

To: File
From: John Legg
Date: December 07, 2016

John Legg
12/17/16

Subject: R13-0436G - Class II Administrative Update
Chesapeake Appalachia, L.L.C. (Chesapeake)
Kanawha Separation Plant; Kanawha County, WV
Company ID No: 039-00094; Permit ID No.: R13-0436G

SUMMARY

On September 9, 2016, Chesapeake submitted a Class II Administrative Update (R13-0436G) for their Kanawha Separation Plant located in Kanawha County, WV to:

- 1) Amend R13-0436F, condition 4.1.7. to update the sulfur removal system's adsorbent change out requirement from 12 months to 18 months.

According to the update's cover letter: **There will be no changes to the equipment, process flow, or emissions that are currently permitted.**

On September 14, 2016, Chesapeake paid a \$300.00 application/permitting fee. That same day the writer was assigned as the reviewing engineer. On September 21, 2016, Chesapeake submitted a cover letter and an newspaper clipping of their legal advertisement which ran in the September 9, 2016 edition of the *Charleston Gazette Mail*. On September 23, 2016, Chesapeake emailed a copy of the newspaper's affidavit of publication to the writer. On December 2, 2016, a statement of completeness was email to Chesapeake deeming their application complete as of September 23, 2016.

DAQ ENGINEER'S EVALUATION

The writer is the same engineer that wrote R13-0436F, the permit that will be modified by this class II administrative update (R13-0436G).

The SO₂ emission limit in R13-0436F was calculated as follows:

- Because of variability in measuring the sulfur content within streams to the flare, Chesapeake calculated the SO₂ emission limit for the flare by using the separation plant's **maximum** inlet natural gas stream sulfur concentration (Total Sulfur analysis of the inlet stream from the new field of 8.62 gr S/100 scf; this concentration was obtained from test data in 2004 - 2005.)
- Chesapeake used the separation plant's **maximum** design inlet natural gas stream flow rate of 650,000 scfh, and

- Chesapeake assumed a 0% sulfur removal efficiency for the plant's new sulfur removal system.

Because of the above calculation decisions made by Chesapeake, the SO₂ emission limit in R13-0436F increased by 49.53 ton/yr to a value of 70.12 ton/yr over the previous permit (R13-0436E).

Current inlet flow to the separation plant is much lower than the maximum design flow rate of 650,000 scfh. Inlet sulfur concentration to the separation plant is still thought to be lower than the maximum concentration measured in 2004 -2005, i.e., the same field is still being pulled from, and the sulfur removal system for the separation plant is in place and operating at a removal efficiency greater than 0%.

For the above reasons, the writer agrees with Chesapeake's assessment that:

The extension in time: from 12 months to 18 months, for the absorbent change out will not result in a violation of the SO₂ emission limit (70.12 ton/yr) contained in Permit R13-0436F.

Also, according to Chesapeake's discussions with Praxair: Praxair has an "economic incentive" in maintaining low sulfur and total hydrocarbon levels in their product stream. The facility is classified as a "food grade" facility. If they do not maintain certain sulfur/VOC levels prior to the stream going into their plant, they have difficulty in achieving a food grade product.

CHESAPEAKE'S DISCUSSION OF PROPOSED CHANGE

The following discussion came for Chesapeake's permit application, the section entitled "Introduction" found on pages 1 and 2 of the application:

The current permit for the Kanawha Separation Plant (KSP) states, in Condition 4.1.7., that the Sulfatreat adsorbent, which is part of the sulfur removal system utilized at the facility, must be replaced every 12 months of operation.

The sulfur removal system is actually owned and operated by Praxair, Inc. but is accounted for in Chesapeake's air permit.

Since the sulfur removal system was initially permitted, there has been significant improvements made to the process which means less gas is being flared in any kind of bypass operation and less emissions generated. When Chesapeake updated the permit in 2006 for KSP after an extensive testing campaign, the resulting SO₂ emissions that were the basis of permit limits were actually based on inlet gas concentration of sulfur at the maximum potential inlet flow with no credit for any kind of sulfur emissions reduction from the sulfur removal system being taken (which was discussed with and approved by the WVDAQ).

In September 2015, Chesapeake requested on Praxair's behalf: a one time 30 day extension to the adsorbent change-out schedule. This was approved by the WVDAQ as noted in the following response by DAQ Enforcement Inspector Todd Shrewsbury:

“Per our telephone conversation this afternoon, it is the understanding of the Director of the West Virginia Division of Air Quality (Director) that a 30 day extension of the requirement to replace the hydrogen sulfide (H₂S) adsorbent in Chesapeake's KSP Sulfatreat vessel every 12 months of logged operations (condition 4.1.7. in permit R13-0436F) described below will result in no deviations of permitted atmospheric pollutant emission limits or odor emissions from the facility nor will it negatively affect the operations or safety of the facility. It also is the understanding of the Director that this requirement was based upon operation of the separation facility at the maximum permitted inlet raw gas flow rate of 650,000 standard cubic feet per hour, and that the facility currently can only operate at a fraction of the permitted inlet flow rate due to the declining supply field. It is the understanding of the Director that the H₂S concentrations in the raw inlet gas have not significantly increased since the issuance of R13-0436F, which would negatively impact the longevity of the Sulfatreat adsorbent. It is the understanding of the Director that this lesser inlet flow rate (at constant inlet H₂S concentrations) consumes the adsorbent in the Sulfatreat vessel at a slower rate than the permitted maximum inlet flow rate, providing for reserve capacity in the Sulfatreat system at the end of 12 months of logged operations. The Director is of the understanding that Chesapeake is considering and will likely act on Praxair's request to petition the Director to update permit R13-0436F to increase the adsorbent replacement rate from a maximum of 12 months of logged operations to a maximum of 18 months of logged operations.”

At this time, Chesapeake is requesting to amend condition 4.1.7., to update the adsorbent change-out requirement from 12 months to 18 months. **Praxair has analytical equipment in place that continuously monitors impurities in the process at both KSP and their Marmet plant.** If a trend developed indicating a decline in purity, the Praxair operators would recognize and report the issue to Chesapeake.

For these reasons and those noted above, Chesapeake is confident that the extension in the adsorbent change out schedule to 18 months will not cause a deviation in currently permitted SO₂ emissions, which Chesapeake intends to retain, as is, in the permit. The supporting calculations submitted with the permit application that were the basis of permit limits in the current permit are included with this submittal for reference. There will be no changes to the equipment, process flow, or emissions.

Please note that the brand of adsorbent has been changed from Sulfratreat to Hydrocat. It is the same product, just a different brand name.

CHANGES MADE TO PERMIT

See the compare file in Attachment A to this evaluation for the changes made to Permit R13-0436F in going to Permit R13-0436G.

Attachment A

Compare File:

Changes Made to R13-0436F to Become R13-0436G

WordPerfect Document Compare Summary

Original document: Q:\AIR_QUALITY\PERMITTING\Permits(New Naming)\039-00094_PERM_13-0436F.wpd

Revised document:

Q:\AIR_QUALITY\J_LEGG\Chesapeake\039-00094_PERM_13-0436G.wpd

Deletions are shown with the following attributes and color:

~~Strikeout~~, **Blue** RGB(0,0,255).

Deleted text is shown as full text.

Insertions are shown with the following attributes and color:

Double Underline, Redline, **Red** RGB(255,0,0).

The document was marked with 25 Deletions, 31 Insertions, 0 Moves.

West Virginia Department of Environmental Protection

*Earl Ray Tomblin
Governor*

Division of Air Quality

*Stephanie R. Randy C.
Fimmermeyer Huffman
Cabinet Secretary*

Permit to ~~Modify~~ Update



R13-0436FG

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**

*John A. William F. Benedict Durham
Director*

Issued: ~~Draft July 21, 2006~~ December 7, 2006 • Effective: ~~July, 21, 2006~~ 2016

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

Facility Location: Rensford, Kanawha County, West Virginia

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

Facility Description: ~~CO₂~~CO₂ 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: ModificationClass II Administrative Update

Description of Change:

~~This modification is submitted pursuant to the requirements of Consent Order CO-R13-C-2005-3. It involves no physical or operational changes to the process, only changes in the way emission limits are estimated and calculated using test data gathered during 2004 - 2005. Because of variability in measuring the sulfur content within streams to the flare, Chesapeake proposes to calculate the SO₂ emission limit for the flare by using the maximum inlet gas stream sulfur content (obtained from test data) and the maximum potential inlet gas stream flow rate, and by assuming a 0% Extend the sulfur removal efficiency for the plant. The new SO₂ emission limit will increase by 49.53 ton/yr to a value of 70.12 ton/yr. Chesapeake proposes to adjust the VOC emission limit for the flare by reducing the flare's efficiency from 98% to 95%, by using the maximum VOC content of individual streams (obtained from test data and adjusted upward 25% to account for variability) and by using the highest Btu content (obtained from test data) of individual streams. The new VOC emission limit will increase by 6.74 ton/yr to a value of 12.99 ton/yr. Chesapeake proposes to adjust the remaining criteria pollutant emission limits (NO_x, CO, PM₁₀) for the flare by using the highest Btu content (obtained from test data) of individual streams. These limits will increase only slightly. At any given time, the plant is assumed to operate in one of three modes: normal, partial bypass, and full bypass. The number of hours per year the plant operates in a given mode was adjusted and was used in calculating annual emission limits for all criteria pollutants other than SO₂. 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.

The source is not subject to 45CSR30.

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 R13-0436EE. 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.

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 [Permits Review](#)
[Compliance Assistance](#)
([3AP123AP20](#))
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

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)(~~15~~14-15) and 45CSR13]

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 Sulfatreat adsorbent vessel (not the carbon beds) of the sulfur removal system shall be removed and replaced no later than once every ~~twelve~~eighteen (12~~8~~) 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

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 adsorbent used in the Sulfatreat vessel, or equivalent brand-named product) used in the adsorbent 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.