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west virginia department of environmental protection

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Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone: (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

December 7, 2016

CERTIFIED MAIL

91 7199 9991 7037 0977 6541

Melissa Hatfield-Atkinson  
P.O. Box 6070  
Charleston, WV 6070

Re: Approved: Permit Update R13-0436G  
Chesapeake Appalachia, L.L.C.  
Kanawha Separation Plant, Kanwha County, WV  
Permit No.: R13-0436G; Plant ID No. 039-00094

Dear Ms. Hatfield-Atkinson:

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, Temporary Permit, General Permit, and Procedures for Evaluation" has been approved. The enclosed permit R13-0436F is hereby issued pursuant to Subsection 5.7 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.

**Promoting a healthy environment.**

Should you have any questions or comments, please contact me at (304) 926-0499, extension 1257.

Sincerely,



John Legg  
Permit Writer

Enclosures

[melissa.hatfield-atkinson@chk.com](mailto:melissa.hatfield-atkinson@chk.com)

*West Virginia Department of Environmental Protection*

*Earl Ray Tomblin  
Governor*

*Division of Air Quality*

*Randy C. Huffman  
Cabinet Secretary*

# Permit to Update



**R13-0436G**

*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 facility listed below is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.*

Issued to:

**Chesapeake Appalachia, L.L.C.  
Kanawha Separation Plant, Rensford, WV  
039-00094**

A blue ink signature of William F. Durham, written in a cursive style, positioned above a horizontal line.

*William F. Durham  
Director*

*Issued: December 7, 2016*

This permit will supercede and replace Permit R13-0436F issued.

Facility Location: Rensford, Kanawha County, West Virginia

Mailing Address: P.O. Box 6070, Charleston, WV 25302

Facility Description: CO<sub>2</sub> Recovery and Natural Gas Sweetening Plant

SIC Codes: 1311

UTM Coordinates: 459.19 km Easting • 4,239.02 km Northing • Zone 17

Latitude /Longitude

Coordinates: 38.292801 (Latitude) • -81.46444 (Longitude)

Permit Type: Class II Administrative Update

Description of Change:

Extend the sulfur removal system's adsorbent change-out time (condition from 4.1.7.) from 12 months to 18 months.

*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.*

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*The source is not subject to 45CSR30.*

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**1.0 Emission Units**

<b>Emission Unit ID</b>	<b>Emission Point ID</b>	<b>Emission Unit Description</b>	<b>Year Installed</b>	<b>Design Capacity</b>	<b>Control Device</b>
-----	FL1	Flare	1996	11,300 acfm (678,000 acfh)  128 MM Btu/hr (net)	Self (FLLP1)

## 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 (45 CSR § 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

<b>CAAA</b>	Clean Air Act Amendments	<b>NO<sub>x</sub></b>	Nitrogen Oxides
<b>CBI</b>	Confidential Business Information	<b>NSPS</b>	New Source Performance Standards
<b>CEM</b>	Continuous Emission Monitor	<b>PM</b>	Particulate Matter
<b>CES</b>	Certified Emission Statement	<b>PM<sub>2.5</sub></b>	Particulate Matter less than 2.5µm in diameter
<b>C.F.R. or CFR</b>	Code of Federal Regulations	<b>PM<sub>10</sub></b>	Particulate Matter less than 10µm in diameter
<b>CO</b>	Carbon Monoxide	<b>Ppb</b>	Pounds per Batch
<b>C.S.R. or CSR</b>	Codes of State Rules	<b>pph</b>	Pounds per Hour
<b>DAQ</b>	Division of Air Quality	<b>ppm</b>	Parts per Million
<b>DEP</b>	Department of Environmental Protection	<b>Ppmv or ppmv</b>	Parts per million by volume
<b>dscm</b>	Dry Standard Cubic Meter	<b>PSD</b>	Prevention of Significant Deterioration
<b>FOIA</b>	Freedom of Information Act	<b>psi</b>	Pounds per Square Inch
<b>HAP</b>	Hazardous Air Pollutant	<b>SIC</b>	Standard Industrial Classification
<b>HON</b>	Hazardous Organic NESHAP	<b>SIP</b>	State Implementation Plan
<b>HP</b>	Horsepower	<b>SO<sub>2</sub></b>	Sulfur Dioxide
<b>lbs/hr</b>	Pounds per Hour	<b>TAP</b>	Toxic Air Pollutant
<b>LDAR</b>	Leak Detection and Repair	<b>TPY</b>	Tons per Year
<b>M</b>	Thousand	<b>TRS</b>	Total Reduced Sulfur
<b>MACT</b>	Maximum Achievable Control Technology	<b>TSP</b>	Total Suspended Particulate
<b>MDHI</b>	Maximum Design Heat Input	<b>USEPA</b>	United States Environmental Protection Agency
<b>MM</b>	Million	<b>UTM</b>	Universal Transverse Mercator
<b>MMBtu/hr or mmbtu/hr</b>	Million British Thermal Units per Hour	<b>VEE</b>	Visual Emissions Evaluation
<b>MMCF/hr or mmcf/hr</b>	Million Cubic Feet per Hour	<b>VOC</b>	Volatile Organic Compounds
<b>NA</b>	Not Applicable	<b>VOL</b>	Volatile Organic Liquids
<b>NAAQS</b>	National Ambient Air Quality Standards		
<b>NESHAPS</b>	National Emissions Standards for Hazardous Air Pollutants		

### **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 supercedes and replaces previously issued Permit R13-0436F. 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 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 R13-0436 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 13-10.3]
- 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/or the Clean Air Act and is grounds for enforcement action by the Secretary and/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 to this permit 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 not 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 emission, 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 45 C.S.R. 11.  
[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.
- d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1.; a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:
  1. The permit or rule evaluated, with the citation number and language;
  2. The result of the test for each permit or rule condition; and,
  3. A statement of compliance or noncompliance with each permit or rule condition.

**[WV Code § 22-5-4(a)(14-15) and 45CSR13]**

### 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. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. 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, SE  
Charleston, WV 25304-2345

**If to the USEPA:**

Associate Director  
Office of Air 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**

**4.1. Limitations and Standards**

- 4.1.1. The inlet natural gas flow to the plant shall not exceed 650,000 scf/hr.
- 4.1.2. The permittee shall limit the feed rate of all streams to the flare designated as FLLP1 to a maximum of 593,333 scf/hr.
- 4.1.3. The flare designated as FLLP1 shall be operated at any given time in one (1) of the following three (3) modes: Typical Operation, Partial Bypass Flow, and Full Bypass Flow, and shall not exceed the hourly and annual emission rates given in the table:

Pollutant	Maximum Emission Rate from Flare	
	Hourly <sup>(1)</sup> (lb/hr)	Annual <sup>(2)</sup> (ton/yr)
Carbon Monoxide (CO)	62.05	93.92
Nitrogen Oxides (NOx)	11.4	17.27
Particulate Matter (PM)	1.25	1.89
Sulfur Dioxide (SO <sub>2</sub> )	16.01 <sup>(3)</sup>	70.12 <sup>(4)</sup>
Volatile Organic Compounds (VOC)	5.37	12.99

(1) Based on operating in “**Full Bypass Flow**” mode. The plant also operates in the “Typical Operation” and “Partial Bypass Flow” modes which produce less emissions.

“**Full Bypass Flow**” mode occurs when the plant has been shutdown and is being restarted or Praxair’s facility goes down. The flow bypasses the sulfur removal system and goes directly to the flare. Unless the carbon bed regeneration system is specifically shut down, there is also a flow to the flare from the carbon bed regeneration system ( $\leq 45,000$  scf/hr). However, the majority of the flow is bypass flow ( $\leq 370,000$  scf/hr) and 30,000 scf/hr tailgas (Selexol) flow. Natural gas flow is  $\leq 148,333$  scf/hr, about one third (1/3) of the sum of the tailgas, bypass, and carbon bed regeneration flows. Total “Full Bypass Flow” Mode is  $\leq 593,333$  scf/hr.

Note that the individual waste gas stream flows and natural gas flow discussed above are given for informational purposes only and are not to be construed as permit limits.

(2) Based on operating in "Typical Operation" Mode for 6,084 hours per year, "Partial Bypass Flow" Mode for 1,876 hours per year, and “Full Bypass Flow” Mode for 800 hours per year.

Pollutant	Maximum Emission Rate from Flare	
	Hourly <sup>(1)</sup> (lb/hr)	Annual <sup>(2)</sup> (ton/yr)
<p>In “<b>Typical Operation</b>” or “Normal Operation” Mode, streams to the flare include tailgas (Selexol) flow (<math>\leq 30,000</math> scf/hr), carbon bed regeneration flow (<math>\leq 45,000</math> scf/hr), and natural gas flow (<math>\leq 25,000</math> scf/hr). There is no bypass flow in “Typical Operation” mode. Total “Typical Operation Mode” flow is <math>\leq 100,000</math> scf/hr (<math>30,000 + 45,000 + 25,000</math>) scf/hr).</p> <p>In “<b>Partial Bypass Flow</b>” Mode, the CO<sub>2</sub> product line to Paxair’s facility at Marmet is pressurized, but some of the gas flow “backs up” and is routed to the flare, bypassing the sulfur removal system. Streams to the flare include tailgas (Selexol) flow (30,000 scf/hr), bypass flow (<math>\leq 170,000</math> scf/hr), carbon bed regeneration flow (<math>\leq 45,000</math> scf/hr), and natural gas flow (<math>\leq 81,667</math> scf/hr). Total “Partial Bypass Mode” flow is <math>\leq 326,667</math> scf/hr (<math>30,000 + 170,000 + 45,000 + 81,667</math>) scf/hr).</p> <p>Tailgas, Partial Bypass, and Full Bypass flows are read as a single flow reading. When flow is 30,000 scf/hr or below, the flow is assumed to be “tailgas only” flow. The maximum “tailgas only” flow is assumed to be 30,000 scf/hr. If the tailgas and bypass flow goes above 30,000 scf/hr, the flow greater than 30,000 scf/hr is assumed to be bypass flow. The maximum bypass flow is 370,000 scf/hr.</p> <p>Note that the individual waste gas stream flows and natural gas flows discussed above are given for informational purposes only and are not to be construed as permit limits.</p> <p>(3) The hourly SO<sub>2</sub> emission limit was determined by using the sulfur content for the inlet natural gas stream found from test data (8.62 gr S/100 scf) and the maximum flow rate for the inlet natural gas stream (650,000 scf/hr), assuming 0% sulfur removal efficiency for the plant. Note that a conversion factor of 2 must be used to convert from pounds S to pounds SO<sub>2</sub>, i.e., 32lb S produce 64 lb SO<sub>2</sub>.</p> <p>(4) The annual SO<sub>2</sub> emission limit is equal to the hourly SO<sub>2</sub> emission limit multiplied by 8,760 hr/yr.</p>		

Compliance with 45CSR§6-4.1 (Section 4.1.8.) and 45CSR§10.3.2. (Section 4.1.9.) will be shown by the more stringent requirements of Section 4.1.3.

4.1.4. Compliance with the emission limits as set forth in 4.1.3. shall be demonstrated by the following:

Pollutant	Compliance Method
CO	CO emissions shall be determined by using 0.37 lb/mm Btu (the AP-42 emission factor provided in Section 13.5-Industrial Flares) and the Total Heat Input (mm Btu/hr) to the flare which is equal to the sum of each individual stream's flow (scf/hr) multiplied by its highest heating value (Btu/scf).
NO <sub>x</sub>	NO <sub>x</sub> emissions shall be determined by using 0.068 lb/mm Btu (the AP-42 emission factor provided in Section 13.5-Industrial Flares) and the Total Heat Input (mm Btu/hr) to the flare which is equal to the sum of each individual stream's flow (scf/hr) multiplied by its highest heating value (Btu/scf).
PM	PM emissions shall be determined by using the emission factor of 7.6 lb/mm scf (the AP-42 emission factor provided in Section 1.4 - Natural Gas Combustion, Table 1.4-2., "Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion"), 1020 Btu/scf (the high Btu value per scf of natural gas), and the Total Heat Input (mm Btu/hr) to the flare which is equal to the sum of each individual stream's flow (scf/hr) multiplied by the stream's highest heating value (Btu/scf).
SO <sub>2</sub>	SO <sub>2</sub> emissions shall be determined by using the sulfur content for the inlet natural gas stream of 8.62 gr S/100 scf (found from test data), and the flow rate for the inlet natural gas stream ( $\leq 650,000$ scf/hr), assuming 0% sulfur removal efficiency for the plant. Note that a conversion factor of 2 must be used to convert from pounds S to pounds SO <sub>2</sub> , i.e., 32lb S produce 64 lb SO <sub>2</sub> .
VOC	<p>VOC emissions shall be determined by summing waste gas VOC emissions and Natural Gas VOC emissions.</p> <p>Waste gas VOC emissions shall be determined by assuming a 5% non-destruction rate for all VOCs in the waste gas streams to the flare (excluding the natural gas stream). The VOCs in the waste gas streams are calculated using the sum of each of individual waste gas stream flows (lb/hr) multiplied by its VOC content in parts per million by volume (ppmv).</p> <p>Natural gas VOC emissions shall be determined by using the emission factor of 0.014 lb/mm Btu [10% of the total hydrocarbon (THC) emission factor of 0.14 lb/mm Btu assuming 10% of the natural gas to be VOC/non-methane/non-ethane and 90% of the natural gas to be methane/ethane] multiplied by 1020 Btu/scf (HHV for natural gas) multiplied by the natural gas flow (scf/hr) to the flare. The estimated VOC emissions from the combustion of natural gas are based on Section 13.5-Industrial Flares of AP-42.</p>

Pollutant	Compliance Method
Annual Rates	Compliance with the annual emission rates shall be determined by utilizing the above hourly emission rates and the hours the plant operated in the following modes: Typical Operation, Partial Bypass and Full By-Pass.

- 4.1.5. The flare designated as FLLP1 shall be operated in accordance with 40 CFR 60.18 “General Control Device Requirements” paragraphs ( c ) through ( f ) (See Appendix A).

Note: Although the flare is not subject to the New Source Performance Standards, the permittee voluntarily agreed in the original application to abide by 40 CFR 60.18 paragraphs ( c ) through ( f ).

- 4.1.6. The input streams to the flare designated as FLLP1 shall have a combined minimum net heating value of 200 BTU/scf.
- 4.1.7. The adsorbent material (Hydrocat, Sulfatreat, or equivalent brand-named product) used in the adsorbent vessel (not the carbon beds) of the sulfur removal system shall be removed and replaced no later than once every eighteen (18) months of logged operation.
- 4.1.8. No person shall cause, suffer, allow or permit particulate matter to be discharged from any incinerator into the open air in excess of the quantity determined by use of the following formula:

$$Emissions (lb/hr) = F \times Incinerator Capacity (tons/hr)$$

Where, the Factor, F, is as indicated in Table I below:

Table I: Factor, F, for Determining Maximum Allowable Particulate Emissions.

	Incinerator Capacity	F Factor
A.	Less than 15,000 lb/hr	5.43
B.	15,000 lbs/hr or greater	2.72

[45CSR§6-4.1.]

- 4.1.9. Maximum Allowable Emission Rates for Similar Units in Region IV (Kanawha Valley Air Quality Control Region: Kanawha County, Putnam County, and Falls and Kanawha Magisterial Districts of Fayette County)--No person shall cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from all stacks located at one plant, measured in terms of pounds per hour, in excess of the amount determined as follows:
- 3.2.c. For Type 'b' and Type 'c' fuel burning units, the product of 1.6 and the total design heat inputs for such units discharging through those stacks in million BTU's per

hour, provided however, that no more than 5,500 pounds per hour of sulfur dioxide shall be discharged into the open air from all such stacks.

[45CSR§10-3.2.]

4.1.10. Allowable Emission Rates for Individual Stacks.

3.4.a. Unless otherwise approved by the Director, the maximum allowable emission rate for an individual stack shall not exceed by more than twenty-five percent (25%) the emission rate determined by prorating the total allowable emission rate specified in subsections 3.1, 3.2, or 3.3, on the basis of individual unit heat input at design capacity for all fuel burning units discharging through that stack.

[45CSR§10-3.4.]

4.1.11. No person shall cause, suffer, allow or permit the emission into the open air from any source operation an in-stack sulfur dioxide concentration exceeding 2,000 parts per million by volume from existing source operations, except as provided in subdivisions 4.1.a through 4.1.e.

[45CSR§10-4.1.]

4.1.12. No person shall cause, suffer, allow or permit the combustion of any refinery process gas stream or any other process gas stream that contains hydrogen sulfide in a concentration greater than 50 grains per 100 cubic feet of gas except in the case of a person operating in compliance with an emission control and mitigation plan approved by the Director and U. S. EPA. In certain cases very small units may be considered exempt from this requirement if, in the opinion of the Director, compliance would be economically unreasonable and if the contribution of the unit to the surrounding air quality could be considered negligible.

[45CSR§10-5.1.]

4.1.13. At the request of the Director the owner and/or operator of a source shall install such stack gas monitoring devices as the Director deems necessary to determine compliance with the provisions of this rule. The data from such devices shall be readily available at the source location or such other reasonable location that the Director may specify. At the request of the Director, or his or her duly authorized representative, such data shall be made available for inspection or copying. Failure to promptly provide such data shall constitute a violation of this rule.

[45CSR§10-8.2.a].

4.1.14. Due to unavoidable malfunction of equipment or inadvertent fuel shortages, emissions exceeding those provided for in this rule may be permitted by the Director for periods not to exceed ten (10) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the equipment malfunction or fuel shortage. In cases of major equipment failure or extended shortages of conforming fuels, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.

[45CSR§10-9.1.]

- 4.1.15. **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.]

#### 4.2. Monitoring Requirements

- 4.2.1. The permittee shall accurately measure and record on an hourly basis the following flows to the flare:
- combined tailgas (Selexol) and bypass flow rates (scfh). (If the flow rate is 30,000 scfh or less then the flow is tailgas only.);
  - the carbon regeneration bed flow (scfh); and
  - the natural gas fuel usage (scfh).

#### 4.3. Testing Requirements

- 4.3.1. Before inlet gas from a new field can be introduced to the plant, the inlet gas stream from the new field shall be sampled and analyzed for Total Sulfur using gas chromatography. Records shall be maintained on site and shall provide the following information about the inlet natural gas stream from the new field: the name/identity of the stream, the date and time the stream was sampled, the reason for the stream change, the flow rate of the stream, and the Total Sulfur analysis of the stream. If the result of the Total Sulfur analysis of the inlet stream from the new field is less than or equal 8.62 gr S/100 scf then the stream can be introduced to the plant without exceeding the maximum SO<sub>2</sub> emission rate from the flare as specified in 4.1.3. of this permit.
- 4.3.2. Following the introduction of natural gas from a new field, each waste stream to the flare shall be sampled and analyzed for VOC content (ppmv) and heating value (Btu/scf). Records shall be maintained on site and shall provide the following information about the waste stream: the name of the waste stream, the date and time the waste stream was sampled, the reason for sampling, the flow rate of the waste stream, and the VOC content and heating value. The waste streams' newly measured VOC contents and heating values shall be used as constants to calculate emission limits as was done in the permit application and compared against the emission limits (PM, CO, NO<sub>x</sub>, and VOC) set forth in section 4.1.3. If the emission limits of section 4.1.3 are not exceeded, the plant shall be deemed in compliance with section 4.1.3. The Secretary reserves the right to conduct or require additional testing pursuant to section 3.3 of this permit.

#### **4.4. Recordkeeping Requirements**

4.4.1. **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.

4.4.2. **Record of Maintenance of Air Pollution Control Equipment.** For all pollution control equipment listed in Section 1.0, the permittee shall maintain accurate records of all required pollution control equipment inspection and/or preventative maintenance procedures.

4.4.3. **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.

4.4.4. Hourly flows (see 4.2.1.) shall to be measured and recorded on an hourly basis, a minimum of 95% of the time the facility is in operation. When hourly flows have not been recorded, a detailed written explanation shall be provided. Said records shall be maintained on site for a period of five (5) years. Certified copies of the records shall be made available to the Secretary of the Division of Air Quality or

his/her duly authorized representative upon request.

- 4.4.5. The permittee shall calculate and maintain accurate records of the daily emissions from the facility using the average daily operational flow rate for each mode of operation used. These records shall be maintain a minimum of 95% of the time the facility is in operation. A twelve-month rolling total shall be kept to demonstrate compliance with the annual (ton/yr) emission limitations. These records shall be maintained for a period of five (5) years. Certified copies of these records shall be made available to the Secretary of the Division of Air Quality or his/her duly authorized representative upon request.
  
- 4.4.6. The permittee shall maintain accurate records of the hours of use for the adsorbent material (Hydrocat, Sulfatreat, or equivalent brand-named product) used in the absorbent vessel (not the carbon beds). These records shall be used to help determine when the adsorbent is to be replaced. Said records shall be maintained on site for a period of five (5) years. Certified copies of these records shall be made available to the Secretary of the Division of Air Quality or his/her duly authorized representative upon request.

## APPENDIX A

[Code of Federal Regulations]

(1) [Title 40, Volume 6, Part 60]

[Revised as of July 1, 1999]

From the U.S. Government Printing Office via GPO Access

[CITE: 40CFR60.18]

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### TITLE 40--PROTECTION OF ENVIRONMENT

#### CHAPTER I--ENVIRONMENTAL PROTECTION AGENCY

#### PART 60--STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES--Table of Contents

##### Subpart A--General Provisions

##### Sec. 60.18 General control device requirements.

(a) Introduction. This section contains requirements for control devices used to comply with applicable subparts of parts 60 and 61. The requirements are placed here for administrative convenience and only apply to facilities covered by subparts referring to this section.

(b) Flares. Paragraphs (c) through (f) apply to flares.

(c) (1) Flares shall be designed for and operated with no visible emissions as determined by the methods specified in paragraph (f), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in paragraph (f).

(3) An owner/operator has the choice of adhering to either the heat content specifications in paragraph (c) (3) (ii) of this section and the maximum tip velocity specifications in paragraph (c) (4) of this section, or adhering to the requirements in paragraph (c) (3) (i) of this section.

(i) (A) Flares shall be used that have a diameter of 3 inches or greater, are nonassisted, have a hydrogen content of 8.0 percent (by volume), or greater, and are designed for and operated with an exit velocity less than 37.2 m/sec (122 ft/sec) and less than the velocity,  $V_{\max}$ , as determined by the following equation:

$$V_{\max} = (X_{H_2} - K_1) * K_2$$

Where:

$V_{\max}$  = Maximum permitted velocity, m/sec.

$K_1$  = Constant, 6.0 volume-percent hydrogen.

$K_2$  = Constant, 3.9 (m/sec)/volume-percent hydrogen.

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$X_{H_2}$  = The volume-percent of hydrogen, on a wet basis, as calculated by using the American Society for Testing and Materials (ASTM) Method D1946-77. (Incorporated by reference as specified in

Sec. 60.17).

(B) The actual exit velocity of a flare shall be determined by the method specified in paragraph (f)(4) of this section.

(ii) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm (200 Btu/scf) or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in paragraph (f)(3) of this section.

(4)(i) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4) of this section, less than 18.3 m/sec (60 ft/sec), except as provided in paragraphs (c)(4)(ii) and (iii) of this section.

(ii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec) are allowed if the net heating value of the gas being combusted is greater than 37.3 MJ/scm (1,000 Btu/scf).

(iii) Steam-assisted and nonassisted flares designed for and operated with an exit velocity, as determined by the methods specified in paragraph (f)(4), less than the velocity,  $V_{\max}$ , as determined by the method specified in paragraph (f)(5), and less than 122 m/sec (400 ft/sec) are allowed.

(5) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity,  $V_{\max}$ , as determined by the method specified in paragraph (f)(6).

(6) Flares used to comply with this section shall be steam-assisted, air-assisted, or nonassisted.

(d) Owners or operators of flares used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs. Applicable subparts will provide provisions stating how owners or operators of flares shall monitor these control devices.

(e) Flares used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

(f)(1) Reference Method 22 shall be used to determine the compliance of flares with the visible emission provisions of this subpart. The observation period is 2 hours and shall be used according to Method 22.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

[GRAPHIC] [TIFF OMITTED] TC01JN92.008

where:

$H_{T}$  = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 deg.C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 deg.C;

[GRAPHIC] [TIFF OMITTED] TC01JN92.009

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$C_i$  = Concentration of sample component  $i$  in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77

(Incorporated by reference as specified in Sec. 60.17); and  
 $H_i$  = Net heat of combustion of sample component  $i$ , kcal/g mole at 25 deg.C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in Sec. 60.17) if published values are not available or cannot be calculated.

(4) The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Methods 2, 2A, 2C, or 2D as appropriate; by the unobstructed (free) cross sectional area of the flare tip.

(5) The maximum permitted velocity,  $V_{max}$ , for flares complying with paragraph (c)(4)(iii) shall be determined by the following equation.

$$\log_{10} (V_{max}) = (H_T + 28.8) / 31.7$$

$V_{max}$  = Maximum permitted velocity, M/sec

28.8 = Constant

31.7 = Constant

$H_T$  = The net heating value as determined in paragraph (f)(3).

(6) The maximum permitted velocity,  $V_{max}$ , for air-assisted flares shall be determined by the following equation.

$$V_{max} = 8.706 + 0.7084 (H_T)$$

$V_{max}$  = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

$H_T$  = The net heating value as determined in paragraph (f)(3).

[51 FR 2701, Jan. 21, 1986, as amended at 63 FR 24444, May 4, 1998]

### 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<sup>1</sup>** \_\_\_\_\_  
(please use blue ink) Responsible Official or Authorized Representative Date

**Name and Title** \_\_\_\_\_  
(please print or type) Name Title

Telephone No. \_\_\_\_\_ Fax No. \_\_\_\_\_

<sup>1</sup> 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 Secretary;
- 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 USEPA); or
- d. The designated representative delegated with such authority and approved in advance by the Secretary.