west virginia department of environmental protection

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Jim Justice, Governor
Austin Caperton, Cabinet Secretary
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May 4, 2017

Mr. Shane Dowell
Jay-Bee Oil & Gas, Inc.
3570 Shields Hill Road
Cairo, WV 26337

Re: Jay-Bee Oil & Gas, Inc.
Ketel Station, Tyler County
Permit No. R13-3257A
Plant ID No. 095-00023

Dear Mr. Dowell:

Your application for a permit as required by Section 5 of 45CSR13 - "Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permit, Permission to Commence Construction, and Procedures for Evaluation" has been approved. The enclosed Administrative Update R13-3257A is hereby issued pursuant to Subsection 4.2 of 45CSR13. Please be aware of the notification requirements in the permit which pertain to commencement of construction, modification, or relocation activities; startup of operations; and suspension of operations.

The source is not subject to 45CSR30.

In accordance with 45CSR22 - Air Quality Management Fee Program, the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the Certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

Should you have any questions or comments, please contact me at (304) 926-0499, extension 1203.

Sincerely,

Jonathan Carney
Engineer

Enclosures

c: Mr. Shane Dowell, Office Manager

sdowell@jaybeeoil.com

Mr. Roger Dhonau, PE, QEP

rdhonau@se-env.com

West Virginia Department of Environmental Protection

Jim Justice
Governor

Division of Air Quality

Austin Caperton
Cabinet Secretary

Class II - Administrative Update

R13-3257A

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 13 – Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Jay–Bee Oil & Gas Inc.
Ketel Site
095-00023

William F. Durham
Director

Issued: May 9, 2017

This permit will supersede and replace R13-3257.

Facility Location:	near Alma, Tyler County, West Virginia
Mailing Address:	3570 Shields Hill Cairo, WV 26337
Facility Description:	Natural Gas Compressor Station
SIC Codes:	1311
UTM Coordinates:	518.180 km Easting • 4,364.529 km Northing • Zone 17
Permit Type:	Modification
Description of Change:	Installation and operation of: one (1) 1,775-bhp compressor engine, one (1) 210-bbl produced liquid tank, and one (1) 2.39-mmBtu/hr enclosed combustor. Removal of one (1) 1,380-bhp compressor engine.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

The source is not subject to 45CSR30.

Table of Contents

1.0. Emission Units 5

1.1. Control Devices 5

2.0. General Conditions 6
2.1. Definitions 6
2.2. Acronyms 6
2.3. Authority 7
2.4. Term and Renewal 7
2.5. Duty to Comply 7
2.6. Duty to Provide Information 7
2.7. Duty to Supplement and Correct Information 8
2.8. Administrative Update 8
2.9. Permit Modification 8
2.10 Major Permit Modification 8
2.11. Inspection and Entry 8
2.12. Emergency 8
2.13. Need to Halt or Reduce Activity Not a Defense 9
2.14. Suspension of Activities 9
2.15. Property Rights 9
2.16. Severability 10
2.17. Transferability 10
2.18. Notification Requirements 10
2.19. Credible Evidence 10

3.0. Facility-Wide Requirements 11
3.1. Limitations and Standards 11
3.2. Monitoring Requirements 11
3.3. Testing Requirements 11
3.4. Recordkeeping Requirements 12
3.5. Reporting Requirements 13

4.0. Source-Specific Requirements [All Emission Units listed in Section 1.0] 14
4.1. Recordkeeping Requirements 14

5.0. Source-Specific Requirements (Engines; CE-1, CE-2, and CE-4) 15
5.1. Limitations and Standards 15
5.2. Monitoring Requirements 16
5.3. Testing Requirements 16
5.4. Recordkeeping Requirements 16

6.0. Source-Specific Hazardous Air Pollutant Requirements (TEG Dehydration Unit, RSV-1) 17
6.1. Limitations and Standards 17
6.2. Monitoring Requirements 18
6.3. Testing Requirements 19
6.4. Recordkeeping Requirements 20

7.0. Source-Specific Requirements (Tanks and Truck Loading; T05, TL-1, and VCU-3) 21
7.1. Limitations and Standards 21
7.2. Monitoring Requirements 21
7.3. Recordkeeping Requirements 21

8.0. Source-Specific Requirements (40CFR60 Subpart JJJJ Requirements; Engines) 22
8.1. Limitations and Standards 22
8.2. Compliance Requirements 22
8.3. Testing Requirements 22
8.4. Recordkeeping 24
8.5. Reporting 25

9.0. Source-Specific Requirements (40CFR60 Subpart OOOO, Compressors Associated 26

with CE-1, CE-2, and CE-4) 26
9.1. Limitations and Standards 26
9.2. Recordkeeping Requirements 26
9.3. Reporting 26

CERTIFICATION OF DATA ACCURACY 27

1.0. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
CE-1	1E	Residue Compressor Engine Caterpillar G3516 B	2013	1,380 bhp	1C (Cat)
CE-2	2E	Residue Compressor Engine Caterpillar G3516 B	2013	1,380 bhp	2C (Cat)
CE-4	3E	Residue Compressor Engine Caterpillar G3606 LE	2016	1,775 bhp	4C (Cat)
RSV-1	9E	TEG Dehydration Unit Still Vent (Controlled by Combustor VCU-1)	2013	40 mmscf/day	VCU-3
RBV-1	6E	TEG Dehydration Unit Reboiler	2013	0.75 mmBtu/hr	None
T05	9E	Produced Liquid Tank (Controlled by Combustor VCU-2)	2016	210 bbl	VCU-3
TL-1	8E	Truck Loading	2016	140,000 gallons/year	None
VCU-3	9E	Vapor Combustor Unit (Controlling Dehydration Unit Still Vent and Produced Liquid Tank T05)	2017	10.0 MMBtu/hr	None

1.1. Control Devices

Emission Unit	Pollutant	Control Device	Control Efficiency
Compressor Engines CE-1 and CE-2 Caterpillar G3516 B 1,380 bhp (each)	Carbon Monoxide	EMIT Oxidation Catalysts 1C and 2C	93%
	Volatile Organic Compounds		50%
	Formaldehyde		76%
Compressor Engine CE-4 Caterpillar G3606 LE 1,775 bhp	Carbon Monoxide	DCL Oxidation Catalyst 4C	93%
	Volatile Organic Compounds		50%
	Formaldehyde		76%
TEG Dehydration Unit Still Vent RSV-1 and Produced Water Tank T05	Volatile Organic Compounds	Vapor Combustor Unit (VCU-3)	98%

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45CSR§30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments
CBI	Confidential Business Information
CEM	Continuous Emission Monitor
CES	Certified Emission Statement
C.F.R. *or* CFR	Code of Federal Regulations
CO	Carbon Monoxide
C.S.R. *or* CSR	Codes of State Rules
DAQ	Division of Air Quality
DEP	Department of Environmental Protection
dscm	Dry Standard Cubic Meter
FOIA	Freedom of Information Act
HAP	Hazardous Air Pollutant
HON	Hazardous Organic NESHAP
HP	Horsepower
lbs/hr	Pounds per Hour
LDAR	Leak Detection and Repair
M	Thousand
MACT	Maximum Achievable Control Technology
MDHI	Maximum Design Heat Input
MM	Million
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NOx	Nitrogen Oxides
NSPS	New Source Performance Standards
PM	Particulate Matter
$PM_{2.5}$	Particulate Matter less than 2.5 μm in diameter
PM_{10}	Particulate Matter less than 10μm in diameter
Ppb	Pounds per Batch
Pph	Pounds per Hour
Ppm	Parts per Million
Ppmv or ppmv	Parts per Million by Volume
PSD	Prevention of Significant Deterioration
Psi	Pounds per Square Inch
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
TAP	Toxic Air Pollutant
TPY	Tons per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
VEE	Visual Emissions Evaluation
VOC	Volatile Organic Compounds
VOL	Volatile Organic Liquids

2.3. Authority

This permit is issued in accordance with West Virginia air pollution control law W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation*;

2.4. Term and Renewal

2.4.1. This permit supersedes and replaces previously issued General Permit Registration R13-2720. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any other applicable legislative rule;

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Application G35-A089A, R13-3225, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to; **[45CSR§§13-5.11 and -10.3.]**

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4.]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10 Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by

improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

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

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

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

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

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

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

2.12.5 The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

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

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13. **[45CSR§13-10.1.]**

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management, and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§15]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1] ***[State Enforceable Only]***

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45CSR11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

[Reserved]

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary

exercise his option to conduct such test(s), the operator shall provide all necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

[WV Code § 22-5-4(a)(15)]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports, and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. Said records shall be maintained on site or in a readily accessible off-site location maintained by the registrant for a period of five (5) years. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.

[45CSR§4. *State Enforceable Only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class with postage prepaid to the address(es) set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:
Director
WVDEP
Division of Air Quality
601 57th Street
Charleston, WV 25304-2345

If to the US EPA:
Associate Director
Office of Enforcement and Compliance Assistance
(3AP20)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

3.5.4. Operating Fee

3.5.4.1. In accordance with 45CSR22 – Air Quality Management Fee Program, the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements [All Emission Units listed in Section 1.0]

4.1. Recordkeeping Requirements

4.1.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit, and time of sampling or measurements;
b. The date(s) analyses were performed;
c. The company or entity that performed the analyses;
d. The analytical techniques or methods used;
e. The results of the analyses; and
f. The operating conditions existing at the time of sampling or measurement.

4.1.2. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment listed in Section 1.0 and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary.
[45CSR§13-5.11.]

4.1.3. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed in Section 1.0, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.
b. Steps taken to minimize emissions during the event.
c. The duration of the event.
d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.
f. Steps taken to correct the malfunction.
g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

5.0. Source-Specific Requirements (Engines; CE-1, CE-2, and CE-4)

5.1. Limitations and Standards

5.1.1. Maximum Brake Horsepower Limit. The four-stroke lean-burn Caterpillar G3516 LE natural gas fired compressor engines (CE-1 and CE-2) shall not exceed 1,380 bhp each.

5.1.2. Emission Limits. The maximum emissions for each engine (1E and 2E) shall not exceed the following limits:

Emission Unit IDs	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
CE-1 and CE-2	Nitrogen Oxides	1.52	6.66
	Carbon Monoxide	0.61	2.67
	Volatile Organic Compounds	0.88	3.86
	Formaldehyde	0.31	1.34

5.1.3. Maximum Brake Horsepower Limit. The four-stroke lean-burn Caterpillar G3606 LE natural gas fired compressor engine (CE-4) shall not exceed 1,775 bhp.

5.1.4. Emission Limits. The maximum emissions for each engine (3E) shall not exceed the following limits:

Emission Unit IDs	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
CE-4	Nitrogen Oxides	1.96	8.57
	Carbon Monoxide	0.75	3.30
	Volatile Organic Compounds	1.66	7.28
	Formaldehyde	0.25	1.07

5.1.5. Requirements for Use of Catalytic Oxidation Devices

a. For engines (CE-1, CE-2, and CE-4), the permittee shall monitor the temperature to the inlet of the catalyst and in accordance with manufacturer's specifications; a high temperature alarm shall shut off the engine before thermal deactivation of the catalyst occurs. If the engine shuts off due to high temperature, the permittee shall also check for thermal deactivation of the catalyst before normal operations are resumed.

b. No person shall knowingly:

1. Remove or render inoperative any air pollution or auxiliary air pollution control device installed subject to the requirements of this permit;

2. Install any part or component when the principal effect of the part or component is to bypass, defeat or render inoperative any air pollution control device or auxiliary air pollution control device installed subject to the requirements of this permit; or

3. Cause or allow engine exhaust gases to bypass any catalytic oxidation device.

5.2. Monitoring Requirements

5.2.1. Catalytic Reduction Control Device

a. The permittee shall regularly inspect, properly maintain and/or replace catalytic reduction devices and auxiliary air pollution control devices to ensure functional and effective operation of the engine's physical and operational design. The permittee shall ensure proper operation, maintenance and performance of catalytic reduction devices and auxiliary air pollution control devices by:

1. Maintaining proper operation of the automatic air/fuel ratio controller or automatic feedback controller.

2. Following operating and maintenance recommendations of the catalyst element manufacturer.

3. The automatic air/fuel ratio controller or closed-loop automatic feedback controller shall provide a warning or indication to the operator and/or be interlocked with the engine ignition system to cease engine operation in case of masking, poisoning or overrich air/fuel ratio situation which results in performance degradation or failure of the catalyst element.

5.3. Testing Requirements

5.3.1. Upon request by the Director, testing shall be conducted using a portable analyzer in accordance with a protocol approved by the Director. Such controls shall ensure proper and efficient operation of the engine and air pollution control devices.

5.4. Recordkeeping Requirements

5.2.1. To demonstrate compliance with sections 5.2.1. all maintenance shall be recorded. Said records shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

6.0. Source-Specific Hazardous Air Pollutant Requirements (TEG Dehydration Unit, RSV-1)

6.1. Limitations and Standards

6.1.1. Maximum Throughput Limits. The maximum wet natural gas throughput to the glycol dehydration unit/still column shall not exceed the following limit for each dehydration unit.

Emission Unit ID	Maximum Wet Natural Gas Throughput
RSV-1	32 MMscf/day

Compliance with the Maximum Throughput Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the monthly throughput at any given time during the previous twelve consecutive calendar months.

6.1.2. Maximum Design Heat Input. The maximum design heat input for the Dehydration Unit Reboiler shall not exceed the following limit for each reboiler:

Emission Unit ID	Maximum Design Heat Input
RBV-1	0.75 MMBtu/hr

6.1.3. Emission Limits. The maximum emissions from the Dehydration Unit Reboiler RBV-1 shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	0.08	0.33
Carbon Monoxide	0.06	0.28

6.1.4. Emission Limits. The maximum emissions from the TEG regenerator still vent being controlled by enclosed combustor VCU-3 shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	0.29	1.26
Carbon Monoxide	0.24	1.06
Volatile Organic Compounds	1.41	6.19
Benzene	0.13	0.55
n-Hexane	0.02	0.10
Toluene	0.18	0.77
Xylenes	0.08	0.37

6.1.5. For purposes of determining potential HAP emissions at production-related facilities, the methods specified in 40 CFR 63, Subpart HH (i.e. excluding compressor engines from HAP PTE) shall be used.

6.1.6. Any source that determines it is not a major source but has actual emissions of 5 tons per year or more of a single HAP, or 12.5 tons per year or more of a combination of HAP (i.e., 50 percent of the major source thresholds), shall update its major source determination within 1 year of the prior determination or October 15, 2012, whichever is later, and each year thereafter, using gas composition data measured during the preceding 12 months.
[40CFR§63.760(c)]

6.1.7. The permittee is exempt from the requirements of 40CFR§63.760(b)(2) if the criteria below is met, except that the records of the determination of these criteria must be maintained as required in 40CFR§63.774(d)(1).

a. The actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 megagram per year (1 ton/yr), as determined by the procedures specified in §63.772(b)(2) of this subpart.
[40CFR§63.764(e)]

6.1.8. Enclosed Combustor VCU-3 shall achieve a minimum control efficiency of 95%.

6.1.9. **Reboiler Opacity Limit.** Reboilers RBV-1 shall not emit particulate matter into the open air greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1.]

6.2. Monitoring Requirements

6.2.1. The permittee shall monitor the throughput of wet natural gas fed to the dehydration system on a monthly basis for the glycol dehydration unit RSV-1.

6.2.2. In order to demonstrate compliance with the area source status, claimed within sections 6.1.5. and 6.1.6., as well as the benzene exemption provided under section 6.1.8., the following parameters shall be measured at least once quarterly, with the exception of the natural gas flowrate annual daily average, natural gas flowrate maximum design capacity, and wet gas composition, in order to define annual average values or, if monitoring is not practical, some parameters may be assigned default values as listed below.

a. Natural Gas Flowrate
   i. Number of hours operated per quarter
   ii. Quarterly throughput (MMscf/quarter)
   iii. Annual daily average (MMscf/day), and
   iv. Maximum design capacity (MMscf/day)
b. Absorber temperature and pressure
c. Lean glycol circulation rate
d. Glycol pump type and maximum design capacity (gpm)
e. Flash tank temperature and pressure, if applicable
f. Stripping Gas flow rate, if applicable
g. Wet gas composition (upstream of the absorber – dehydration column) sampled in accordance with GPA method 2166 and analyzed consistent with GPA extended method 2286 as well as the procedures presented in the GRI-GLYCalc™ Technical Reference User Manual and Handbook V4
h. Wet gas water content (lbs H_2O/MMscf)
i. Dry gas water content (lbs H_2O/MMscf) at a point directly after exiting the dehydration column and before any additional separation points

The following operating parameter(s) may be assigned default values when using GRI-GLYCalc:

a. Dry gas water content can be assumed to be equivalent to pipeline quality at 7 lb H_2O / MMscf
b. Wet gas water content can be assumed to be saturated
c. Lean glycol water content if not directly measured may use the default value of 1.5 % water as established by GRI
d. Lean glycol circulation rate may be estimated using the TEG recirculation ratio of 3 gal TEG / lb H_2O removed.

Note: If you are measuring and using actual wet or dry gas water content, then you should also measure the glycol recirculation rate rather than using the default TEG recirculation ratio.
[45CSR§13-5.11, §63.772(b)(2)(i)]

6.3. Testing Requirements

6.3.1. The permittee shall determine the composition of the wet natural gas by sampling in accordance with GPA Method 2166 and analyzing according to extended GPA Method 2286 analysis as specified in the GRI-GLYCalc™ V4 Technical Reference User Manual and Handbook. As specified in the handbook, the permittee shall sample the wet gas stream at a location prior to the glycol dehydration contactor column, but after any type of separation device, in accordance with GPA method 2166. The permittee may utilize other equivalent methods provided they are approved in advance by DAQ as part of a testing protocol. If alternative methods are proposed, a test protocol shall be submitted for approval no later than 60 days before the scheduled test date. The initial compliance test must be conducted within 180 days of permit issuance or within 180 days of startup of the glycol dehydration unit, whichever is later.

Note: The DAQ defines a representative wet gas sample to be one that is characteristic of the average gas composition dehydrated throughout a calendar year. If an isolated sample is not indicative of the annual average composition, the permittee may opt to produce a weighted average based on throughput between multiple sampling events, which can be used to define a more representative average annual gas composition profile.
[45CSR§13-5.11]

6.3.2. The following testing and compliance provisions of Part 63 Subpart HH National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities are applicable to the facility:

§ 63.772 Test methods, compliance procedures, and compliance demonstrations.

(b) Determination of glycol dehydration unit flowrate, benzene emissions, or BTEX emissions. The procedures of this paragraph shall be used by an owner or operator to determine glycol dehydration unit natural gas flowrate, benzene emissions, or BTEX emissions.

(2) The determination of actual average benzene emissions or BTEX emissions from a glycol dehydration unit shall be made using the procedures of paragraph (b)(2)(i) of this requirement. Emissions shall be determined either uncontrolled, or with federally enforceable controls in place.

(i) The owner or operator shall determine actual average benzene emissions using the model GRI-GLYCalc™, Version 3.0 or higher, and the procedures presented in the associated GRI-GLYCalc™ Technical Reference Manual. Inputs to the model shall be representative of actual operating conditions of the glycol dehydration unit and may be determined using the procedures documented in Gas Research Institute

(GRI) report entitled "Atmospheric Rich/Lean Method for Determining Glycol Dehydrator Emissions " (GRI-95/0368.1).
[§63.772(b)(2)(i)]

6.4. Recordkeeping Requirements

6.4.1. The permittee shall maintain a record of the wet natural gas throughput through the glycol dehydration unit RSV-1 to demonstrate compliance with section 6.1.1. of this permit.

6.4.2. For the purpose of demonstrating compliance with section 6.1.4. through 6.1.7., the permittee shall maintain a record of all potential to emit (PTE) HAP calculations for the entire affected facility. These records shall include the natural gas compressor engines and ancillary equipment.

6.4.3. For the purpose of documenting compliance with the emission limitations, HAP major source thresholds, as well as the benzene exemption, the permittee shall maintain records of all monitoring data, wet gas sampling, and annual GRI-GLYCalc™ emission estimates.

6.4.4. All records in section 6.4. shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official. Said records shall be maintained for a period of five (5) years on site or in a readily accessible off-site location maintained by the permittee.

7.0. Source-Specific Requirements (Tanks and Truck Loading; T05, TL-1, and VCU-3)

7.1. Limitations and Standards

7.1.1. Produced Liquid Tank Emission Limits. Maximum emissions from the enclosed combustor VCU-3 associated with the 210-bbl produced liquids tank T05 shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
NO_x	0.00	0.01
Carbon Monoxide	0.01	0.03
Volatile Organic Compounds	0.03	0.13

7.1.2. Maximum Produced Water Truck Loading Throughput Limitation. The maximum throughput limitation for tank T05 shall not exceed 140,000 gallons per year. Compliance with this annual throughput limitation shall be determined using the truck loading TL-01 using a twelve month rolling total. A twelve month rolling total shall mean the sum of the tank throughput at any given time during the previous twelve consecutive calendar months.

7.1.3. Tank Size Limitation. Tank T05 shall not exceed 210-bbl design volume.

7.1.4. The potential for VOC emissions shall be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline.

7.1.5. Combustor VCU-3 shall achieve a minimum control efficiency of 95%.

7.2. Monitoring Requirements

7.2.1. For the purpose of demonstrating compliance with section 7.1.2. the permittee shall monitor the volume of produced liquids loaded into tank trucks on at least a monthly basis.

7.3. Recordkeeping Requirements

7.3.1. To demonstrate compliance with section 7.1.2. the permittee shall record the volume and date of each truck of produced liquid.

8.0. Source-Specific Requirements (40CFR60 Subpart JJJJ Requirements; Engines)

8.1. Limitations and Standards

8.1.1. Each engine (CE-1, CE-2, and CE-4) is required to meet the following emission standards: NOx 1.0 g/bhp-hr, CO 2.0 g/bhp-hr, and VOC 0.7 g/bhp-hr.
[40CFR§60.4233(e)]

8.1.2. This facility must operate and maintain each engine (CE-1, CE-2, and CE-4) over the entire life of the engine.
[40CFR§60.4234]

8.2. Compliance Requirements

8.2.1. The permittee shall keep a maintenance plan and records of conducted maintenance and must, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the permittee must conduct an initial performance test and conduct subsequent performance testing every 8,760 hours of operation or 3 years, whichever comes first, thereafter to demonstrate compliance.
[40CFR§60.4243(b)(2)(ii)]

8.2.2. It is expected that the air-to-fuel ratio (AFR) controllers will be used with the operation of three-way catalysts/non-selective catalytic reduction. The AFR controller must be maintained and operated in a manner to ensure proper operation of the engine and control device to minimize emissions at all times.
[40CFR§60.4243(g)]

8.3. Testing Requirements

To demonstrate compliance with section 8.1.1., the permittee shall conduct the following testing.

8.3.1. The permittee shall conduct performance tests following the procedures in paragraphs (a) through (g) of this section.

a. Each performance test shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and according to the requirements in §60.8 and under the specific conditions that are specified by Table 2 to this subpart. [40CFR§60.4244(a)]

b. The permittee may not conduct performance tests during periods of startup, shutdown, or malfunction, as specified in §60.8(c). If the stationary SI internal combustion engine is non-operational, it is not necessary to start up the engine solely to conduct a performance test; however, the performance test must be conducted immediately upon startup of the engine. [40CFR§60.4244(b)]

c. The permittee shall conduct three separate test runs for each performance test required in this section, as specified in §60.8(f). Each test run shall be conducted within 10 percent of 100 percent peak (or the highest achievable) load and last at least 1 hour. [40CFR§60.4244(c)]

d. To determine compliance with the NO_X mass per unit output emission limitation, convert the concentration of NO_X in the engine exhaust using Equation 1 of this section:

$$ER = \frac{C_d \times 1.912 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 1)}$$

Where:
ER = Emission rate of NO_X in g/HP-hr.

C_d= Measured NO_X concentration in parts per million by volume (ppmv).

1.912×10^{-3} = Conversion constant for ppm NO_X to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meter per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, horsepower-hour (HP-hr).

[40CFR§60.4244(d)]

e. To determine compliance with the CO mass per unit output emission limitation, convert the concentration of CO in the engine exhaust using Equation 2 of this section:

$$ER = \frac{C_d \times 1.164 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 2)}$$

Where:
ER = Emission rate of CO in g/HP-hr.

C_d= Measured CO concentration in ppmv.

1.164×10−3 = Conversion constant for ppm CO to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

[40CFR§60.4244(e)]

f. For purposes of this subpart, when calculating emissions of VOC, emissions of formaldehyde should not be included. To determine compliance with the VOC mass per unit output emission limitation, convert the concentration of VOC in the engine exhaust using Equation 3 of this section:

$$ER = \frac{C_d \times 1.833 \times 10^{-3} \times Q \times T}{HP - hr} \qquad \text{(Eq. 3)}$$

Where:
ER = Emission rate of VOC in g/HP-hr.

C_d= VOC concentration measured as propane in ppmv.

1.833×10^{-3} = Conversion constant for ppm VOC measured as propane, to grams per standard cubic meter at 20 degrees Celsius.

Q = Stack gas volumetric flow rate, in standard cubic meters per hour, dry basis.

T = Time of test run, in hours.

HP-hr = Brake work of the engine, in HP-hr.

[40CFR§60.4244(f)]

g. If the owner/operator chooses to measure VOC emissions using Method 18 of 40 CFR part 60, appendix A, or Method 320 of 40 CFR part 63, appendix A, then it has the option of correcting the measured VOC emissions to account for the potential differences in measured values between these methods and Method 25A. The results from Method 18 and Method 320 can be corrected for response factor differences using Equations 4 and 5 of this section. The corrected VOC concentration can then be placed on a propane basis using Equation 6 of this section.

$$RF_i = \frac{C_{Mi}}{C_{Ai}} \qquad \text{(Eq. 4)}$$

Where:
RF_i= Response factor of compound i when measured with EPA Method 25A.

C_{Mi}= Measured concentration of compound i in ppmv as carbon.

C_{Ai}= True concentration of compound i in ppmv as carbon.

$$C_{icorr} = RF_i \times C_{imeas} \qquad \text{(Eq. 5)}$$

Where:
C_{icorr}= Concentration of compound i corrected to the value that would have been measured by EPA Method 25A, ppmv as carbon.

C_{imeas}= Concentration of compound i measured by EPA Method 320, ppmv as carbon.

$$C_{Peq} = 0.6098 \times C_{icorr} \qquad \text{(Eq. 6)}$$

Where:
C_{Peq}= Concentration of compound i in mg of propane equivalent per DSCM.

[40CFR§60.4244(g)]

8.4. Recordkeeping

The permittee shall keep the following records pursuant to section 3.4.1.
[40CFR§60.4245(a)]

8.4.1. All notifications to comply with 40CFR60 Subpart JJJJ and all documentation supporting any notification.

8.4.2. Maintenance conducted on each engine (CE-1, CE-2, and CE-4).

8.4.3. Documentation that each engine (CE-1, CE-2, and CE-3) meets the emission standards set forth in 8.1.1.

8.5. Reporting

8.5.1 The permittee shall submit an initial notification to the Director of the Division of Air Quality as required by §60.7(a)(1) and include the following.
[40CFR§60.4245(c)]

8.5.1.1. Name and address of the owner or operator,

8.5.1.2. The address of the affected source,

8.5.1.3. Make, model, engine family, serial number, model year, maximum engine power, and engine displacement.

8.5.1.4. Emission control equipment.

8.5.1.5. Fuel used.

8.5.2. The permittee shall submit a copy of each performance test as conducted in accordance with §60.4244 to the Director of the Division of Air Quality within 60 days after the test has been completed.

9.0. Source-Specific Requirements (40CFR60 Subpart OOOO, Compressors Associated with CE-1, CE-2, and CE-4)

9.1. Limitations and Standards

9.1.1. The compressors associated with engines CE-1, CE-2, and CE-4 must replace the compressor rod packing before the compressor has operated 26,000 hours from installation or repacking; or 36 months from the date of installation or repacking whichever one comes first.

9.2. Recordkeeping Requirements

9.2.1. From the date the compressors are installed the hours of operation and months of service shall be recorded continuously.

9.2.2. Records of the date and time of each reciprocating compressor rod packing replacement.

9.3. Reporting

9.3.1. **Annual Report**. The initial annual report is due 30 days after the initial compliance period and the subsequent reports are due on the same date as the initial report. The information needed in the annual report is the following: The hours of operation from installation or from the previous repacking and records of deviations.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached _____, representing the period beginning _____ and ending _____, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] (please use blue ink) _____ Responsible Official or Authorized Representative _____ Date

Name & Title (please print or type) _____ Name _____ Title

Telephone No. _____ Fax No. _____

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[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

   (i) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

   (ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of U.S. EPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.