ALLEGHENY COUNTY HEALTH DEPARTMENT
AIR QUALITY PROGRAM

May 26, 2023

SUBJECT: **Hyperion Midstream, LLC**
Champion Compressor Station
2340 Douglas Run Road
Elizabeth Township, PA 15083
Allegheny County

Installation Permit No. 0996-I001

TO: JoAnn Truchan, P.E.
Program Manager, Engineering

FROM: Michael Dorman
Air Quality Engineer

FACILITY DESCRIPTION:

This permit is for the installation of a natural gas compressor and transmission facility at 2340 Douglas Run Road Elizabeth Township, PA 15083, Allegheny County, PA. Natural gas from area wells enters the facility through an inlet separator. A natural gas fired compressor engine compresses the gas received from the inlet separator. Upon exiting the compressors, the natural gas enters the TEG dehydration units. These dehydration units remove any water remaining in the gas through glycol absorption of the water in a contactor vessel. The water rich glycol goes to a glycol dehydrator reboiler where the water is boiled off to restore the glycol. The emissions from the natural gas fired reboilers exhaust to atmosphere. Water from the inlet separator is stored in two (2) 400-barrel storage tanks.

The facility is a minor source of particulate matter (PM), particulate matter < 10 microns in diameter (PM_{10}), particulate matter < 2.5 microns in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen oxides (NO_X), carbon monoxide (CO), volatile organic Compounds (VOCs) and hazardous air pollutants (HAPs) as defined in section 2101.20 of Article XXI.

INSTALLATION PERMIT DESCRIPTION

This permit is for the installation of a natural gas compressor and transmission facility comprising two (2) Caterpillar natural gas fired engines each driving a compressor, one (1) natural gas heated dehydrator/reboiler, one (1) Cummins generator and two (2) 400-barrel storage tanks. Additional tanks for glycol, methanol, waste oil, lubricants and engine coolant are included at the facility. Emissions from the compressor engines are controlled by oxidation catalysts. Emissions from the dehydrator/reboiler are controlled by an enclosed combustor.

The proposed installation will result in the following potential emissions, in tons per year.

PM	PM_{10}	$PM_{2.5}$	SO_X	NO_X	CO	VOC	HCHO
2.10	2.10	2.10	0.122	12.58	11.61	7.38	4.31

PERMIT APPLICATION COMPONENTS:

1. Installation Permit Application No. 0996-I001, dated November 23, 2022.
2. Additional requested information dated January 25, 2023.

EMISSION SOURCES:

Emissions Sources

I.D.	SOURCE DESCRIPTION	CONTROL DEVICE(S)	MAXIMUM CAPACITY	FUEL/RAW MATERIAL	STACK I.D.
P-001	Caterpillar; Model: 3606	Oxidation Catalyst	1875 bhp/hr	Natural Gas	S001
P-002	Caterpillar; Model: 3606	Oxidation Catalyst	1875 bhp/hr	Natural Gas	S002
G-001	Cummins; Model C750N6	None	1006 bhp/hr	Natural Gas	S003
H-001	Dehydrator/Reboiler	Enclosed Combustor	94 MMScf/day	Natural Gas	
T-001	Produced Water Tank	None	400 bbl	Produced Water	
T-002	Produced Water Tank	None	400 bbl	Produced Water	
T-003	Glycol Tank	None	1,000 gal	Triethylene Glycol	
T-004	Methanol Tank	None	500 gal	Methanol	
T-005	Compressor Coolant Day Tank	None	1,000 gal	Mono-ethylene glycol	
T-006	Waste Oil Tank	None	50 bbl	Waste Oil	
T-007	Engine Oil Day Tank 1	None	500 gal	Engine Oil	
T-008	Engine Oil Day Tank 2	None	500 gal	Engine Oil	
T-009	Compressor Coolant Day Tank 1	None	500 gal	Compressor Oil	
T-010	Compressor Coolant Day Tank 2	None	500 gal	Compressor Oil	

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated by performance testing for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO. VOCs and HAPs. Additionally, compliance will be demonstrated by maintaining records of inspections of compressor engines and dehydrator/reboiler operations. Compliance with the short-term (lb/hr) limits must be maintained at all times, including startup and shutdown. Any emissions due to startup, shutdown, or malfunction are included in the facility's total annual emissions. See Installation Permit No. 0996-I001 for the specific conditions for determining compliance with the applicable requirements.

REGULATORY APPLICABILITY:

1. **Article XXI Requirements for Issuance:**

   See Permit Application No. 0996-I001, Section 5. The requirements of Article XXI, Part B for the issuance of an installation permit has been met for this facility. Article XXI, Part D, Part E and Part H will have the necessary sections addressed individually.

2. BACT Analysis:

A top-down BACT analysis was sent as a supplement to Permit Application No. 0996-I001. The analysis identifies lean burn, 4-stroke engines combined with an oxidation catalyst as BACT. The lean burn engines specified emit 0.3 g/bhp-hr of NO_X or less. An oxidation catalyst reduces CO emissions to 0.175 g/hp-hr, VOC emissions 0.094 g/hp-hr and HCOH emissions to 0.029 g/hp-hr. The requirements for SI ICE (40 CFR Part 60 Subpart JJJJ) manufactured after January 1, 2011 is 1.0 g/bhp-hr of NO_X. The manufacturer's Specification Sheet indicates that the NO_X emissions for the G3606 engine is 0.3 g/hp-hr. The Department accepts the permittee's BACT analysis.

3. **Testing Requirements:**

The permittee shall conduct initial testing, upon installation of the facility for PM, PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO, VOCs and HAPs. The Department reserves the right to require additional testing if necessary in the future to assure compliance with the terms and conditions of this Installation Permit.

4. **Applicable New Source Performance Standards (NSPS):**

This installation is subject to 40 CFR Part 60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines – SI-RICE) because the newly installed compressors and the generator are powered by spark ignition internal combustion engines.

This installation is subject to 40 CFR Part 60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015) because compressors are being installed at this compressor station.

5. **Non-Applicable New Source Performance Standards (NSPS):**

The installation is not subject to 40 CFR Part 60 Subpart Dc (Standards of Performance for Stationary Small Industrial-commercial-Institutional Steam Generating Units) because the dehydrators/reboilers are all rated at less than 10 MMBtu/hr heat input

This installation is not subject to 40 CFR Part 60 Subpart Kb (Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984) because each tank, to be constructed, has a capacity below the applicability threshold.

The installation is not subject to 40 CFR Part 60 Subpart GG (Standards of Performance for Stationary Gas Turbines) because there are no gas turbines at the site.

The installation is not subject to 40 CFR Part 60 Subpart KKK (Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants for Which Construction, Reconstruction or Modification Commenced After January 20, 1984 and on or Before August 23, 2011) because this compressor station commenced construction after August 23, 2011.

The installation is not subject to 40 CFR Part 60 Subpart LLL (Standards of Performance for SO_2 Emissions from Onshore Natural Gas Processing Plants for Which Construction, Reconstruction or Modification Commenced After January 20, 1984 and on or Before August 23, 2011) because this compressor station commenced construction after August 23, 2011.

The installation is not subject to 40 CFR Part 60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – CI-RICE) because there are no CI-RICE at the site.

6. **Applicable NESHAP and MACT Standards:**

The installation is subject to 40 CFR Part 63, Subpart HH (National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities) because this facility is an area source of HAPs and processes, upgrades, or stores "natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user". (See 40 CFR §760(a))

The installation is subject to 40 CFR Part 63, Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). It meets this requirement by being in compliance with 40 CFR Part 60 Subpart JJJJ. (40 CFR §63.6590(c))

The installation is not subject to 40 CFR Part 63 Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers Area Sources). It is exempt because the boiler is gas-fired.

7. **New Source Review (NSR) Regulations:**

NSR does not apply because this installation is not a major source.

8. **Risk Management Plan; CAA Section 112(r):**

The facility is not required to have a risk management plan at this time because it is not a major source.

9. **Greenhouse Gas Reporting (40 CFR Part 98):**

Greenhouse gases (GHGs) from this facility come from the combustion units. Only three (3) of the six GHG categories apply: CO_2, N_2O (nitrous oxide), and CH_4 (methane). Based on the calculation methodology in 40 CFR Part 98, §98.33(a)(1), potential emissions of CO_2e are 30,372.16 tpy. This is less than the 100,000 tpy major source threshold. Therefore, the facility is not considered a major source of GHG emissions.

If the actual CO_2e emissions exceed the 25,000 metric ton applicability threshold for the reporting rule, the facility will have to submit annual reports in accordance with 40 CFR Part 98.

AIR TOXICS:

The permittee modeled air toxics emissions using the AERMOD dispersion model. Five years of meteorological data were used. The conclusions of the analysis demonstrated that:

1. The combined impact of the proposed increased potential air toxic emissions with known or possible carcinogenic health effects does not result in an aggregated Maximum Individual Carcinogenic Risk (MICR) that poses an undue human health risk at or beyond the public exposure boundary;
2. The increased ambient concentration of any individual air toxic resulting from the proposed increase in potential air toxic emissions with known or possible non-carcinogenic health effects will not exceed the Reference Concentration (RfC) at or beyond the public exposure boundary; and
3. The combined impact of the proposed increased potential air toxic emissions with known or possible non-carcinogenic health effects does not result in Hazard Quotients (HQ) that pose an undue human health risk at or beyond the public exposure boundary.

The modeling results confirmed that the air toxics emissions from this project will not exceed the air toxics thresholds in the Department's Air Toxics Policy.

EMISSION CALCULATIONS:

See attached spreadsheet for emissions calculations.

EMISSIONS SUMMARY:

Emissions Summary for Hyperion Midstream, LLC – Champion Compressor Station

POLLUTANT	TOTAL ANNUAL EMISSIONS LIMIT (tons/year*)
Particulate Matter	2.10
Particulate Matter <10 µm (PM_{10})	2.10
Particulate Matter <2.5 µm ($PM_{2.5}$)	2.10
Sulfur Oxides (SO_X)	0.122
Nitrogen Oxides (NO_X)	12.58
Carbon Monoxide (CO)	11.61
Volatile Organic Compounds (VOC)	7.38
Formaldehyde (HCHO)	4.31

* A year is defined as any consecutive 12-month period.

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application. The facility is not subject to the restrictions of §2102.04.k of Article XXI because there have been no Notices of Violation issued for this or any other Hyperion or Olympus Energy facility in Pennsylvania during the last 18 months. The Installation Permit for Hyperion Midstream, LLC – Champion Compressor Station should be approved with the emission limitations, terms and conditions in Installation Permit No. 0996-I001.