COMMONWEALTH OF PENNSYLVANIA **MEMO**
Department of Environmental Protection
Southwest Regional Office

TO Air Quality Permit File PA-04-00740B

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DATE May 19, 2020

RE Plan Approval Application
Shell Chemical Appalachia, LLC
Shell Polymers Monaca Site
Potter and Center Townships, Beaver County
APS # 1008145, Auth # 1299664, PF # 775836

BACKGROUND

Shell Chemical Appalachia LLC ("Shell") submitted a plan approval application received by the Pennsylvania Department of Environmental Protection ("Department") on December 18, 2019, for the installation and temporary operation of sulfur hexafluoride (SF_6)-insulated high voltage equipment associated with the cogen area of the Shell Polymers Monaca Site in Potter and Center Townships, Beaver County. Shell proposes to allow for the continued operation of the following air contamination sources and controls under PA-04-00740B authorization at this site:

- SF_6-insulated high voltage equipment; controlled by leak detection and repair ("LDAR").

SF_6-insulated high voltage equipment includes substation switchgear and transformer surge arrestors. SF_6 is used as an insulating medium in high voltage equipment. This equipment is a potential source of fugitive GHG emissions due to the potential for leakage of SF_6 from the gas-tight compartments.

The application was hand delivered on December 18, 2019. Application materials were determined to be administratively "complete" pursuant to the Prevention of Signification Deterioration regulations (Subchapter D of Chapter 127 of the Pennsylvania Code). A letter of Administrative Completeness was mailed to the applicant on January 22, 2020.

Shell submitted plan approval application PA-04-00740A on May 1, 2014, for the construction of a petrochemicals complex in Potter and Center Townships, Beaver County. Plan approval PA-04-00740A was issued on June 18, 2015. The facility was determined to be a major source of air contaminants for ozone precursors (NOx and VOC), NO_2, CO, PM_{10}, $PM_{2.5}$, hazardous air pollutants (HAPs), and greenhouse gasses (GHGs). Air contamination sources at the facility include three gas fired turbines, which will produce electricity for the site, and any surplus electricity may be sold. Certain electrical equipment that was installed at the site contains gas-insulated switchgear (GIS), which uses SF_6 as an insulating medium. SF_6-insulated high voltage equipment at the site include electrical equipment at the Main Incoming Substation (MIS) and Power Distribution Substation (PDS) that contain GIS, and select power transformers. SF_6 is a GHG and a regulated New Source Review pollutant under the Prevention of Significant Deterioration (PSD) program. Electrical equipment containing GIS were installed at Shell in September and October 2018.

GIS and GIS specifications were not identified in application PA-04-00740A, nor did the application identify any potential to emit SF_6 from the GIS. The application also did not contain a BACT analysis for the SF_6 emissions from the GIS. The GIS were not identified as air contamination sources in PA-04-00740A. A Consent Order and Agreement (COA) was issued by the Department on November 11, 2019, for installation of an air contamination source without prior Department approval. Pursuant to 25 Pa. Code §127.402, a person may not operate an air contamination source without prior Department approval. Shell's installation and/or construction of GIS without prior Department approval violated 25 Pa. Code §127.11. As part of the COA, Shell was required to submit to the Department a plan approval application to evaluate Prevention of Significant Deterioration (PSD)/BACT requirements of the previously installed sources and allow the temporary operation of all GIS currently installed at the facility and any GIS that Shell intends to install at the facility in the future. As noted in the COA the installation of the previously installed switch gears was judged to commence operation of the facility.

REGULATORY ANALYSIS

Per **25 Pa. Code §127.1**, new sources shall control emissions to the maximum extent, consistent with the best available technology ("BAT") as determined by the Department as of the date of issuance of the plan approval for the new source. The proposed SF_6-insulated high voltage equipment meet the definition of a *New source* under 25 Pa. Code §121.1.

Per **25 Pa. Code §127.11**, approval by the Department is required to allow the construction of an air contamination source or installation of an air cleaning device on an air contamination source. The SF_6-insulated high voltage equipment meet the definition of *Air contamination source* as defined under 25 Pa. Code §121.1.

25 Pa. Code §§123.1 relating to fugitive emissions will apply to this facility and has been included as a plan approval condition.

NSPS from 40 CFR Part 60 Subpart VVa - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006 will not apply to the SF_6-insulated high voltage equipment since SF_6 is not a VOC.

NSPS from 40 CFR Part 60 Subpart DDD - Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry will not apply to the SF_6-insulated high voltage equipment since SF_6 is not a VOC.

National Emission Standards for Equipment Leaks – Control Level 2 Standards from 40 CFR Part 63 Subpart UU will not apply to the SF_6-insulated high voltage equipment. Per 40 CFR §63.1019, "The provisions of this subpart apply to the control of air emissions from equipment leaks for which another subpart references the use of this subpart for such air emission control…" The SF_6-insulated high voltage equipment are not subject to a 40 CFR Part 63 Subpart which references use of this subpart.

NESHAPS for Source Categories: Generic Maximum Achievable Control Technology Standards from 40 CFR Part 63 Subpart YY will not apply to the SF_6-insulated high voltage equipment. Per 40 CFR §63.1100, this subpart is applicable to equipment leaks at ethylene production facilities; however, per 40 CFR §63.1103(e), this standard only applies to equipment that contains or contacts organic HAP.

40 CFR Part 64 – Compliance Assurance Monitoring will not apply to the SF_6-insulated high voltage equipment. Per 40 CFR §64.2, "*General applicability.* Except for backup utility units that are exempt under paragraph (b)(2) of this section, the requirements of this part shall apply to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria:

1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of this section;
2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of this paragraph, "potential pre-control device emissions" shall have the same meaning as "potential to emit," as defined in §64.1, except that emission reductions achieved by the applicable control device shall not be taken into account."

This facility is classified as a major source and will be required to obtain a part 70 (Title V) operating permit; however, the above criteria is not applicable to the SF_6-insulated high voltage equipment.

40 CFR Part 98 - Mandatory Greenhouse Gas (GHG) Reporting: Subpart A – General Provision and Subpart DD – Electrical Transmission and Distribution Equipment Use will apply to the SF_6-insulated high voltage equipment. However, the Department has been advised by U.S. EPA that emissions reporting under the Mandatory Reporting Rule is not currently considered an "applicable requirement" under U.S. EPA regulations implementing Title V and therefore does not have to be included in permits for minor or major sources. 40 CFR Part 98 and associated subparts may be applicable but this is to be determined by U.S. EPA. Applicable greenhouse gas reporting conditions may be included in an operating permit at a later date. The Department has elected to require the reporting of GHG emissions for all sources under 25 Pa. Code §127.12b as GHG are now a regulated pollutant under the Clean Air Act.

Prevention of Significant Deterioration Review

On May 31, 1980, the Department adopted Prevention of Significant Deterioration ("PSD") requirements promulgated by the U.S. EPA under the Clean Air Act. These requirements have been adopted in their entirety and incorporated by reference in 25 Pa. Code Chapter 127 Subchapter D. Per 40 CFR 52.21(a)(2)(i), "The requirements of [40 CFR Part 52.21, *Prevention of Significant Deterioration of Air Quality*] apply to the construction of any new major stationary source… in an area designated as attainment or unclassifiable under sections 107(d)(1)(A)(ii) or (iii) of the Act." Attainment or unclassifiable designations (listed under 40 CFR §81.339 for Pennsylvania) are established in reference to the National Ambient Air Quality Standards ("NAAQS") established under 40 CFR Part 50.

A major stationary source is defined as either: (a) a source in one of the 28 source categories identified in 40 CFR 52.21 that has a potential to emit 100 tons or more per year of any regulated NSR pollutant, or (b) any other stationary source that has the potential to emit 250 tons or more per year of a regulated NSR pollutant (separate GHG emission thresholds are described below). Once PSD requirements are triggered for one air contaminant, a review must be conducted for the other regulated NSR pollutants to determine if they exceed the significant levels as defined in 40 CFR 52.21(b)(23). This facility will qualify for multiple listed categories including chemical process plant and fossil fuel-fired steam electric plants of more than 250 MMBtu/hr of heat input. Therefore, the threshold for PSD applicability is 100 tons per year of a regulated pollutant (except GHG).

U.S. EPA determined on December 07, 2009, that GHGs are a threat to public health and welfare. This determination was made final effective on January 14, 2010. GHG emissions are those emissions of carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons, and other fluorinated greenhouse gases defined in 40 CFR Part 98 Subpart A. Each different GHG emission is considered to impact global warming at varying levels. Carbon dioxide equivalent ("CO_2e") emissions are the combined impact of each GHG emission after it is normalized to the impact of CO_2 as a reference. On May 13, 2010, U.S. EPA issued a final Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule ("GHG Tailoring Rule") which became effective on August 2, 2010. This rule established an applicability timeline and GHG emission thresholds for requiring facilities to be permitted for GHG emissions. Implementation occurred in steps with the last "Step 3" being finalized on June 29, 2012. PSD major source thresholds were established at 100,000 tons of CO_2e PTE for new

sources and 75,000 tons of CO_2e PTE for existing major facilities. Title V permitting requirements applied to facilities with a potential to emit of at least 100,000 tpy CO_2e.

On June 23, 2014, the Supreme Court of the United States ruled that "EPA exceeded its statutory authority when it interpreted the Clean Air Act to require PSD and Title V permitting for stationary sources based on their greenhouse-gas emissions. Specifically, the Agency may not treat greenhouse gases as a pollutant for purposes of defining a "major emitting facility" (or a "modification" thereof) in the PSD context or a "major source" in the Title V context. To the extent its regulations purport to do so, they are invalid. EPA may, however, continue to treat greenhouse gases as a "pollutant subject to regulation under this chapter" for purposes of requiring BACT for "anyway" sources." In effect, the GHG Tailoring Rule and included GHG major source thresholds have been rescinded. However, this facility will be an "anyway" source because of its NO_2, CO, and PM_{10} PTE. BACT requirements will apply to other pollutants with a PTE that exceeds the *Significant* thresholds under 40 CFR §52.21(b)(23). Pollutants with a PTE below these thresholds are considered *de minimis* for PSD purposes and will not be subject to BACT requirements. In response to the above decision, U.S. EPA has formally proposed to revise the PSD and Title V permitting regulations and establish a significant emission rate ("SER") of 75,000 tpy CO_2e below which GHG emissions would be considered *de minimis* for PSD purposes.[1] GHG is proposed to be subject to PSD and Title V permitting requirements only if the source is subject to these requirements for another regulated pollutant. The public comment period for this proposed rule has closed but it has not yet been finalized.

Per 40 CFR §52.21(j)(2), "A new major stationary source shall apply best available control technology for each regulated NSR pollutant that it would have the potential to emit in significant amounts." This is a new facility and the PTE from each individual source shall be considered to determine if the facility is a "new major stationary source". This plan approval will only address GHG emissions from the SF_6-insulated high voltage equipment. Shell will exceed the PSD significant thresholds for CO_2e. There is currently no formally established significant threshold for GHG although Shell's CO_2e PTE will be greater than any *de minimis* threshold for GHG (when established). Shell is therefore subject to BACT requirements for CO_2e.

Per 40 CFR §52.21(p)(1), "The Administrator shall provide written notice of any permit application for a proposed major stationary source or major modification, the emissions from which may affect a Class I area, to the Federal land manager and the Federal official charged with direct responsibility for management of any lands within any such area. Such notification shall include a copy of all information relevant to the permit application and shall be given within 30 days of receipt and at least 60 days prior to any public hearing on the application for a permit to construct. Such notification shall include an analysis of the proposed source's anticipated impacts on visibility in the Federal Class I area." It was confirmed in an email received by the Department on January 15, 2020, from Emily Bertram (Physical Scientist, U. S. EPA Region 3, Air and Radiation Division) that the Federal Land Manager notification is not required for a project with only GHG emissions based on the 2011 GHG Permitting Guidance.

[1] *Federal Register*, Vol. 81, No. 191, Monday, October 3, 2016, Proposed Rules, p. 68113.

Table 1: PSD Applicability Summary

Pollutant	Baseline Emissions	Project Emissions[1]	Net Emissions Change	Major Source Threshold	Significant Emission Rate	PSD (Yes/No)
CO_2e[2]	0	2,249,147	2,249,147	100,000	75,000	Yes

[1] Project emissions rounded up for PSD applicability summary.
[2] CO_2e emissions from PA-04-00740A are included in this PSD applicability analysis.

Nonattainment New Source Review (NNSR)

On May 19, 2007, the Department adopted revised New Source Review regulations in 25 Pa. Code Chapter 127 Subchapter E. Per 25 Pa. Code §127.201(a), "a person may not cause or permit the construction or modification of an air contamination facility in a nonattainment area… unless the Department… has determined that the requirements of this subchapter have been met." GHG's are not a pollutant for which there is an attainment/non-attainment designation by EPA. This plan approval will only address GHG emissions from the SF_6-insulated high voltage equipment which is regulated under PSD therefore, NNSR does not apply.

BACT/BAT Analysis for Greenhouse Gases (GHGs)

BACT (Best available control technology) is defined under 40 CFR §52.21(b)(12) as:

"…an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results. "

The facility is subject to BACT for GHGs since the facility is an "anyway" source. The applicant has conducted a BACT analysis for GHG following a 5 step "top-down" analysis which has been recommended by U.S. EPA for traditional attainment pollutants as well as the new GHG pollutants. The steps of this analysis are summarized as follows:

- Identify all available control technologies.
- Eliminate technically infeasible options.
- Rank remaining control technologies by effectiveness.
- Evaluate the most effective controls and document results.
- Select BACT.

For new "anyway" sources (such as Shell), U.S. EPA intends to continue applying PSD BACT requirements to GHG emissions if the source emits or has the potential to emit at least 75,000 tpy of GHGs. U.S. EPA acknowledges that the Supreme Court said the agency would need to justify a "de minimis" GHG emissions threshold above which BACT may be applied to "anyway" sources, but to ensure compliance with the Clean Air Act at present and until there are further developments at the D.C. Circuit, U.S. EPA will continue to apply the 75,000 tpy threshold; which was formally proposed on October 3, 2016 (FR Vol. 81 No. 191). As such, a BACT analysis for GHG emissions must be conducted using the same five-step, top-down approach used for other NSR pollutants according to U.S. EPA's guidance.

Sulfur Hexafluoride ("SF_6") Insulated High Voltage Equipment

Sulfur hexafluoride (SF_6) is the most potent GHG identified by the U.S. EPA in 40 CFR Part 98 Subpart A, with a global warming potential (GWP) of 22,800. SF_6 is the industry standard for electrical insulation in high voltage circuit breakers, gas-insulated substations, and other switchgear due to its superior properties over other media such as air. According to U.S. EPA's website, electric transmission and distribution make up for 3% of U.S. fluorinated gas emissions[2]. Progress has been made in finding SF_6 alternatives for use in low and medium voltage applications; however, the inertness and dielectric properties of SF_6 are such that no effective substitutes are known for high voltage applications at this time.

Therefore it is imperative to control potential leaks to the maximum extent possible. Shell has proposed to use state-of-the-art circuit breaker technology with a totally enclosed pressure system to minimize leaks, as well as the implementation of density alarm leak detection to ensure that SF_6 leaks are repaired as soon as possible. Based upon review of the U.S. EPA's RACT/BACT/LAER Clearinghouse (RBLC) database and other recent plan approvals, circuit breakers with leak detection equipment that alerts the operator when 10% of the SF_6 by weight has escaped from any breaker will be required.

Shell provided a BACT analysis addressing GHGs from the SF_6-Insulated High Voltage Equipment associated with the G02 Cogeneration Units Emissions Group. The SF_6-Insulated High Voltage Equipment are located in the Main Incoming Substation (MIS), Power Distribution Substation (PDS), and select power transformers[3]. BACT for control of GHG has been proposed by the applicant to be implementation of an LDAR program on the SF_6-insulated high voltage equipment. LDAR shall be implemented as follows:

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[2] https://www.epa.gov/ghgemissions/overview-greenhouse-gases#f-gases

[3] See listed equipment in Attachment A of Application.

- Enclosed SF_6-Insulated High Voltage Equipment having a vendor-guaranteed leak rate of 0.1% or less per year for GIS equipment.
- Enclosed SF_6-Insulated High Voltage Equipment having a vendor-guaranteed leak rate of 0.5% or less per year on transformers.
- Installation and operation of a density monitor alarm system that will alert the operator when 10% of the SF_6 by weight escapes from any SF_6-Insulated High Voltage Equipment.
- Monitoring the SF_6 containing equipment within the Main Incoming Substation building[4] against a 5,000 ppm SF_6 action trigger.
- Each SF_6-Insulated High Voltage Equipment shall be checked for leakage no less frequently than once every three months using either an OGI camera, a gas leak detector that meets the requirements of 40 CFR Part 60, Appendix A-7, Method 21, or other leak detection methods approved by the Department's Division of Source Testing and Monitoring.
- Leaks shall be repaired as soon as possible, but no later than fifteen (15) calendar days after the leak is detected.
- The date and time that each alarm associated with a SF_6-insulated high voltage equipment is activated, the corrective action taken to remedy the problem associated with each alarm, and the date the corrective action remedied the problem shall be recorded.
- Each quarterly LDAR inspection shall be recorded including the date, time, name, and title of the observer, along with any corrective action taken as a result.

There are no GHG (SF_6) limits contained in any NSPS applicable to SF_6-insulated high voltage equipment or for any of this facility's source categories. This LDAR requirement is consistent with determinations found in U.S. EPA's RBLC for SF_6-insulated high voltage equipment and other recent plan approvals issued by the Department for similar sources.

PSD Modeling Analysis

Air dispersion modeling is not required for this plan approval application because there are no NAAQS or PSD increments for GHGs. This was addressed in the PSD & Title V Permitting Guidance[5], which states: "There are currently no NAAQS or PSD increments established for GHGs, and therefore these PSD requirements would not apply for GHGs, even when PSD is triggered for GHGs. However, if PSD is triggered for a GHG emissions source, all regulated NSR pollutants which the new source emits in significant amounts would be subject to PSD requirements. Therefore, if a facility triggers review for regulated NSR pollutants that are non-GHG pollutants for which there are established NAAQS or increments, the air quality, additional impacts, and Class I requirements would apply to those pollutants. Since there are no NAAQS or PSD increments for GHGs, the requirements in sections 52.21(k) and 51.166(k) of EPA's regulations to demonstrate that a source does not cause or contribute to a violation of the NAAQS is not applicable to GHGs. Thus, we do not recommend that PSD applicants be required to model or conduct ambient monitoring for CO_2e or GHGs."

[4] See Attachment A of Application for MIS equipment list.
[5] U.S. Environmental Protection Agency, EPA-457/B-11-001, *PSD and Title V Permitting Guidance for Greenhouse Gases*, March 2011, p. 47.

EMISSIONS & CONTROLS

SF_6-insulated high voltage equipment includes substation switchgear and transformer surge arrestors. SF_6-insulated high voltage equipment are located at the Main Incoming Substation (MIS), Power Distribution Substation (PDS), MIS transformers, gas turbine generator step up transformers, and steam turbine generator step up transformers. The equipment will be initially charged with 73,804 lbs of SF_6 as an insulator gas. This equipment is a potential source of GHG emissions due to the potential for leakage of SF_6 from the gas-tight compartments. Attachment 1 of the application includes an inventory of equipment. Each gas compartment is equipped with a fill port to add or withdraw SF_6. Each gas compartment is equipped with dedicated pressure relief rupture diaphragms, and where necessary, diverter nozzles to divert a possible overpressure gas discharge away from the normal operating area of the switchgear. Fugitive emissions can occur during initial filling, operating leaks, and periodic recharging following a leak. GIS is designed to be gas-tight, and is type tested and designed with a maximum acceptable leakage of 0.1% per year. Transformers are designed with a maximum acceptable rate of leakage of 0.5% per year.

Emissions will be minimized through equipment design and LDAR. Each SF_6-insulated compartment will be equipped with a pressure indicator that will be monitored and alert the operator when pressure drops below a setpoint level. Additionally, the MIS is equipped with a multi-zone SF_6 gas monitor as a safety device to protect site personnel in an enclosed space. The monitoring system will use infrared sensing technology to detect leaks at low levels.

Fugitive emissions were estimated by the applicant for SF_6-insulated high voltage equipment based upon the licensor's guaranteed leak rates of 0.1% for GIS equipment and 0.5% for transformers. The Department has determined the applicant's emission calculations to be acceptable. Table 2 below summarizes the GHG emissions from the SF_6-insulated high voltage equipment.

Table 2: SF_6-Insulated High Voltage Equipment PTE

Source	CO_2e[a]
	Emission Rate (tpy)
SF_6-insulated high voltage equipment	854
Facility Wide Total	2,249,147

[a] After applying global warming potential ("GWP") multipliers of 22,800 (for SF_6)

CONCLUSIONS AND RECOMMENDATIONS

Shell Chemical Appalachia LLC has shown that emissions will be minimized through the use of appropriate BACT in this application for SF_6-insulated high voltage equipment to be located at the Shell Polymers Monaca Site in Potter and Center Townships, Beaver County. I recommend issuance of a Plan Approval with an expiration date of October 28, 2020 subject to the standard conditions in Section B of all plan approvals along with the special conditions below.

SPECIAL CONDITIONS

Site Level Requirements

RESTRICTIONS

- No person may permit air pollution as that term is defined in the act [25 Pa. Code §121.7].
- The permittee may not permit the emission into the outdoor atmosphere of a fugitive air contaminant contrary to 25 Pa. Code §123.1 [25 Pa. Code §123.1].
- Emissions from the Facility shall not exceed the following on a 12-month rolling sum basis [25 Pa. Code §127.12b]:
    - Greenhouse Gases, expressed as Carbon Dioxide Equivalent (CO_2e): 2,249,147 tpy

TESTING REQUIREMENTS

- If, at any time, the Department has cause to believe that air contaminant emissions from the sources listed in this plan approval may be in excess of the limitations specified in, or established pursuant to this plan approval or the permittee's operating permit, the permittee may be required to conduct test methods and procedures deemed necessary by the Department to determine the actual emissions rate. Such testing shall be conducted in accordance with 25 Pa. Code Chapter 139, where applicable, and in accordance with any restrictions or limitations established by the Department at such time as it notifies the company that testing is required [25 Pa. Code §127.12b].
- Performance testing shall be conducted as follows [25 Pa. Code §127.12b and §139.11]:
    - The Permittee shall submit two hard copies and one electronic copy of a pre-test protocol to the Department for review at least 60 days prior to the performance of any U.S. EPA reference method stack test. All proposed performance test methods shall be identified in the pre-test protocol and approved by the Department prior to testing.
    - The Permittee shall notify the Regional Air Quality Manager and Division of Source Testing and Monitoring at least 15 days prior to any performance test so that an observer may be present at the time of the test. This notification may be sent by email. Notification shall not be made without prior receipt of a protocol acceptance letter from the Department.
    - Pursuant to 40 CFR Part 60.8(a), a complete test report shall be submitted to the Department no later than 60 calendar days after completion of the on-site testing portion of an emission test program.

- Pursuant to 25 Pa. Code Section 139.53(b) a complete test report shall include a summary of the emission results on the first page of the report indicating if each pollutant measured is within permitted limits and a statement of compliance or non-compliance with all applicable permit conditions. The summary results will include, at a minimum, the following information:

    - A statement that the owner or operator has reviewed the report from the emissions testing body and agrees with the findings.
    - Permit number(s) and condition(s) which are the basis for the evaluation.
    - Summary of results with respect to each applicable permit condition.
    - Statement of compliance or non-compliance with each applicable permit condition.

- Pursuant to 25 Pa. Code § 139.3 all submittals shall meet all applicable requirements specified in the most current version of the Department's Source Testing Manual.

- All testing shall be performed in accordance with the provisions of Chapter 139 of the Rules and Regulations of the Department of Environmental Protection.

- Pursuant to 25 Pa. Code Section 139.53(a)(1) and 139.53(a)(3) all hard copy submittals shall be sent to the Pennsylvania Department of Environmental Protection, Air Quality Program, 400 Waterfront Drive, Pittsburgh, PA 15222 with deadlines verified through document postmarks. Electronic submittals shall be sent to RA-epstacktesting@pa.gov. Alternatively, electronic copies may be provided on a CD along with hard copy submittals.

RECORDKEEPING REQUIREMENTS

- The Owner/Operator shall maintain the following comprehensive and accurate records [25 Pa. Code §127.12b]:

    - Emissions (expressed in tons) of CO_2e on a 12-month rolling sum basis.
    - Monitoring information and report data as specified in 25 Pa. Code Chapter 139 Subchapter C and the most recent version of the Department's Continuous Source Monitoring Manual.
    - Maintenance procedures and schedules for each air contamination source and air cleaning device authorized under this plan approval.
    - Maintenance conducted on each air contamination source authorized under this plan approval.
    - Amount of sulfur hexafluoride (SF_6) dielectric added to each SF_6-insulated high voltage equipment on a monthly basis.
    - Date and time that each alarm associated with a SF_6-insulated high voltage equipment is activated, the corrective action taken to remedy the problem associated with each alarm, and the date the corrective action remedied the problem.
    - Results of quarterly LDAR inspections including the date, time, name, and title of the observer, along with any corrective action taken as a result.

- All logs and required records shall be maintained on site, or at an alternative location acceptable to the Department, for a minimum of five years and shall be made available to the Department upon request [25 Pa. Code §127.12b].

REPORTING REQUIREMENTS

- Annual emissions reporting shall be conducted as follows [25 Pa. Code §127.12b and §135.3]:

    - In accordance with 25 Pa. Code §135.3, the permittee shall submit to the Department via AES*Online or AES*XML at www.depgreenport.state.pa.us/ by March 1 of each year, a facility inventory report for the preceding calendar year for all sources authorized under this plan approval. The inventory report shall include all emissions information for all sources operated during the preceding calendar year. Emissions data including, but not limited, to the following shall be reported: carbon monoxide (CO); oxides of nitrogen (NOx); particulate matter less than 10 micrometers in diameter (PM_{10}); particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$); sulfur dioxide (SO_2); volatile organic compounds (VOC); total hazardous air pollutants (HAP); speciated HAP including, but not limited to, benzene, ethyl benzene, formaldehyde, n-hexane, toluene, isomers and mixtures of xylenes, and 2,2,4-trimethylpentane; carbon dioxide (CO_2); methane (CH_4); and nitrous oxide (N_2O).

    - A source owner or operator may request an extension of time from the Department for the filing of a source report, and the Department may grant the extension for reasonable cause.

- Malfunction reporting shall be conducted as follows [25 Pa. Code §127.12b]:

    - The Owner/Operator shall report each malfunction that occurs at this Facility that poses an imminent and substantial danger to the public health and safety or the environment or which it should reasonably believe may result in citizen complaints to the Department. For purpose of this condition a malfunction is defined as any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment or source to operate in a normal or usual manner that may result in an increase in the emission of air contaminants. Examples of malfunctions may include, but are not limited to: large dust plumes, heavy smoke, a spill or release that results in a malodor that is detectable outside the property of the person on whose land the source is being operated.

    - When the malfunction poses an imminent and substantial danger to the public health and safety, potential harm to the environment, the permittee shall report the incident to the Department within one hour of discovery. The permittee shall also notify the Department within one hour, when corrective measures have been accomplished.

      All other malfunctions that must be reported under subsection (a) shall be reported to the Department no later than the next business day.

- Initial reporting of the malfunction shall identify the following items to the extent known:

  - Name and location of the facility;
  - Nature and cause of the malfunction;
  - Time when the malfunction or breakdown was first observed;
  - Expected duration of increased emissions; and
  - Estimated rate of emissions.

- Malfunctions shall be reported to the Department by e-mail (addresses will be provided by the Department) or at the following address:

  PA DEP
  Office of Air Quality
  400 Waterfront Drive
  Pittsburgh, PA 15222-4745
  412-442-4000

- If requested by the Department, the permittee shall submit a full written report to the Department including final determinations of the items identified in (c) and the corrective measures taken on the malfunction. The report shall be submitted within 15 days of the Department's request or accomplishing corrective measures, whichever is later.

WORK PRACTICE REQUIREMENTS

- The permittee shall construct, operate, and maintain all air contamination sources authorized under this Plan Approval in accordance with the manufacturer's specifications and recommended maintenance schedules [25 Pa. Code § 127.12b].

ADDITIONAL REQUIREMENTS

- The permittee shall comply with all applicable requirements under 40 CFR Part 98 related to the Mandatory Greenhouse Gas Reporting Rule [25 Pa. Code § 127.12b].

- Air contamination sources and air cleaning devices authorized for construction and temporary operation under this Plan Approval are as follows [25 Pa. Code §127.12b]:

  - SF_6-insulated high voltage equipment; controlled by leak detection and repair ("LDAR).

- Upon determination by the permittee that the air contamination sources covered by this plan approval are in compliance with all conditions of the plan approval, the permittee shall contact the Department and schedule the Initial Operating Permit Inspection [25 Pa. Code §127.12b].

- Upon completion of the Initial Operating Permit Inspection and determination by the Department that the permittee is in compliance with all conditions of the plan approval, the

permittee shall submit the Title V Operating Permit (TVOP) application within 120 days after the Department provides notice to the permittee that the application is due [25 Pa. Code §127.12b].

- The permittee shall submit requests to extend the temporary operation periods at least 15 days prior to the expiration date of any authorized period of temporary operation [25 Pa. Code §127.12b].

Source Level: SF_6-Insulated High Voltage Equipment

RESTRICTIONS

- The emissions from the SF_6-Insulated High Voltage Equipment installed and operated under this authorization shall not exceed the following on a 12-month rolling sum basis [25 Pa. Code §127.12b]:

    - Greenhouse Gases, expressed as Carbon Dioxide Equivalent (CO_2e): 854 tpy

MONITORING REQUIREMENTS

- The permittee shall implement a sulfur hexafluoride (SF_6) leak detection and repair (LDAR) program to minimize SF_6-Insulated High Voltage Equipment leaks as follows [25 Pa. Code §127.12b]:

    - SF_6-insulated high voltage equipment are to be state-of-the-art enclosed pressure system equipped with low pressure alarms that are triggered when:

        - 10% of the SF_6 by weight has escaped from any SF_6-Insulated High Voltage Equipment.
        - A leak exceeds 5,000 ppm SF_6.

    - When alarms are triggered, the operator shall take corrective action as soon as practicable to repair the SF_6-insulated high voltage equipment to a like-new state to minimize emissions of SF_6 to the maximum extent possible.

    - Each SF_6-Insulated High Voltage Equipment shall be checked for leakage no less frequently than once every three months using either an OGI camera, a gas leak detector that meets the requirements of 40 CFR Part 60, Appendix A-7, Method 21, or other leak detection methods approved by the Department's Division of Source Testing and Monitoring. A leak is defined as: any positive indication, whether audible, visual, or odorous, determined during an AVO inspection; or any visible emissions detected by an OGI camera.

    - Any leak detected from a fugitive emission component shall be repaired by the owner or operator of the facility as expeditiously as practicable. A first attempt at repair must be

attempted within five (5) calendar days of detection, and repair must be completed no later than fifteen (15) calendar days after the leak is detected.

- Once a fugitive emission component has been repaired or replaced, the owner or operator must resurvey the component as soon as practicable, but no later than 30 calendar days after the leak is repaired.

  - For repairs that cannot be made during the inspection when the leak is initially found, either a digital photograph must be taken of the component or the component must be tagged for identification purposes.

  - A leak is considered repaired if there is no visible leak image when using an OGI camera.

RECORDKEEPING REQUIREMENTS

- The permittee shall maintain the following comprehensive and accurate records [25 Pa. Code §127.12b]:

  - Amount of sulfur hexafluoride (SF_6) dielectric added to or removed from high voltage equipment on a monthly basis.

  - Record pressure gauge inspections monthly, and when density monitoring system or concentration monitor alarm sounds.

  - Date and time that each alarm associated with SF_6-insulated high voltage equipment is activated, the corrective action taken to remedy the problem associated with each alarm, and the date the corrective action remedied the problem.

  - Records of each LDAR inspection, including:

    - The date, start time, and end time of the inspection;
    - The monitoring instrument used;
    - The ambient temperature, sky conditions, and maximum wind speed at the time of inspection; and
    - Documentation of each fugitive emission including;
      - The identification of each component from which fugitive emissions were detected;
      - The instrument reading of each fugitive emissions component:
      - The status of repair of each component including:
        - The repair methods applied in each attempt to repair the component;
        - The tagging or digital photographing of each component not repaired during the inspection in which fugitive emissions were discovered;
        - The reasons a component was placed on delay of repair;
        - The date of successful repair of the component; and

- The information on the instrumentation or method used to resurvey the component after repair, if it was not completed during the inspection in which the fugitive emissions were discovered.

REPORTING REQUIREMENTS

- The permittee shall submit an annual report either in electronic format, by hand-delivery, courier, or sent by certified mail, return receipt requested, to the Air Program Manager of the Southwest DEP Regional Office. The reporting period specified by the owner/operator shall be no later than one year from the start of operations of the facility, unless otherwise approved by the Department. The initial and subsequent annual reports shall be submitted within 60 days of the end of the reporting periods. The report shall include: company name; facility site name; the beginning and ending dates of the reporting period; and the records of each LDAR inspection conducted during the reporting period. [25 Pa. Code §127.12b]

ADDITIONAL REQUIREMENTS

- The enclosed SF_6-Insulated High Voltage Equipment for Gas-Insulated Switchgear (GIS) equipment shall have a vendor-guaranteed leak rate of 0.1% or less per year. [25 Pa. Code §127.12b]

- The enclosed SF_6-Insulated High Voltage Equipment on transformers shall have a vendor-guaranteed leak rate of 0.5% or less per year. [25 Pa. Code §127.12b]