

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

B647833456

|  |                               |                              |
|--|-------------------------------|------------------------------|
| FACILITY: DTE Gas Company BELLE RIVER COMPRESSOR STATION             |                               | SRN / ID: B6478              |
| LOCATION: 5440 PUTTYGUT RD., CHINA TWP                               |                               | DISTRICT: Southeast Michigan |
| CITY: CHINA TWP  |                               | COUNTY: SAINT CLAIR          |
| CONTACT: Phillis Rynne , Staff Engineer, Env. Management & Resources |                               | ACTIVITY DATE: 02/19/2016    |
| STAFF: Robert Elmouchi   | COMPLIANCE STATUS: Compliance | SOURCE CLASS: MAJOR          |
| SUBJECT: Scheduled inspection.                                       |                               |                              |
| RESOLVED COMPLAINTS:   |                               |                              |

On February 19, 2016, I conducted a scheduled inspection at the DTE Energy, Belle River Mills Compressor Station (Belle River); located at 5440 Puttygut Road, China, Michigan. This facility is uniquely identified by the State Registration Number (SRN) of **B6478**. The purpose of this inspection was to determine the facility's compliance with the requirements of the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451); the administrative rules; Permit to Install (PTI) No. 141-13; PTI No. 32-15; PTI No. 147-15; the conditions of Renewable Operating Permit (ROP) No. MI-ROP-B6478-2010; and ROP No. MI-ROP-B6478-2016, which was pending completion of the EPA 45-day review.

MI-ROP-B6478-2016 was approved and issued by the AQD on March 1, 2016.

I entered the site and was greeted by Mr. Tom Anderson, Manager, Transmission & Storage Operations. Also present during this inspection was Ms. Phillis Rynne, Staff Engineer, Environmental Management & Resources; Ms. Christy Clark, Supervisor – DO Gas & Electric; and Mr. Joe Kotwicki, Associate Environmental Specialist. Ms. Rynne and Mr. Kotwicki escorted me during the site inspection.

We began the inspection by reviewing the permit conditions and recordkeeping. Ms. Rynne and I were in agreement that even though the proposed ROP renewal was currently undergoing a 45-day EPA review, it appeared appropriate to evaluate compliance with respect to the proposed ROP. Even though the ROP was pending approval, applicable regulations are in effect. The result is that if a noncompliance was determined then the AQD would cite the applicable regulation if an observed noncompliance did not relate to an existing permit condition. Hard copies of collected records are attached to the printed report.

**ROP No.: MI-ROP-B6478-2016**

**EUDEHY – Glycol dehydration unit with an enclosed flare emission control unit.**

storage field and only when the moisture content of the natural gas exceeds pipeline quality standards.

Emission records provided appear to indicate annual benzene emissions were below the permit limit of 0.43 tons per year (860 pounds per year). The maximum 12-month rolling total emissions of benzene from January 2014 through December 2015 was 47.01 pounds.

Records provided appear to indicate annual VOC emissions were below the permit limit of 9 tons per year (18,000 pounds per year). The maximum 12-month rolling total emissions of VOC from January 2014 through December 2015 was 306 pounds.

A visual inspection of EUDEHY appeared to indicate that the flash tank was installed, maintained and capable of proper operation.

DTE summarizes these calculated emission values into monthly and 12-month rolling totals.

Ms. Rynne stated that she is working with DTE staff to obtain a monthly print out of only the alarm events that relate to ECU function. Ms. Rynne stated that a print out of all system recorded events would create large stacks of paper. The alarm log for December 2015 was provided via email on April 15, 2016. This record appears to demonstrate compliance with the permit required recordkeeping.

All closed-vent tagging is expected to be complete during June 2016. Some replacement of tags was delayed for safety concerns due to seasonal weather related conditions. The records provided appear to indicate compliance with leak detection procedures and limits.

#### **EUREFRIGPLANT**

This emission unit is subject to 40 CFR Part 60, Subparts A and 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. I was provided requested copies of leak detection records, which appear to indicate compliance with the 40 CFR Part 60 Subpart KKK leak testing requirement. Emission records appear to indicate that EUREFRIGPLANT was only operated during February, March and April of 2014.

#### **EUREGEN**

EUREGEN, which is part of FGCOMBUSTION, has been operated almost exclusively for maintenance and emission testing purposes. The records provided appear to support the assertion of minimum operation as well as indicate compliance with the permitted emission limits.

**NOTE:** Per IV.2 the thermal oxidizer appeared to be installed, maintained and operated in a satisfactory manner. I did observe that the flame zone sight glass was cracked. The crack did not appear to result in a separation of the glass sections, which might compromise the function of the thermal oxidizer by allowing intake or exhaust

that deviates from the control device design. I discussed this observation with Ms. Rynne and my concern was noted. The sight glass crack did not appear to violate the maintenance requirement. Further damage to the sight glass may evolve into a non-compliance.

### **EUKingRdHCTank approved per PTI 141-13**

This permit was approved on November 25, 2013, for the installation of a hydrocarbon liquid condensate storage tank located at 3891 King Road, East China, Michigan. Although this tank falls under the facility's SRN, this tank is located outside the fenced property perimeter. The tank has been installed and is in active use. Records provided appear to satisfy the monitoring and recordkeeping requirements of tracking the gallons of liquid added and removed per special condition VI.1. DTE provided monthly and 12-month rolling total gallons added or removed. The permitted material throughput limit is 103,000 gallons per year. The greatest monthly throughput was 3,171 gallons and the greatest 12-month rolling total throughput was 7,189 gallons.

I did not have the opportunity to observe the labeling of the King Road tank because the sun had set before I completed the site inspection at the fenced portion of the facility. I plan to observe the tank labeling during a subsequent inspection.

### **FGCOLDCLEANERS**

This facility has one parts cleaner (model no. AL100, serial no. 1010430) located in the maintenance building, which is not vented to the outside. The original cold solvent parts cleaner was replaced with a new model in September 1998. The reported solvent-air interface is 8.13 square feet (this is a correction to the 7.96 square feet value in the previous activity report). Dyna 143 is used as the parts cleaning solvent and that the solvent is not heated. The SDS appears to confirm that this cleaning solvent does not contain any halogenated solvents.

### **FGCOMBUSTION**

The conditions in this flexible group are limited to addressing 12-month rolling total NO<sub>x</sub>, CO and VOC emissions from this group. Conditions regarding other aspects of compliance are addressed in the specific emission unit or flexible group associated with each emission unit. This flexible group consists of the following emission units:

EUENGINE1, EUENGINE2, EUHMOHEATER, EULSTANK, EUREFRIGPLANT, EUREGEN, EUTURBINE1 and EUTURBINE2 (not installed during the 18-month period authorized by the approved permit to install). The records provided appear to indicate compliance with the emission limits and calculation basis per Appendix 4 for this flexible group.

### **FGEMERGENS approved per PTI No. 147-15**

The following text consists of parts copied from the permit evaluation form:

*"DTE Energy submitted a permit application for two emergency engines [received on*

July 31, 2015]. These engines are both already installed at the facility. They were previously thought to be exempt from new source review (NSR) permitting, and it was recently discovered that they do not qualify for the exemption, since they each have a heat input that is greater than 10 MMBtu.

*This facility is subject to Title 40, Part 70, the Renewable Operating Permit (ROP) Program, because the potential to emit (PTE) of the facility for NO<sub>x</sub>, CO, and VOCs exceeds 100 tpy, and the PTE of any single HAP (formaldehyde) is greater than 10 tpy. The facility operates under MI-ROP-B6478-2010, which is currently going through the renewal cycle. The engines are both already included in the ROP, and it was discovered during the ROP renewal that they do not meet the exemption.*

*The facility has previously been subject to review under the Prevention of Significant Deterioration (PSD), because at the time of New Source Review (NSR) permitting of FGRULE818ENGINES, the potential to emit of nitrogen oxides was greater than 250 tons per year.*

*This proposed project, the installation of two emergency engines, has a true (unrestricted) potential to emit (PTE) that is less than the significant emission rates (SERs) for criteria pollutants. Therefore, this project is not subject to review under PSD, and it is not considered a major modification. A public comment period is not required for this project. Although the unrestricted PTE is less than SERs, the emissions are limited further, because the engines will be limited to 850 hours of operation.”*

It's important to note that both the existing (MI-ROP-B6478-2010) and pending (MI-ROP-B6478-2015) ROPs contain a high-level citation requiring the source to comply with all applicable conditions of the RICE MACT, which is 40 CFR 63 Subpart ZZZZ. Nevertheless, because these engines have a heat input that is greater than 10 MMBtu and therefore are subject to R 336.1201 (Rule 201). The PTI for these two emergency generators was approved on August 28, 2015, and the special conditions were subsequently rolled into MI-ROP-B6478-2016.

Attached to the hard copy of this report are records of monthly and 12-month rolling total hours of operation. The records include the reason for operation. This record appears to satisfy special condition VI.1.

I observed that each emergency generator has a non-resettable hour meter. The meter on EUBUGENSETTURBIN displayed 959 hours. The meter on EUEMERGENZBLDG displayed 885 hours.

## **FGENGINES**

Five various sized 2-cycle natural gas reciprocating internal combustion engines are used to power natural gas pipeline compressors for injection into a natural gas storage field. Three of the engines (Unit #1 = EU014, Unit #2 = EU015 and Unit #3 = EU016) were installed in 1964 and are considered grandfathered. These engines are in a building designated as the GMVC building.

The remaining two engines in this flexible group are in a building designated as the Z building because the engines are model Z-330 Cooper engines. EU017 (Z330 COMPRESSOR ENGINE Unit #4) and EU018 (Z330 COMPRESSOR ENGINE Unit #5) were installed in 1972 and at that time all natural gas fired engines were exempt from the requirement to obtain a permit to install but, per R 336.1818 *Emission Limitations for Stationary Internal Combustion Engines*, became subject to new regulations. To comply with Rule 818, Unit #4 was modified in 2008 and Unit #5 was modified in 2009. The permit required records of natural gas consumption for each emission unit listed in FGENGINEs are attached. See FGRULE818ENGINEs below regarding compliance with Rule 818.

#### **FGENGINEsR1-2.**

**NOTE:** EUENGINE1 and EUENGINE2 (FGENGINEsR1-2) are the engines that drive the refrigeration plant process. The refrigeration plant engines have multiple names which are cross referenced as follows:

EUENGINE1 = EN100A = engine train A - Unit 7,

EUENGINE2 = EN100B = engine train B - Unit 8.

#### **Background:**

FGENGINEsR1-2 consists of two 1,480 HP natural gas-fired 4-cycle lean-burn reciprocating internal combustion engines (RICE), each with a catalyst oxidation system operating at a minimum of 93% efficiency on CO oxidation. These engines are located in the refrigeration plant and are used to drive propane refrigerant compressors. Prior to the installation of the propane refrigeration plant, the typical pressure of the field gas varied from about 2,000 pounds per square inch (psi) to 700 psi. The propane refrigeration plant, permitted per PTI 155-06D, is designed to process field gas when withdrawal pressures are between 700 psi and 200 psi (low psi value corrected from previous report). At this low pressure range, the field gas was expected to contain more heavy hydrocarbons (C<sub>2</sub> to C<sub>9</sub>) than acceptable for pipeline quality natural gas. During very cold recent winters, the field pressure dropped to 250 psi. None of the forecasted heavy hydrocarbons appeared in significant concentrations within the field gas. If the heavy hydrocarbons do not reach significant concentrations at 200 psi then DTE may determine that the refrigeration plant is not needed and dismantle it. The refrigeration plant has only been operated on a limited basis.

Since January 2014, the engines have operated in January, February and March of 2014. The NO<sub>x</sub>, CO and VOC emissions totals were 13.56 tons, 0.83 tons and 15.48 tons respectively. These engines were not operating on the day of the inspection.

**FGRULE285(mm)**

Any emission unit that emits air contaminants and is exempt from the requirements of Rule 201 pursuant to Rules 278 and R285(mm). R285(mm) requires reporting only if the venting of natural gas is greater than 1,000,000 standard cubic feet per event. DTE notified the AQD of four subject natural gas releases from January 2014 through April 14, 2016, which appears to demonstrate compliance with the reporting requirements.

**FGRULE290**

This flexible group consists of EULSTANK5, EUPIGTANK and EUSUMPTANK. EULSTANK5 contains hydrocarbon condensate liquids from the Belle River Road Estate Vertical Separator, the Field Slug Catcher, three GMVC Engine Scrubbers, the North Field Filter-Separator, the South Field Filter-Separator, the Turbine Filter-Separator, and the Dehydration Unit Filter-Separator.

EUPIGTANK receives hydrocarbon condensate liquids from the four Z330 Engine Scrubbers, the Vector Pipeline Filter-Separator and hydrocarbon condensate liquids generated during the "pigging" of natural gas transport lines.

EUSUMPTANK received brine from the storage fields.

Per the attached DTE Rule 290 demonstration, emissions from the sump tank appear to be in compliance with Rule 290.

**FGRULE818ENGINES**

The EU017 and EU018 emission units are the two Z330 engines (Unit #4 and Unit #5) described in FGENGINEs above. These engines are fired only with pipeline quality natural gas and have been retrofitted per PTI 165-07. The emission tests conducted September 2011 indicate compliance with the permitted limits. The most recent emissions test were conducted on August 6 and 7, 2014. Test report data appears to indicate compliance with emission limits. The final report is pending submittal to the AQD.

It is important to note that the VOC emission limits were accidentally omitted in the MI-ROP-B6478-2010 renewal. The omission of VOC emission limits was not detected during the multiple reviews before the renewal was issued. Due to this omission, the AQD did not detect the missing VOC limit and did not require DTE to test for VOC emissions during the 2014 stack test. DTE has previously demonstrated compliance with NO<sub>x</sub>, CO and VOC. Therefore, the AQD does not plan to cite DTE for this testing deficiency. DTE has planned emission testing to occur during the summer of 2016.

**FGTURBINES1-2**

**PTI No. 32-15**

**FGTURBINES**

This flexible group consists of EUTURBINE1, EUTURBINET70 and EUTURBINEC50. EUTURBINE1 was initially approved for installation per PTI 155-06D, which also approved the installation of EUTURBINE2. EUTURBINE2 was not installed within 18 months of the permit approval date and therefore the authorization to install had lapsed per R 336.3201(4).

During my inspection of the turbine building, EUTURBINE1 was operating. I also observed that the concrete floor had been modified since my previous inspection. The concrete floor was modified to receive EUTURBINET70 and EUTURBINEC50. EUTURBINET70 and EUTURBINEC50 were not yet on site.

Per my telephone conversation with Ms. Rynne on April 11, 2016, the whole Belle River Mills Compressor Station (BRM) facility was shut down during the second week of April 2016 to conduct the necessary utility modifications needed to install EUTURBINET70 and EUTURBINEC50. The BRM facility is scheduled to return to nominal operation around the end of April 2016. EUTURBINET70 and EUTURBINEC50 are expected to be on site during the month of May 2016.

The permittee appeared to be in compliance with material usage limit of only burning natural gas. There is no permit limit on the amount of natural gas that can be burned.

**FGBOILERS**

The FGBOILERS flexible group table was added to the 2016 permit renewal due to the promulgation and applicability of 40 CFR Part 63 Subpart DDDDD (Subpart 5D), which applies to industrial, commercial, and institutional boilers and process heaters. The following is a list of the emission units in FGBOILERS according to heat input categories:

*Less than 5 MMBtu/hr:* EUREFRIGPLTBLR  
EUZBLDGBLR  
EUAUXBLDGBLR  
EUPLT3BLR  
EUPLT1BLR  
EUTECHBLDGBLR  
EUBATHHTR

*Equal to or greater than 5  
MMBtu/hr and less than 10  
MMBtu/hr:*

EUHMOHEATER  
EUNUGHTR  
EUSUGHTR  
EU24LINEHTR

*Equal to or greater than 10*

MMBtu/hr:

EUE36LINEHTR

EUW36LINEHTR

The applicable sections of Subpart 5D require a tune-up and energy assessment. DTE provided documents that appear to demonstrate compliance with the one-time energy assessment and initial tune-up requirements.

## CONCLUSION

Per observations during the field inspection and a records review, with the exception of temperature sensing device calibration addressed in EUEDEHY, and VOC emission testing addressed in FGRULE818ENGINES above, this source appears to be in compliance with the evaluated permit conditions. The AQD has decided not to cite the permittee for the aforementioned deviations. A repeat of either of these deviations may result in the issuance of a violation notice.

NAME

Robert J. Hunsicker

DATE

4/15/2016

SUPERVISOR

CJE