



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502
www.deq.idaho.gov

Governor Brad Little
Director John H. Tippetts

September 26, 2019

Jim McCulloch, Sr. Environmental Engineer
P4 Production LLC
1853 Hwy 34 North
Soda Springs, ID 83276

RE: Facility ID No. 029-00001, P4 Production LLC, Soda Springs
Final Tier II Operating Permit Letter

Dear Mr. McCulloch:

The Department of Environmental Quality (DEQ) is issuing Tier II Operating Permit No. T2-2019.0027 to P4 Production LLC for the installation of the GORE™ Mercury Control System (GMCS) on the nodulizing kiln as Mercury Best Available Control Technology (MBACT) located at Soda Springs, in accordance with IDAPA 58.01.01.400 through 406, Rules for the Control of Air Pollution in Idaho (Rules).

The enclosed Tier II operating permit is based on the information contained in your permit application and on the relevant comments received during the public comment period. This Tier II permit is effective immediately and replaces your previous permit, T2-2012.0016, issued on March 4, 2014. This permit does not release P4 Production LLC from compliance with all other applicable federal, state, or local laws, regulations, permits, or ordinances. Please note that this permit expires five years after the issuance date.

The Tier I operating permit does not need to be reopened to include these permit conditions. The MBACT Tier II permit requirements of IDAPA 58.01.01.401.02.a.ii are not applicable requirements for that permit program because that rule is not part of Idaho's Clean Air Act State Implementation Plan.

In accordance with IDAPA 58.01.01.407, DEQ has assessed the emissions for this permit and determined that a Tier II processing fee of \$1,250 will be due. A fee invoice will be sent to you from the DEQ fiscal office shortly. Failure to submit a Tier II operating permit processing fee within 45 days of receipt of the fee invoice will result in a monthly accrual of interest in the amount of 12% per annum on the outstanding balance until the fee is paid in full.

In order to fully understand the compliance requirements of this permit, DEQ highly recommends that you schedule a meeting with Melissa Gibbs, Regional Air Quality Manager, at (208) 236-6160 to review and discuss the terms and conditions of this permit. Should you choose to schedule this meeting, DEQ recommends the following representatives attend the meeting: your facility's plant manager, responsible official, environmental contact, and any other staff responsible for day-to-day compliance with permit conditions.

Pursuant to IDAPA 58.01.23, you, as well as any other entity, may have the right to appeal this final agency action within 35 days of the date of this decision. However, prior to filing a petition for a contested case, I encourage you to contact Darrin Pampaian at 208-373-0502 or darrin.pampaian@deq.idaho.gov to address any questions or concerns you may have with the enclosed permit.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Simon". The signature is written in a cursive, flowing style.

Mike Simon
Stationary Source Manager
Air Quality Division

MS/drp

Permit No. T2-2019.0027 PROJ 62246

Enclosure

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Please make checks payable to: Department of Environmental Quality. Please write your permit number on the check and remit the fee and this information to the following:

Idaho Department of Environmental Quality
Fiscal Office – Air Quality
1410 N. Hilton, Boise, ID 83706-1255

Amount Enclosed: \$ _____.

Check No.: _____

DEPARTMENT USE ONLY:			
Facility	P4 Production LLC	Facility ID:	029-00001
Project	MBACT permit	Permit No.:	T2-2019.0027
Fee Type:	Tier II Processing Fee	Fee Amount:	\$ 1,250.00
Routing Instructions: Copy Air Program upon receipt of fee.			

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AIR QUALITY

TIER II OPERATING PERMIT

Permittee	P4 Production LLC
Permit Number	T2-2019.0027
Project ID	62246
Facility ID	029-00001
Facility Location	1853 Hwy. 34 North Soda Springs, ID 83276

Permit Authority

This permit (a) is issued according to the "Rules for the Control of Air Pollution in Idaho" (Rules) (IDAPA 58.01.01.400–410); (b) pertains only to emissions of air contaminants regulated by the State of Idaho and to the sources specifically allowed to be constructed or modified by this permit; (c) has been granted on the basis of design information presented with the application; (d) does not affect the title of the premises upon which the equipment is to be located; (e) does not release the permittee from any liability for any loss due to damage to person or property caused by, resulting from, or arising out of the design, installation, maintenance, or operation of the proposed equipment; (f) does not release the permittee from compliance with other applicable federal, state, tribal, or local laws, regulations, or ordinances; and (g) in no manner implies or suggests that the Idaho Department of Environmental Quality (DEQ) or its officers, agents, or employees assume any liability, directly or indirectly, for any loss due to damage to person or property caused by, resulting from, or arising out of design, installation, maintenance, or operation of the proposed equipment. Changes in design, equipment, or operations may be considered a modification subject to DEQ review in accordance with IDAPA 58.01.01.200–228.

Date Issued September 26, 2019

Date Expires September 26, 2024


Darrin Pampaian, P.E., Permit Writer


Mike Simon, Stationary Source Manager

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1. Permit Scope

Purpose

- 1.1 The purpose of this permit is to require the installation of the GORE™ Mercury Control System (GMCS) and operation of the Lime Concentrated Dual Alkali (LCDA) scrubbing water treatment system for blowdown from GMCS collectors on the nodulizing kiln as Mercury Best Available Control Technology (MBACT) in accordance with IDAPA 58.01.01.401.02.a.ii and the Compliance Agreement Schedule (CAS) dated June 24, 2015.
- 1.2 The permit requires the installation of the GMCS on the four exhaust streams from the nodulizing kiln in accordance with the following schedule:
- Within two years of permit issuance the permittee shall complete the installation and start-up on one of the four exhaust streams;
 - Within 12 months of installation and startup, a full-scale demonstration shall be conducted to determine consistency with the pilot study performance;
 - Within five years of permit issuance the permittee shall complete the installation and operation on the three remaining exhaust streams.
 - DEQ shall be notified when each of these steps have been completed.
- 1.3 This Tier II operating permit supersedes the following permit(s):
- Tier II Operating Permit No. T2-2012.0016, project 61025, issued March 4, 2014.

Regulated Sources

Table 1.1 lists all sources of regulated emissions in this permit.

Table 1.1 REGULATED SOURCES

Permit Section	Source	Control Equipment
2	Nodulizing Kiln	Dust knockout chamber, North spray tower (nodulizing kiln spray tower) ^{a)} , eight parallel cyclonic separators (four pairs), four parallel Hydro-Sonic scrubbers, demisters, lime concentrated dual alkali (LCDA) SO ₂ scrubbing system, and four parallel GMCS collectors

^{a)} The north spray tower is upstream of the hydrosonic scrubbers and is different than the “cooler spray tower and demisters” listed in P4’s Permit No. T1-2009.0121 as controls for the “Cooler” source in Table 2.1 of that permit.

2. Nodulizing Kiln

2.1 Process Description

Phosphate ore is nodulized in a rotary kiln in preparation for use in the furnace feedstock. Blended ore is added to the nodulizing kiln where it is heated to the point of incipient fusion. The tumbling action of the nodulizing 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 nodulizing kiln's exhaust gas is routed through an emission control system prior to exhausting out of the four tall stacks.

2.2 Control Device Descriptions

Table 2.1 NODULIZING KILN DESCRIPTION

Emissions Units / Processes	Control Devices	Emission Points
Nodulizing kiln	Dust knockout chamber, North spray tower (nodulizing kiln spray tower) ^a , eight parallel cyclonic separators (four pairs), four parallel Hydro-Sonic scrubbers, demisters, lime concentrated dual alkali (LCDA) SO ₂ scrubbing system, and four parallel GMCS collectors	Four exhaust stacks

^a The north spray tower is upstream of the hydrosolic scrubbers and is different than the "cooler spray tower and demisters" listed in P4's Permit No. T1-2009.0121 as controls for the "Nodule cooler" source in Table 3.1 of that permit.

Emission Limits

2.3 Mercury Emissions Target Control Efficiency

The mercury emissions target control efficiency shall be established based on pilot performance and the performance testing that is required after the installation of the full-scale GMCS on the first exhaust stream. The mercury emissions target control efficiency is intended to show effective operation of the full-scale GMCS technology.

Once the mercury emissions target control efficiency has been established, if it is not achieved over the specified averaging period, P4 shall perform certain corrective actions to meet the required target control efficiency. These may include but are not limited to replacement of the GMCS modules (if the nameplate capacity has also been exceeded), further consultation with DEQ, or, if appropriate and approved, a resetting of the specified mercury emissions target control efficiency.

Operating Requirements

2.4 North Spray Tower (Nodulizing Kiln Spray Tower) Operation

When the nodulizing kiln is in use the water spray flow rate to the spray tower shall be equal to or greater than the three-hour average flow rate monitored during the most recent mercury emissions test.

2.5 GMCS Operational Requirements

Each of the four nodulizing kiln exhaust stream's full-scale controls will be constructed with a minimum of a 6 x 6 array of GMCS modules, stacked four modules high, for a total of at least 144 modules per kiln emission train with a total of at least 576 modules across all four kiln emission trains, or an alternate configuration approved by the Department that is modeled to offer comparable target control efficiency.

When the nodulizing kiln is in use the GMCS collector shall be operated (once installation and a shake-down period is complete) on each of the four nodulizing kiln exhaust streams per the Permit Scope installation schedule. The operating parameters of the GMCS collector, including but not limited to, the maximum pressure drop across the GMCS collector unit in inches of water (in-H₂O), GMCS modules water washing frequency, and mercury emissions target control efficiency shall be determined after the shake-down of the system is completed (not to exceed 180 days).

Wash water from the GMCS collector must be blown down to the facility's LCDA scrubbing water system, which will treat and filter mercury solids through rotary vacuum drum filters along with the calcium sulfite cake for disposal in the facility's existing double-lined SO₂ cake landfill.

Monitoring and Recordkeeping Requirements

2.6 North Spray Tower (Nodulizing Kiln Spray Tower) Monitoring Requirement

Once each eight (8) hours the permittee shall monitor and record the three-hour average water flow rate to the north spray tower in gallons per minute (gpm).

2.7 GMCS Monitoring Requirement

Once every eight hours the permittee shall monitor and record:

- The three-hour average pressure drop across the GMCS collector unit in inches of water (in-H₂O).
- The water washing frequency of the GORE™ modules.

2.8 GMCS O & M Plan Submittal Requirement

Within 180 days of startup of the first full-scale unit P4 must prepare and submit to DEQ an operations and maintenance (O & M) plan that will identify various operating parameters for operation of the GMCS control technology. For the air stream mercury control, this would include but is not limited to maintaining a maximum pressure drop across the GMCS collector unit as well as requiring periodic washing of the GMCS modules at a minimum frequency and wash volume. The O & M plan must also specify a schedule for various maintenance tasks, which will include inspecting and repairing the support surfaces between modules to ensure consistent air flow past the GMCS modules material, and sampling/analysis of the GMCS modules fabric on a specified schedule (at least annually) to assess mercury uptake by the modules. The permit will also require P4 to monitor and record operation and maintenance processes and procedures in compliance with the O & M plan.

Performance Testing Requirements

2.9 Short-Term Mercury Testing Requirement

At least once every 30 days after the GMCS has been installed on each nodulizing kiln exhaust stream, the permittee shall conduct mercury emissions testing on the kiln stack using EPA Method 30B. The following information shall be recorded during each short-term performance test:

- Monitor and record mercury emissions concentration in micrograms per dry standard cubic meter ($\mu\text{g}/\text{dscm}$).
- Monitor and record the water flow rate to the North Spray tower (Nodulizing Kiln Spray Tower) in gallons per minute.
- Monitor and record the inlet and outlet mercury emissions concentration from the GMCS collector unit and determine the control efficiency.
- Monitor and record the pressure drop across the GMCS collector unit.
- Identify and record the water washing frequency, and volume of wash water of the GMCS modules.

2.10 Long-Term Mercury Source Testing Requirement

Within a year after the GMCS has been installed on each nodulizing kiln exhaust stream, the permittee shall conduct mercury emissions source tests on the kiln stack using ASTM Method D6784 (Ontario Hydro method). The permittee may at its discretion conduct mercury emission tests on the kiln stacks more frequently than as required by the preceding schedule, provided the results of such tests will be treated as the most recent emission test for all purposes under this Permit Condition. The initial source tests shall be conducted on each of the four kiln stacks; subsequent source testing shall be on each of the four kilns stacks unless approved otherwise in writing by DEQ. Each emission test shall be conducted in accordance with a written and DEQ approved source testing protocol, and in accordance with IDAPA 58.01.01.157. The following information shall be recorded during each long-term performance test:

- Monitor and record total mercury emissions in pounds per hour and determine particulate bound mercury, oxidized mercury, and elemental mercury emissions rates.
- Monitor and record the water flow rate to the North Spray tower (Nodulizing Kiln Spray Tower) in gallons per minute.
- Calculate the superficial face velocity of the exhaust gas through the GMCS collector in feet per second (ft/sec).
- Monitor and record the pressure drop across the GMCS collector unit.
- Identify and record the water washing frequency, and volume of wash water of the GMCS modules.
- Monitor and record the inlet and outlet mercury emissions concentration from the GMCS collector unit and determine the control efficiency using Method 30B.

Reporting Requirements

2.11 Short-Term Mercury Testing Reporting Requirement

The short-term mercury monitoring and testing results shall be reported to DEQ no later than 15-days after the results have been determined.

2.12 Long-Term Mercury Source Testing Reporting Requirement

The long-term mercury monitoring and source testing results shall be reported to DEQ per the Performance Testing General Provisions.

2.13 Interim GMCS Reporting Requirement

Within 60-days following completion of the one-year full-scale demonstration period on the initial installation of the GMCS, P4 shall submit a Full-Scale Demonstration Report to IDEQ for IDEQ's approval. At a minimum, the report shall include a summary of:

- The performance of the control technology at full-scale compared to performance of the pilot test unit,
- Statistical analyses of emission and process monitoring results and if necessary, additional stack testing results; and
- Any significant differences and/or design changes implemented to ensure successful scale-up from pilot to full-scale.

2.14 Final GMCS Reporting Requirement

Within 90 days of the final installation of the GMCS on all four exhaust stacks a final report shall be submitted to DEQ. This report shall detail the long-term permitting requirements to ensure proper operation and compliance with the mercury emissions target control efficiency requirement for the GMCS.

3. General Provisions

General Compliance

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

[Idaho Code §39-101, et seq.]

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

[IDAPA 58.01.01.405, 5/1/94]

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

[IDAPA 58.01.01.406, 5/1/94]

Inspection and Entry

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

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

[Idaho Code §39-108]

Construction and Operation Notification

3.5 The permittee shall furnish DEQ written notifications as follows:

- A notification of the date of initiation of construction, within five working days after occurrence;
- A notification of the date of any suspension of construction, if such suspension lasts for one year or more;
- A notification of the anticipated date of initial start-up of the stationary source or facility not more than sixty days or less than thirty days prior to such date; and
- A notification of the actual date of initial start-up of the stationary source or facility within fifteen days after such date; and
- A notification of the initial date of achieving the maximum production rate, within five working days after occurrence - production rate and date.

Performance Testing

- 3.6** If performance testing (air emissions source test) is required by this permit, the permittee shall provide notice of intent to test to DEQ at least 15 days prior to the scheduled test date or shorter time period as approved by DEQ. DEQ may, at its option, have an observer present at any emissions tests conducted on a source. DEQ requests that such testing not be performed on weekends or state holidays.
- 3.7** All performance testing shall be conducted in accordance with the procedures in IDAPA 58.01.01.157. Without prior DEQ approval, any alternative testing is conducted solely at the permittee's risk. If the permittee fails to obtain prior written approval by DEQ for any testing deviations, DEQ may determine that the testing does not satisfy the testing requirements. Therefore, at least 30 days prior to conducting any performance test, the permittee is encouraged to submit a performance test protocol to DEQ for approval. The written protocol shall include a description of the test method(s) to be used, an explanation of any or unusual circumstances regarding the proposed test, and the proposed test schedule for conducting and reporting the test.
- 3.8** Within 60 days following the date in which a performance test required by this permit is concluded, the permittee shall submit to DEQ a performance test report. The written report shall include a description of the process, identification of the test method(s) used, equipment used, all process operating data collected during the test period, and test results, as well as raw test data and associated documentation, including any approved test protocol.

[IDAPA 58.01.01.157, 4/5/00]

Monitoring and Recordkeeping

- 3.9** The permittee shall maintain sufficient records to ensure compliance with all of the terms and conditions of this permit. Monitoring records 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 58.01.01.405, 5/1/94]

Excess Emissions

- 3.10** The permittee shall comply with the procedures and requirements of IDAPA 58.01.01.130–136 for excess emissions due to start-up, shut-down, scheduled maintenance, safety measures, upsets, and breakdowns.

[IDAPA 58.01.01.130–136, 4/5/00]

Certification

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

[IDAPA 58.01.01.123, 5/1/94]

False Statements

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

[IDAPA 58.01.01.125, 3/23/98]

Tampering

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

[IDAPA 58.01.01.126, 3/23/98]

Expiration and Renewal

- 3.14** Only those permit conditions regulated in accordance of IDAPA 58.01.01.400-410 are subject to expiration. The permittee shall submit an application to DEQ for renewal of this permit at least six months before, but no earlier than 18 months before the expiration of this permit. To ensure that the term of the permit does not expire before the permit is renewed the permittee is encouraged to submit a renewal application nine months prior to the date of the expiration. The expiration of a permit will not affect the operation of a stationary source or facility during the administrative procedure period associated with the permit renewal.

[IDAPA 58.01.01.405.03, 5/1/94]

Transferability

- 3.15** This permit is transferable in accordance with procedures listed in IDAPA 58.01.01.404.05.

[IDAPA 58.01.01.404.05, 4/11/06]

Severability

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

[IDAPA 58.01.01.405, 5/1/94]