter	Fug, outside	b30, Low usage, negligible amount of emissions
840.00, Heavy duty building	Welding snorkle vents	Pt, duct vent	b30, Primarily Welding emissions (insignificant activity)
843.10, Mark III shop	Welding snorkle vents	Pt, wall vent	b30, Primarily Welding emissions (insignificant activity)
102.00, 109.00, 116.00, 121.00, 523.00, 523.20, 530.20, 610.00, 855.20	Baghouse dust unloading	Vector truck vent	b30, Bag in vector truck is process equipment

Location of the Emissions Unit	Description	Emission Point	Insignificant activities IDAPA citation Section 317.01(b)
303.20	Lime silo loading	Pt, Lime silo baghouse vent	IDAPA 58.01.01.317.01.a.i (95)
Waste Handling Building	Aerosol Can Ventilation System	Pt, wall vent	IDAPA 58.01.01.317.01.a.i (38)
Phos Loading Dock	Ventilation fan	Pt, roof vent	IDAPA 58.01.01.317.01.a.i (9)
Thermal Oxidizer	Emergency Diesel Electric Generator	Pt, outside	b7, Diesel, 217 hp = 0.552 MMBtu/hr
Kiln	East auxiliary kiln drive engine	Pt, outside	b7, Diesel, 165 hp = 0.42 MMBtu/hr
Kiln	West auxiliary kiln drive engine	Pt, outside	b7, Diesel, 165 hp = 0.42 MMBtu/hr
Dryer	Dryer auxiliary drive engine	Pt, outside	b7, Diesel, 28 hp = 0.071 MMBtu/hr

### 5.8 Non-applicable Requirements for Which a Permit Shield is Requested

This section of the permit lists the regulations for which the facility has requested, and DEQ proposes to grant, a permit shield pursuant to IDAPA 58.01.01.325. The findings on which this shield is based are presented below:

- Requirements for Which a Permit Shield Will Be Granted  
None requested
- Requirements for Which a Permit Shield Will Not Be Granted  
None requested

### 5.9 Emissions Inventory

Table 5.7 summarizes the emissions inventory for this major facility. All values are expressed in units of tons-per-year and represent the facility's potential to emit. Potential to emit is defined as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hour of operation or on the type or amount of material combusted, stored or processed shall be treated as part of its design if the limitation or the effect it would have on emission is state or federally enforceable.

Listed below Table 5.7 are the references for the emission factors used to estimate the emissions. The documentation provided by the applicant for the emissions inventory and emission factors is provided as Appendix A of this statement of basis.

**Table 5.7 EMISSIONS INVENTORY - POTENTIAL TO EMIT (T/yr)**

Source Description	PM <sub>2.5</sub> /PM <sub>10</sub> T/yr	NO <sub>x</sub> T/yr	SO <sub>2</sub> T/yr	CO T/yr	VOC T/yr	HAP T/yr	GHG CO <sub>2</sub> e T/yr
Coke Handling Baghouse (C&Q)	6.28						
Scaleroom Baghouse	3.93						
Coke Bunker Baghouse	0.11						
105 Baghouse	0.30						
<b>RECOVERED PRODUCTION</b>							
Dryer Baghouse	0.292	0.00509	0.0213	0.00351	0.196		6.11
Bulk Storage Bin BH	0.0001	0.00	0.00	0.00	0.00		0.00
Nodule Reclaim BH	47.7	0.00	0.00	0.00	0.00		0.00
Nodule Crushing and Screening Scrubber	10.2/11.4	0.00	53.0	0.00	0.00		0.00
SDM Bin Vent	1.5	0.00	0.00	0.00	0.00		0.00
Main Furnace BH	0.408	0.00	0.00	0.00	0.00		0.00
No. 7 CO Dust BH	0.0186	0.00	0.00	77.1	0.00		0.00
No. 7 CO Dust Collection Bypass	0.00103/0.00138	0.00	0.00	0.00645	0.00		0.00
No. 7 THFC	1.89/1.99	11.3	6.98	45.2	0		0.0452
No. 304 Coke Fines Bin Vent	5.93E-4/8.47E-4	0.00	0.00	0.00	0.00		0.00
No. 305 Coke Fines Bin Vent	0.00135/0.00193	0.00	0.00	0.00	0.00		0.00
No. 8 CO Dust BH	0.0437/0.0437	0	0	294	0.00		0.00
No. 8 CO Dust Collection Bypass	0.0204/0.0274	0.00	0.00	0.224	0.00		0.00
No. 8 THFC	1.67/1.76	11.4	25.0	45.4	0		0.0454
No. 306 Coke Fines Bin Vent	7.65E-4/1.09E-3	0.00	0.00	0.00	0.00		0.00
No. 307 Coke Fines Bin Vent	1.45E-3/2.08E-3	0.00	0.00	0.00	0.00		0.00
No. 9 CO Dust BH	0.0296	0.00	0.00	139	0.00		0.00
No. 9 CO Dust Collection Bypass	2.20E-3/2.93E-3	0.00	0.00	0.000022	0.00		0.00
No. 9 THFC	0.746/0.785	11.2	10.8	44.9			0.0449
No. 308 Coke Fines Bin Vent	1.38E-3/1.97E-3	0.00	0.00	0.00	0.00		0.00
No. 309 Coke Fines Bin Vent	2.78E-3/3.97E-3	0.00	0.00	0.00	0.00		0.00
Dryer Area Fugitives	0.172/1.15	0.18	10.8E-3	0.0378	0.0104		
105 Belt Fugitives	7.75E-3/0.0516	0	0	0	0		
Nodule Handling Fugitives	0.147/0.980	0	0	0	0		
Furnace Feed Fugitives	1.44/3.89E-3	0	0	0	0		
#7 Furnace Fugitives	0.390/2.60	0	8.94	15.8	0		
#8 Furnace Fugitives	0.399/2.66	0	9.17	16.2	0		
#9 Furnace Fugitives	0.387/2.58	0	15.1	20.0	0		
<b>Total Emissions</b>	<b>78.54/89.38</b>	<b>35</b>	<b>129</b>	<b>698</b>	<b>0.21</b>	<b>18.48</b>	<b>6.25</b>

The emission inventory (EI) was developed in PTC No. P-2012.0055, issued on April 20, 2015, and are carried over into this Tier I operating permit. The PTE emissions estimates of PM<sub>10</sub>/PM<sub>2.5</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO, and VOC were based on emission factors and process information specific to the facility. Emissions of hazardous air pollutants are included in Appendix A.

## 6. EMISSIONS LIMITS AND MRRR

This section contains the applicable requirements for this major facility. Where applicable, monitoring, recordkeeping and reporting requirements (MRRR) follow the applicable requirement and state how compliance with the applicable requirement is to be demonstrated.

This section is divided into several subsections. The first subsection lists the requirements that apply facility wide. The next subsection lists the emissions units- and emissions activities-specific applicable requirements. The final subsection contains the general provisions that apply to all major facilities subject to Idaho DEQ's Tier I operating permit requirements.

This section contains the following subsections:

- Facility-Wide Conditions;
- Phosphate Ore Nodulizing Kiln and Cooler Emissions Limits;
- Material Handling and Drying Emissions Limits;
- Nodule Crushing and Screening Emissions Limits;
- Furnaces No. 7, No. 8, and No. 9 Emissions Limits;
- Natural Gas-Fired Boiler (A/U Boiler) Emissions Limits;
- Optimization Projects
- Tier I Operating Permit General Provisions.

### ***MRRR***

Immediately following each applicable requirement (permit condition) is the periodic monitoring regime upon which compliance with the underlying applicable requirement is demonstrated. A periodic monitoring regime consists of monitoring, recordkeeping and reporting requirements for each applicable requirement. If an applicable requirement does not include sufficient monitoring, recordkeeping and reporting to satisfy IDAPA 58.01.01.322.06, 07, and 08, then the permit must establish adequate monitoring, recordkeeping and reporting sufficient to yield reliable data from the relevant time period that are representative of the source's compliance with the permit. This is known as gap filling. In addition to the specific MRRR described under each permit condition, generally applicable facility-wide conditions and general provisions may also be required, such as monitoring, recordkeeping, performance testing, reporting, and certification requirements.

The discussion of each permit condition includes the legal and factual basis for the permit condition. If a permit condition was changed due to facility draft or public comments, a description of why and how the condition was changed is provided.

### ***State Enforceability***

An applicable requirement that is not required by the federal CAA and has not been approved by EPA as a SIP-approved requirement is identified as a "State-only" requirement and is enforceable only under state law. State-only requirements are not enforceable by the EPA or citizens under the CAA. State-only requirements are identified in the permit within the citation of the legal authority for the permit condition.

### ***Federal Enforceability***

Unless identified as "State-only," all applicable requirements, including MRRR, are state and federally enforceable. It should be noted that while a violation of a MRRR is a violation of the permit, it is not necessarily a violation of the underlying applicable requirement (e.g. emissions limit).

To minimize the length of this document, the following permit conditions and MRRR have been paraphrased. Refer to the permit for the complete requirements.

## 6.1 Facility-Wide Conditions

### Permit Condition 3.1 - Fugitive Dust

All reasonable precautions shall be taken to prevent PM from becoming airborne in accordance with IDAPA 58.01.01.650-651.

[IDAPA 58.01.01.650-651, 3/30/07]

### MRRR (Permit Conditions 3.2 through 3.4)

- Monitor and maintain records of the frequency and the methods used to control fugitive dust emissions;
- Maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint;
- Conduct facility-wide inspections of all sources of fugitive emissions. If any of the sources of fugitive dust are not being reasonably controlled, corrective action is required.

[IDAPA 58.01.01.322.06, 07, 08, 4/5/2000]

### Permit Condition 3.5 - Odors

The permittee shall not allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution.

[IDAPA 58.01.01.775-776 (State-only), 5/1/94]

### MRRR (Permit Condition 3.6)

- Maintain records of all odor complaints received and the corrective action taken in response to the complaint;
- Take appropriate corrective action if the complaint has merit, and log the date and corrective action taken.

[IDAPA 58.01.01.322.06, 07 (State only), 5/1/94]

### Permit Condition 3.7 - Visible Emissions

The permittee shall not discharge any air pollutant to the atmosphere from any point of emission for a period or periods aggregating more than three minutes in any 60-minute period which is greater than 20% opacity as determined by procedures contained in IDAPA 58.01.01.625. These provisions shall not apply when the presence of uncombined water, nitrogen oxides, and/or chlorine gas is the only reason for the failure of the emission to comply with the requirements of this section.

[IDAPA 58.01.01.625, 4/5/00]

### MRRR (Permit Condition 3.8 through 3.9)

- Conduct facility-wide inspections of all emissions units subject to the visible emissions standards (or rely on continuous opacity monitoring);
- If visible emissions are observed, take appropriate corrective action and/or perform a Method 9 opacity test;
- Maintain records of the results of each visible emissions inspection.

[IDAPA 58.01.01.322.06, 07, 5/1/94]

### Permit Conditions 3.10 through 3.14 - Excess Emissions

The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130-136 for excess emissions. The provisions of IDAPA 58.01.01.130-136 shall govern in the event of conflicts between the excess emissions facility wide conditions and the regulations of IDAPA 58.01.01.130-136.

### MRRR (Permit Conditions 3.10 through 3.14)

Monitoring, recordkeeping and reporting requirements for excess emissions are provided in Sections 131 through 136.

- Take appropriate action to correct, reduce, and minimize emissions from excess emissions events;
- Prohibit excess emissions during any DEQ Atmospheric Stagnation Advisory or Wood Stove Curtailment Advisory;
- Notify DEQ of each excess emissions events as soon as possible, including information regarding upset, breakdown, or safety events.
- Submit a report for each excess emissions event to DEQ;
- Maintain records of each excess emissions event.

**Permit Condition 3.15 – Fuel-Burning Equipment PM Standards**

The permittee shall not discharge to the atmosphere from any fuel-burning equipment PM in excess of 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume for gas, 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid, 0.050 gr/dscf of effluent gas corrected to 8% oxygen by volume for coal, and 0.080 gr/dscf of effluent gas corrected to 8% oxygen by volume for wood products.

[IDAPA 58.01.01.676-677, 5/1/94]

**MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

**Permit Condition 3.16 - Sulfur Content Limits**

The permittee shall not sell, distribute, use, or make available for use any of the following:

- Distillate fuel oil containing more than the following percentages of sulfur:
  - ASTM Grade 1 fuel oil, 0.3% by weight.
  - ASTM Grade 2 fuel oil, 0.5% by weight.
- Coal containing greater than 1.0% sulfur by weight.
- DEQ may approve an exemption from these fuel sulfur content requirements (IDAPA 58.01.01.725.01 725.04) if the permittee demonstrates that, through control measures or other means, SO2 emissions are equal to or less than those resulting from the combustion of fuels complying with these limitations.

[IDAPA 58.01.01.725, 3/29/10]

**MRRR - (Permit Condition 3.17)**

The permittee shall maintain documentation of supplier verification of fuel sulfur content on an as received basis.

[IDAPA 58.01.01.322.06, 5/1/94]

**Permit Condition 3.18 - Open Burning**

The permittee shall comply with the *Rules for Control of Open Burning*, IDAPA 58.01.01.600-623.

[IDAPA 58.01.01.600-623, 5/08/09]

**MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

**Permit Condition 3.19 - Asbestos**

The permittee shall comply with all applicable portions of 40 CFR 61, Subpart M when conducting any renovation or demolition activities at the facility.

[40 CFR 61, Subpart M]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Condition 3.20 - Accidental Release Prevention**

An owner or operator of a stationary source that has more than a threshold quantity of a regulated substance in a process, as determined under 40 CFR 68.115, shall comply with the requirements of the Chemical Accident Prevention Provisions at 40 CFR 68 no later than the latest of the following dates:

- Three years after the date on which a regulated substance present above a threshold quantity is first listed under 40 CFR 68.130.
- The date on which a regulated substance is first present above a threshold quantity in a process.

[40 CFR 68.10 (a)]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Condition 3.21 - Recycling and Emissions Reductions**

The permittee shall comply with applicable standards for recycling and emissions reduction of refrigerants and their substitutes pursuant to 40 CFR 82, Subpart F, Recycling and Emissions Reduction.

[40 CFR 82, Subpart F]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Condition 3.22 - NSPS/NESHAP General Provisions**

This facility is subject to NESHAP Subpart K, and is therefore required to comply with applicable General Provisions.

[40 CFR 60, Subpart A]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Condition 3.23 - Monitoring and Recordkeeping**

The permittee shall maintain sufficient records to assure compliance with all of the terms and conditions of this operating 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, 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 58.01.01.322.06, 07, 5/1/94]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Conditions 3.24 through 3.25 - Performance Testing**

If performance testing is required, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test or shorter time period as provided in a permit, order, consent decree, or by DEQ approval. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests such testing not be performed on weekends or state holidays.

All 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, prior to conducting any performance test, the permittee is encouraged to submit in writing to DEQ, at least 30 days in advance, the following for approval:

- The type of method to be used
- Any extenuating or unusual circumstances regarding the proposed test
- The proposed schedule for conducting and reporting the test

[IDAPA 58.01.01.157, 4/5/00; IDAPA 58.01.01.322.06, 08.a, 09, 5/1/94]

### **MRRR (Permit Conditions 3.26 and 3.27)**

The permittee shall submit compliance test report(s) to DEQ following testing.

[IDAPA 58.01.01.157, 4/5/00; IDAPA 58.01.01.322.06, 08.a, 09, 5/1/94]

### **Permit Condition 3.28 - Reports and Certifications**

This permit condition establishes generally applicable MRRR for submittal of reports, certifications, and notifications to DEQ and/or EPA as specified.

[IDAPA 58.01.01.322.08, 11, 5/1/94]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

### **Permit Condition 3.29 - Incorporation of Federal Requirements by Reference**

Unless expressly provided otherwise, any reference in this permit to any document identified in IDAPA 58.01.01.107.03 shall constitute the full incorporation into this permit of that document for the purposes of the reference, including any notes and appendices therein.

[IDAPA 58.01.01.107, 4/7/11]

## **MRRR**

No specific monitoring is required for this facility-wide condition. As with all permit conditions, the permittee must certify compliance with this condition annually, which includes making a reasonable inquiry to determine if this requirement was met during the reporting period.

## **6.2 Emissions Unit-Specific Emissions Limits and MRR**

### **Emissions Unit No. 1 – Phosphate Ore Nodulizing Kiln and Cooler**

#### **Permit Condition 4.3 – Polonium-210 Emission Limit**

Emissions of polonium-210 to the ambient air from all calciners and nodulizing kilns at an elemental phosphorus plant shall not exceed a total of 2 curies per year; except that compliance with this standard may be conclusively shown if the elemental phosphorous plant does the following:

Operate and maintain a Hydro-Sonic Tandem Nozzle Fixed Throat Free-Jet Scrubber System including four scrubber units.

All four scrubber units are operated continuously with a minimum average over any six-hour period of 40 inches (water column) of pressure drop across each scrubber during calcining of phosphate shale.

The system is used to scrub emissions from all calciners and/or nodulizing kilns at the plant.

Total emissions of polonium-210 from the plant do not exceed 4.5 curies per year.

Alternative operating conditions, which can be shown to achieve an overall removal efficiency for emissions of polonium-210 which is equal to or greater than the efficiency that would be achieved under the operating conditions described in first three bullet items of Permit Condition 4.3, may be used with prior approval of the U. S. Environmental Protection Agency (EPA). A facility shall apply for such approval in writing, and the EPA shall act upon the request within 30 days after receipt of a complete and technically sufficient application.

**MRRR - (Permit Conditions 4.3, 4.11-4.18, 4.29)**

The facility is required to control polonium-210 emissions by following the permit requirements in Permit Condition 4.3.

**Permit Condition 4.4 – Kiln and Cooler Emission Limit**

The emissions from the kiln and cooler stacks shall not exceed any emissions rate limit in the following table (Table 4.3).

**MRRR - (Permit Conditions 4.5-4.10, 4.19, 4.21-4.24 4.26-4.28, 4.30)**

The facility is required to comply with the PM<sub>10</sub> and SO<sub>2</sub> emission limits for the both the kiln and cooler.

**Emissions Unit No. 2 – Material Handling and Drying**

**Permit Condition 5.2**

The emissions from the Coke handling baghouse and the scaleroom baghouse stacks shall not exceed any corresponding emissions rate limits listed in Table 5.3.

**MRRR - (Permit Conditions 5.8, 5.10-5.12)**

The facility is required to comply with the PM<sub>10</sub> and PM<sub>2.5</sub> limits by conducting a performance test on the baghouse after installation of the coke screens.

**Emissions Unit No. 3 – Nodule Crushing and Screening**

**Permit Condition 6.2**

The PM<sub>10</sub> emissions from the nodule crushing and screening scrubber shall not exceed 15 lb/hr or 65.7 tons per any consecutive 12-calendar-month period.

**MRRR - (Permit Conditions 6.3-6.10)**

The facility is required to comply with the PM<sub>10</sub> limits through performance tests, monitoring, and recordkeeping.

**Emissions Unit No. 4 – Furnaces No. 7, No. 8, and No. 9**

**Permit Condition 7.4**

Emissions of hydrogen cyanide (HCN) resulting from the furnaces shall not cause the controlled ambient concentration of HCN to exceed the applicable acceptable ambient concentration listed in IDAPA 58.01.01.585. The emission rate of HCN may be estimated through the use of standard scientific and engineering principles and practices including, but not limited to, the use of emission factors and engineering judgment.

**MRRR - (Permit Conditions 7.4, 7.11)**

The facility is required to comply with the HCN limit through the use of standard scientific and engineering principles.

**Permit Condition 7.5**

Emissions of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and CO from the thermal oxidizer shall not exceed any of the corresponding limits specified in Table 7.3.

**MRRR - (Permit Conditions 7.12-7.15, 7.23-7.25)**

The facility is required to comply with the criterial pollutant limits performance tests, monitoring, and recordkeeping.

**Emissions Unit No. 5 – Natural Gas-Fired Boiler (A/U Boiler)**

**Permit Condition 8.2**

The PM emissions shall not exceed 0.015 gr/dscf of effluent gas corrected to 3% oxygen by volume for natural gas, and 0.050 gr/dscf of effluent gas corrected to 3% oxygen by volume for liquid fuel.

**MRRR - (Permit Condition 3.15)**

The boiler shall burn only natural gas. No monitoring or recordkeeping of grain-loading is required by this permit while burning natural gas.

**6.3 General Provisions**

Unless expressly stated, there are no MRRR for the general provisions.

**General Compliance, Duty to Comply**

The permittee must comply with the terms and conditions of the permit.

[IDAPA 58.01.01.322.15.a, 5/1/94; 40 CFR 70.6(a)(6)(i)]

**General Compliance, Need to Halt or Reduce Activity Not a Defense**

The permittee cannot use the fact that it would have been necessary to halt or reduce an activity as a defense in an enforcement action.

[IDAPA 58.01.01.322.15.b, 5/1/94; 40 CFR 70.6(a)(6)(ii)]

**General Compliance, Duty to Supplement or Correct Application**

The permittee must promptly submit such supplementary facts or corrected information upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application. The permittee must also provide information as necessary to address any new requirements that become applicable after the date a complete application has been filed but prior to the release of a draft permit.

[IDAPA 58.01.01.315.01, 5/1/94; 40 CFR 70.5(b)]

**Reopening, Additional Requirements, Material Mistakes, Etc.**

This term lists the instances when the permit must be reopened and revised, including times when additional requirements become applicable, when the permit contains mistakes, or when revision or revocation is necessary to assure compliance with applicable requirements.

[IDAPA 58.01.01.322.15.c, 5/1/94; IDAPA 58.01.01.386, 3/19/99; 40 CFR 70.7(f)(1), (2); 40 CFR 70.6(a)(6)(iii)]

**Reopening, Permitting Actions**

This term discusses modification, revocation, reopening, and/or reissuance of the permit for cause. If the permittee files a request to modify, revoke, reissue, or terminate the permit, the request does not stay any permit condition, nor does notification of planned changes or anticipated noncompliance.

[IDAPA 58.01.01.322.15.d, 5/1/94; 40 CFR 70.6(a)(6)(iii)]

### **Property Rights**

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

[IDAPA 58.01.01.322.15.e, 5/1/94; 40 CFR 70.6(a)(6)(iv)]

### **Information Requests**

The permittee must furnish, within a reasonable time to DEQ, any information, including records required by the permit, that is requested in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit.

[Idaho Code §39-108; IDAPA 58.01.01.122, 4/5/00; IDAPA 58.01.01.322.15.f, 4/5/00; 40 CFR 70.6(a)(6)(v)]

### **Information Requests, Confidential Business Information**

Upon request, the permittee must furnish to DEQ copies of records required to be kept by this permit. For information claimed to be confidential, the permittee may furnish such records along with a claim of confidentiality in accordance with Idaho Code §9-342A and applicable implementing regulations including IDAPA 58.01.01.128.

[IDAPA 58.01.01.322.15.g, 5/1/94; IDAPA 58.01.01.128, 4/5/00; 40 CFR 70.6(a)(6)(v)]

### **Severability**

If any provision of the permit is held to be invalid, all unaffected provisions of the permit will remain in effect and enforceable.

[IDAPA 58.01.01.322.15.h, 5/1/94; 40 CFR 70.6(a)(5)]

### **Changes Requiring Permit Revision or Notice**

The permittee may not commence construction or modification of any stationary source, facility, major facility, or major modification without first obtaining all necessary permits to construct or an approval under IDAPA 58.01.01.213, or complying with IDAPA 58.01.01.220 through 223. The permittee must comply with IDAPA 58.01.01.380 through 386 as applicable.

[IDAPA 58.01.01.200-223, 4/2/08; IDAPA 58.01.01.322.15.i, 3/19/99; IDAPA 58.01.01.380-386, 7/1/02; 40 CFR 70.4(b)(12), (14), (15), and 70.7(d), (e)]

Changes that are not addressed or prohibited by the Tier I operating permit require a Tier I operating permit revision if such changes are subject to any requirement under Title IV of the CAA, 42 U.S.C. Section 7651 through 7651c, or are modifications under Title I of the CAA, 42 U.S.C. Section 7401 through 7515. Administrative amendments (IDAPA 58.01.01.381), minor permit modifications (IDAPA 58.01.01.383), and significant permit modifications (IDAPA 58.01.01.382) require a revision to the Tier I operating permit. IDAPA 58.01.01.502(b)(10) changes are authorized in accordance with IDAPA 58.01.01.384. Off permit changes and required notice are authorized in accordance with IDAPA 58.01.01.385.

[IDAPA 58.01.01.381-385, 7/1/02; IDAPA 58.01.01.209.05, 4/11/06; 40 CFR 70.4(b)(14) and (15)]

### **Federal and State Enforceability**

All permit conditions are federally enforceable unless specified in the permit as a state or local only requirement. State and local only requirements are not required under the CAA and are not enforceable by EPA or by citizens.

[IDAPA 58.01.01.322.15.j, 5/1/94; IDAPA 58.01.01.322.15.k, 3/23/98; Idaho Code §39-108; 40 CFR 70.6(b)(1), (2)]

### **Inspection and Entry**

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

- Enter upon the permittee's premises where a Tier I 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; IDAPA 58.01.01.322.15.1, 5/1/94; 40 CFR 70.6(c)(2)]

### **New Applicable Requirements**

The permittee must continue to comply with all applicable requirements and must comply with new requirements on a timely basis.

[IDAPA 58.01.01.322.10, 4/5/00; IDAPA 58.01.01.314.10.a.ii, 5/1/94; 40 CFR 70.6(c)(3) citing 70.5(c)(8)]

### **Fees**

The owner or operator of a Tier I source shall pay annual registration fees to DEQ in accordance with IDAPA 58.01.01.387 through IDAPA 58.01.01.397.

[IDAPA 58.01.01.387, 4/2/03; 40 CFR 70.6(a)(7)]

### **Certification**

All documents submitted to DEQ shall be certified in accordance with IDAPA 58.01.01.123 and comply with IDAPA 58.01.01.124.

[IDAPA 58.01.01.322.15.o, 5/1/94; 40 CFR 70.6(a)(3)(iii)(A); 40 CFR 70.5(d)]

### **Renewal**

The permittee shall submit an application to DEQ for a renewal of this permit at least six months before, but no earlier than 18 months before, the expiration date of this operating permit. To ensure that the term of the operating permit does not expire before the permit is renewed, the owner or operator is encouraged to submit a renewal application nine months prior to the date of expiration.

[IDAPA 58.01.01.313.03, 4/5/00; 40 CFR 70.5(a)(1)(iii)]

If a timely and complete application for a Tier I operating permit renewal is submitted, but DEQ fails to issue or deny the renewal permit before the end of the term of this permit, then all the terms and conditions of this permit including any permit shield that may have been granted pursuant to IDAPA 58.01.01.325 shall remain in effect until the renewal permit has been issued or denied.

[IDAPA 58.01.01.322.15.p, 5/1/94; 40 CFR 70.7(b)]

### **Permit Shield**

Compliance with the terms and conditions of the Tier I operating permit, including those applicable to all alternative operating scenarios and trading scenarios, shall be deemed compliance with any applicable requirements as of the date of permit issuance, provided that:

- Such applicable requirements are included and are specifically identified in the Tier I operating permit; or
  - DEQ has determined that other requirements specifically identified are not applicable and all of the criteria set forth in IDAPA 58.01.01.325.01(b) have been met.
- The permit shield shall apply to permit revisions made in accordance with IDAPA 58.01.01.381.04 (administrative amendments incorporating the terms of a permit to construct), IDAPA 58.01.01.382.04 (significant modifications), and IDAPA 58.01.01.384.03 (trading under an emissions cap).
- Nothing in this permit shall alter or affect the following:

- Any administrative authority or judicial remedy available to prevent or terminate emergencies or imminent and substantial dangers;
- The liability of an owner or operator of a source for any violation of applicable requirements prior to or at the time of permit issuance;
- The applicable requirements of the acid rain program, consistent with 42 U.S.C. Section 7651(g)(a); and
- The ability of EPA to obtain information from a source pursuant to Section 114 of the CAA; or the ability of DEQ to obtain information from a source pursuant to Idaho Code §39-108 and IDAPA 58.01.01.122.

[Idaho Code §39-108 and 112; IDAPA 58.01.01.122, 4/5/00;  
IDAPA 58.01.01.322.15.m, 325.01, 5/1/94; IDAPA 58.01.01.325.02, 3/19/99;  
IDAPA 58.01.01.381.04, 382.04, 383.05, 384.03, 385.03, 3/19/99; 40 CFR 70.6(f)]

### **Compliance Schedule and Progress Reports**

- For each applicable requirement for which the source is not in compliance, the permittee shall comply with the compliance schedule incorporated in this permit.
- For each applicable requirement that will become effective during the term of this permit and that provides a detailed compliance schedule, the permittee shall comply with such requirements in accordance with the detailed schedule.
- For each applicable requirement that will become effective during the term of this permit that does not contain a more detailed schedule, the permittee shall meet such requirements on a timely basis.
- For each applicable requirement with which the permittee is in compliance, the permittee shall continue to comply with such requirements.

[IDAPA 58.01.01.322.10, 4/5/00; IDAPA 58.01.01.314.9, 5/1/94; IDAPA 58.01.01.314.10, 4/5/00;  
40 CFR 70.6(c)(3) and (4)]

### **Periodic Compliance Certification**

The permittee shall submit compliance certifications during the term of the permit for each emissions unit to DEQ and the EPA as specified.

- Compliance certifications for all emissions units shall be submitted annually unless otherwise specified;
- All original compliance certifications shall be submitted to DEQ and a copy of all compliance certifications shall be submitted to the EPA.

[IDAPA 58.01.01.322.11, 4/6/05; 40 CFR 70.6(c)(5)(iii) as amended,  
62 Fed. Reg. 54900, 54946 (10/22/97); 40 CFR 70.6(c)(5)(iv)]

### **False Statements**

The permittee may not 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]

### **No Tampering**

The permittee may not 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]

### **Semiannual Monitoring Reports.**

In addition to all applicable reporting requirements identified in this permit, the permittee shall submit reports of any required monitoring at least every six months as specified.

[IDAPA 58.01.01.322.15.q, 3/23/98; IDAPA 58.01.01.322.08.c, 4/5/00; 40 CFR 70.6(a)(3)(iii)]

## Reporting Deviations and Excess Emissions

Each and every applicable requirement, including MRRR, is subject to prompt deviation reporting. Deviations due to excess emissions must be reported in accordance Sections 130-136. All instances of deviation from Tier I operating permit requirements must be included in the deviation reports. The reports must describe the probable cause of the deviation and any corrective action or preventative measures taken. Deviation reports must be submitted at least every six months unless the permit specifies a different time period as required by IDAPA 58.01.01.322.08.c. Examples of deviations include, but are not limited to, the following:

- Any situation in which an emissions unit fails to meet a permit term or condition
- Emission control device does not meet a required operating condition
- Observations or collected data that demonstrate noncompliance with an emissions standard
- Failure to comply with a permit term that requires a report  
[IDAPA 58.01.01.322.15.q, 3/23/98; IDAPA 58.01.01.135, 4/11/06; 40 CFR 70.6(a)(3)(iii)]

## Permit Revision Not Required, Emissions Trading

No permit revision will be required, under any approved, economic incentives, marketable permits, emissions trading, and other similar programs or processes, for changes that are provided for in the permit.

[IDAPA 58.01.01.322.05.b, 4/5/00; 40 CFR 70.6(a)(8)]

## Emergency

In accordance with IDAPA 58.01.01.332, an “emergency” as defined in IDAPA 58.01.01.008, constitutes an affirmative defense to an action brought for noncompliance with such technology-based emissions limitation if the conditions of IDAPA 58.01.01.332.02 are met.

[IDAPA 58.01.01.332.01, 4/5/00; 40 CFR 70.6(g)]

## 7. REGULATORY REVIEW

### 7.1 Attainment Designation (40 CFR 81.313)

The facility is located in Caribou which is designated as attainment or unclassifiable for PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>2</sub>, SO<sub>x</sub>, and Ozone. Reference 40 CFR 81.313.

### 7.2 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

This facility is a major facility as defined by IDAPA 58.01.01.008.10 because it emits or has the potential to emit SO<sub>2</sub> and CO in amounts greater than or equal to major facility threshold(s) listed in Subsection 008.10. The AIRS facility classification is A.

### 7.3 PSD Classification (40 CFR 52.21)

The facility is classified as an existing major stationary source, because the estimated emissions of SO<sub>2</sub> and CO have the potential to exceed major stationary source thresholds. The facility is a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a) and is subject to PSD permitting requirements.

### 7.4 NSPS Applicability (40 CFR 60)

40 CFR 60 Subpart NN

Standards of Performance for Phosphate Rock Plants

This subpart is not applicable to facilities preparing phosphate rock solely for consumption in elemental phosphorus production (40 CFR 60.400(a)). There is an exception in the rule for those facilities.

40 CFR 60 Subpart OOO

Standards of Performance for Nonmetallic Mineral Processing Plants

The P4 Production facility does not meet the definition of a nonmetallic mineral processing plant because the facility does not crush or grind any nonmetallic mineral, including quartzite.

40 CFR 60 Subpart UUU

Standards of Performance for Calciners and Dryers in Mineral Industries

The P4 Production facility does not meet the definition of a mineral processing plant because the whole facility does not process greater than 50% industrial sand.

**7.5 NESHAP Applicability (40 CFR 61)**

40 CFR 61, Subpart K

National Emission Standards for Radionuclide Emissions from Elemental Phosphorus Plants

The provisions of this subpart are applicable to owners or operators of calciners and nodulizing kilns at elemental phosphorus plants. P4 Production owns and operates a nodulizing kiln at the Soda Springs elemental phosphorus plant, but the kiln is not affected in this current permitting action.

Also, the facility obtained a permanent waiver from the emissions test requirements from the EPA in a letter dated July 29, 1996 based on a source test conducted by the facility. According to the letter, no further annual testing is required. The monitoring requirements that are still required are in the Title V Operating Permit.

**7.6 MACT Applicability (40 CFR 63)**

The facility is not subject to any MACT standards in 40 CFR Part 63. The boiler is natural gas fired, and is therefore exempt from 40 CFR 63 Subpart JJJJJ in accordance with 40 CFR 63.11195(e)

**7.7 CAM Applicability (40 CFR 64)**

The Compliance Assurance Monitoring (CAM) program regulates emission sources that employ a control system to maintain compliance with an enforceable emission limit. CAM applicability and requirements are carried over with this renewal from T1-2009.0121, issued on July 14, 2009. CAM parameter operating limits are incorporated for the thermal oxidizer scrubbers in Permit Conditions 10.6 and 10.7. Table 7.1 is a list of all the control systems at the facility required to have a CAM plan.

**Table 7.1 CAM PLAN APPLICABLE CONTROL SYSTEMS**

Source
#104 Baghouse
#105 Baghouse
#7 Furnace Dust Collector Baghouse
#7 Furnace Tap Hole Fume Collector
#8 Furnace Dust Collector Baghouse
#8 Furnace Tap Hole Fume Collector
#9 Furnace Dust Collector Baghouse
#9 Furnace Tap Hole Fume Collector
Bulk Storage Bin Baghouse
Coke & Quartzite Baghouse
Coke Bin Baghouse
Dryer Baghouse
Kiln Hydrosonics Scrubbers (4)
Main Stocking Baghouse
Nodule Cooler Spray Tower
Nodule Reclaim Baghouse
Nodule Crushing & Screening Scrubber
Scaleroom Baghouse

Source
Separator Discharge Material Baghouse
Thermal Oxidizer Hydrosonics Scrubbers (3)

**7.8 Acid Rain Permit (40 CFR 72-75)**

This facility is not an affected facility as defined in 40 CFR 72 through 75; therefore, acid rain permit requirements do not apply.

**8. PUBLIC COMMENT**

As required by IDAPA 58.01.01.364, a public comment period was made available to the public from November 19, 2015 to December 21, 2015. During this time, comments were submitted in response to DEQ's proposed action. A response to public comments document has been crafted by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

**9. EPA REVIEW OF PROPOSED PERMIT**

As required by IDAPA 58.01.01.366, DEQ provided the proposed permit to EPA Region 10 for its review and comment on December 23, 2015 via e-mail. After 45 days, EPA did not respond and DEQ is free to issue the permit.

## Appendix A - Emissions Inventory

FACILITY-WIDE HAZARDOUS AIR POLLUTANT EMISSION RATES  
P4 Production Tier I Permit Renewal Application  
Soda Springs, Idaho

Emission rates are in tons per year

Pollutant	CAS No.	Emission Rate
Antimony	7440-36-0	0.07
Arsenic	7440-38-2	0.19
Asbestos	1332-21-4	0.00
Beryllium	7440-41-7	0.00
Cadmium	7440-43-9	0.06
Chromium	7440-47-3	1.07
Cobalt	7440-48-4	0.00
Lead	7439-92-1	0.23
Manganese	7439-96-5	0.08
Mercury	7439-97-6	0.30
Nickel	7440-02-0	0.26
Selenium	7782-49-2	0.53
Carbonyl Sulfide	463-58-1	2.72
Hydrogen Cyanide	6914-07-4	7.94
Hydrogen Fluoride	7664-39-3	1.98
Phosphine	7803-51-2	2.42
Phosphorus	7723-14-0	0.62
Total	N/A	18.48
Maximum	N/A	7.94

## **Appendix B - Facility Comments for Draft Permit**

**The following comments were received from the facility on November 9, 2015:**

**Facility Comment:** P4 suggests all references to Tier II No. T2-2011.0016 be removed from this permit. Once the current compliance agreement schedule has been completed and this Tier II permit updated it could be amended into the Tier I permit.

**DEQ Response:** T2-2012.0016, issued March 4, 2014 established a Mercury Best Available Control Technology (MBACT) emission standard. Because this permit contains only state enforceable conditions, the permit has been removed from the Tier I operating permit.

**Facility Comment:** Remove the requirement to test “at least once every three years” in Section 4.23, as it is covered in Section 4.32.

**DEQ Response:** The requirement to test for PM and PM<sub>10</sub> emissions at least once every three years was removed from Permit Condition 4.19 as it is contradictory to the requirements in Permit Condition 4.26 which allows for flexible testing depending on the emission rate measured in the most recent test.

**Facility Comment:** The requirement in Section 6.3 should be removed as this testing was conducted in June of 2013 and accepted by the Department in a letter dated December 16, 2013.

**DEQ Response:** The PM compliance test on the nodule crushing and screening scrubber was removed from the permit as the testing has been completed.

**Facility Comment:** Consider removing Section 7.18 and 7.19 as continuous flaring was eliminated since the last Tier I permit renewal with the issuance of PTC No. P-030316 on October 1, 2010.

**DEQ Response:** The permit conditions referencing the No. 7 and No. 8 CO flare were removed from the permit.

**Facility Comment:** P4 requests changes in the Statement of Basis that are consistent with the permit changes noted above. In addition, there are multiple places in this document where an apparent hyperlink was not functional. These areas are identified by the statement: “Error! Reference source not found.”

**DEQ Response:** The statement of basis has been modified to reflect the above changes and the hyperlinks have been fixed.