

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N178425552

FACILITY: ADA COGENERATION LIMITED PARTNERSHIP		SRN / ID: N1784
LOCATION: 7575 FULTON STREET EAST, ADA		DISTRICT: Grand Rapids
CITY: ADA		COUNTY: KENT
CONTACT: Buck Surratt , Facility Manager		ACTIVITY DATE: 06/18/2014
STAFF: Steve Lachance	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Unannounced Inspection/ FCE for '014; self-initiated based on ROP renewal		
RESOLVED COMPLAINTS:		

On June 18, 2014, SL conducted an unannounced, scheduled inspection of the Ada Cogeneration Limited Partnership facility located at 7575 Fulton Road, NE, Ada, Michigan. The purpose of the inspection was to determine the facility's compliance with Renewable Operating Permit (ROP) No. MI-ROP-N1784-2010. The facility was represented by Mr. Buck Surratt, Facility Manager and Mr. Andy Kurcharczyk, Operations and Maintenance Manager. This Full Compliance Evaluation incorporates all AQD compliance-related activities since the last inspection (May, 2013.) Results of these activities are summarized on the attached Full Compliance Evaluation Summary form.

Source Description

This facility, an electricity and steam cogeneration operation, is a separate stationary source located at the Access Business Group, LLC's (f.k.a. Amway Corporation's) manufacturing and administrative headquarters in Ada, Michigan. The cogeneration unit is owned and operated by Ada Cogeneration Limited Partnership. Less than 50% of the cogeneration plant steam is supplied to Access Business Group, LLC for their process, space heating and hot water requirements. All of the electricity produced is purchased by Consumer's Energy Company.

The cogeneration plant consists of a gas turbine-generator prime mover, a heat recovery system generator, a steam turbine-generator and a supplementary firing duct burner. While the equipment was originally permitted for firing fuel oil in addition to natural gas, the turbine and duct burner fire pipeline quality natural gas only. The equipment, as currently constructed, does not have the capability of firing oil.

Emissions of nitrogen oxides are controlled by water injection. Both fuel usage and water injection volumes are monitored, and a minimum water injection: fuel combusted ratio, as set during performance testing, is maintained.

Regulatory Analysis

The following is a general description and history of the source.

The stationary source is located in Kent County, which is currently designated by the U.S. Environmental Protection Agency (USEPA) as attainment/unclassified for all criteria pollutants.

The stationary source is subject to Title 40 of the Code of Federal Regulations (CFR), Part 70, because the potential to emit exceeds 100 tons of NO_x per year.

The stationary source is not considered a major source of Hazardous Air Pollutant (HAP) emissions because the potential to emit of any single HAP regulated by the Clean Air Act, Section 112 is less than 10 tons per year and the potential to emit of all HAPs combined is less than 25 tons per year. As such, the source is not subject to the Stationary Combustion Turbine National Emission Standard for Hazardous Air Pollutants (40 CFR 63, Subpart YYYYY).

At the time of New Source Review permit issuance, the stationary source was subject to Prevention of Significant Deterioration (PSD) (40 CFR 52.21) regulations, because this type of facility was included in the PSD named source category "fossil fuel-fired steam electric plants of more than 250 million Btus per hour of heat input" and the source has the potential to emit greater than 100 tons per year for nitrogen oxides. During the initial Permit to Install application process, the facility underwent Best Available Control Technology (BACT) review of the cogeneration unit, due to the PSD applicability for this source. The facility also underwent Air Quality Impact Analysis for each pollutant emitted in excess of the designated PSD significance levels. The pollutants requiring BACT review were nitrogen oxides, carbon monoxide and sulfur dioxide.

The stationary source is subject to the Standards of Performance for New Stationary Sources (i.e., New Source Performance Standards (NSPS)) for Stationary Gas Turbines promulgated in 40 CFR Part 60 Subparts A and GG. Certain requirements (emission limits for nitrogen oxides and sulfur dioxide, monitoring of sulfur and nitrogen content of fuels, and related fuel testing) have been streamlined, based on other, more stringent applicable requirements (i.e., BACT and use of pipeline quality natural gas). Streamlined requirements are identified in Table EUTURBINE of the ROP. Compliance with streamlined requirements shall be considered compliance for the subsumed requirements. However, any instance of non-compliance with the streamlined requirement shall not be automatically considered to be non-compliance with the subsumed requirements.

All required NSPS initial performance testing has been completed. Testing requirements in the ROP pertain to ongoing and future testing. The required testing for EUTURBINE and EUDUCTBURNER will be completed as part of the same tests, as EUDUCTBURNER does not operate independently of EUTURBINE. Compliance will be assessed based on comparison of the results with the emissions limits in EUTURBINE and FGENERGY, and continued recordkeeping of EUDUCTBURNER operations.

As discussed above, while the source equipment was originally permitted for the firing of oil in addition to natural gas, it cannot do so as currently constructed. Use of oil as a source fuel would require New Source Review. Conditions from the original Permit to Install pertaining exclusively to the use of fuel oil have not been carried forward in the current ROP.

The monitoring conditions contained in the ROP are necessary to demonstrate compliance with all applicable requirements and are consistent with the DEQ's "Procedure for Evaluating Periodic Monitoring Submittals."

The stationary source is not subject to the federal Compliance Assurance Monitoring (CAM) rule (40 CFR 64) because the emission limitations or standards for EUTURBINE meet the CAM exemption of a continuous compliance determination method. The continuous monitoring of water injection: fuel combustion was included in, and practically enforceable through, the facility's original ROP, effective March 1, 1999. Thus, EUTURBINE is exempt from further CAM requirements per 40 CFR 64.2(b)(1)(vi).

The facility is not subject to Acid Rain (Title IV) regulations or Michigan Air Pollution Control Rules, Part 8 (Emission Limitations and Prohibitions – Oxides of Nitrogen), since the nameplate capacity of the electrical generator is less than 25 megawatts.

COMPLIANCE EVALUATION

The field portion of the evaluation was completed on June 18, 2014. Weather conditions were humid, overcast and about 80 degrees F with sporadic heavy rainfall. No visible emissions were noted from the stack during this evaluation. SL arrived on-site at approximately 1:00 PM.

The inspection began with an introductory meeting with Mr. Surratt (Facility Manager.) SL conveyed his intention to conduct a compliance inspection, and requested certain records. These were provided by Mr. Kurcharczyk (O&M Manager), who also accompanied SL during the on-site observations.

Historically, most reported deviations pertain to start-up conditions, where water is not injected (per manufacturer's recommendation) until a specific phase of turbine operation, where-as NSPS, Subpart GG defines as excess emissions any period of operation where the water: fuel ratio does not meet a test-defined level. The facility also reports as deviations that portion of the startup period from the beginning of water injection until turbine operations stabilize at tested operating conditions. Each of these conditions is an unavoidable consequence of a turbine start. See A-GR-9828 for a more detailed discussion of how these periods of defined "excess emissions" occur, are reported, and are evaluated.

2012 Stack Testing established the following water: fuel injection rates. Compliance with these injection rates is required on an hourly basis:

Operational Scenario: NO_x (ppm) Water:Fuel Ratio

Full, w/ Duct Burner	<42	0.80
Full, w/o Duct Burner		0.82
Low, w/o Duct Burner		0.65
Low, w/ Duct Burner		0.60

These injection ratios must be maintained on an hourly basis in order to support compliance; and operators have targeted injection rates (per hour) slightly higher than these levels to assure compliance. See the attached "Ada Cogeneration NOx Hourly Log" as Attachment A. Note, the facility has also added audible alarms in the Control Room to help maintain hourly injection rates.

SL requested and received the following records and process information; each of these supports compliant operation of the facility with respect to MI-ROP-N1784-2010.

- **HOURLY LOGS of OPERATIONS (B) and WATER INJECTION RATIOS (C) for June 17, 2014**
- **MONTHLY and 12-MONTH ROLLING PERIOD SUMMARIES (D)**

SL requested these for the day of the inspection (6/18/14; partial and only through the last completed hour) and for the previous, complete day of operations (6/17/14.) SL spot-verified ratio calculations on the hand-written log and no problems were noted. The operator's target water: fuel injection rate (as noted on the lower left-hand portion of the hourly log template) is in excess of the required (stack-test derived) rate. Contents for the hour of the inspection are consistent with SL's Control Room observations. This raw data is condensed into a daily summary which is in turn the basis for the compilation of data on a monthly and 12-month rolling period (Attachment D). These latter reports incorporate the emission factors derived from the last stack test. SL verified cell contents and calculations.

Mr. Surratt also provided access to electronic summaries, in which daily operations data are compiled into monthly emissions estimates using stack test emission factors.

SL confirmed that these are in accordance with the requirements of Appendix 3 of the ROP.

SL compared these to reported values in MAERS, and found them to be consistent.

EUTURBINE EMISSION UNIT CONDITIONS

EMISSION LIMITS; *stack testing (historic and current) have demonstrated compliance with the NOx and CO limits.*

MATERIAL LIMITS; *Mr. Surratt confirmed that only pipeline quality natural gas is used.*

PROCESS/OPERATIONAL RESTRICTIONS; *the turbine's water injection is operated in accordance with written operational standards and at rates indicating compliance per stack tests.*

TESTING/SAMPLING; required testing per ROP and NSPS, Subpart GG has been completed. Testing was most recently completed in 2012, and future periodic compliance testing will be further required through the ROP renewal process.

MONITORING/RECORDKEEPING; the records requested, reviewed, and previously discussed fulfill these requirements. Specifically, water and fuel usage rates and ratios are continuously recorded and logged on an hourly basis; target injection rates are established per stack test results; and daily records are compiled for use in monthly and 12-month period records.

REPORTING; the facility fulfills these requirements.

STACK/VENT RESTRICTIONS; the stack appears to comply with these requirements.

OTHER REQUIREMENTS; the facility complies with NSPS, Subpart GG through historic testing, water injection, monitoring, recordkeeping, and reporting.

EUDUCTBURNER EMISSION UNIT CONDITIONS

The duct burner does not operate by itself; compliance with these terms is through compliance with the conditions for FGENERGY (which includes both the turbine and the duct burner.)

The possibility of this unit being subject to the "Boiler MACT" (40 CFR 63, Subpart JJJJJJ) was previously discussed. As an existing source at a minor source of HAPs, able to burn only natural gas, there are no emission limits from this rule. However, the boiler appears to be specifically exempted from this rule as a waste heat recovery boiler.

FGENERGY FLEXIBLE GROUP CONDITIONS

EMISSION LIMITS; compliance has been established per results of previous stack tests in combination with ongoing monitoring of operations per Appendix 3.

TESTING/SAMPLING; required testing has been completed; on-going periodic testing will re-establish water injection rates.

MONITORING/RECORDKEEPING; heat input, load, and operating hours are logged on an hourly basis, and records per Appendix 3 are maintained. (See discussions above.)

REPORTING; is completed in a timely manner. See above.

STACK/VENT RESTRICTIONS; the existing stack appears to meet these requirements.

SL observed current operating conditions;

"High Load" + Duct Burner; 29.3 MW electricity and steam production

Instantaneous water: fuel injection rate = 0.875

Hourly water: fuel injection rate = 0.870

Required water: fuel injection rate = 0.85

FGCOLDCLEANERS FLEXIBLE GROUP CONDITIONS; Operating instructions and the "DEQ Highlight Sticker" are posted. The unit uses Safety Kleen Premium Gold (mineral spirit) solvent; Mr. Kurcharczyk had previously provided a current MSDS for AQD review.

FGRULE290 FLEXIBLE GROUP CONDITIONS; Mr. Surratt reports that no such units are in service on-site.

EVALUATION SUMMARY

SL considers the facility to be in compliance with applicable air regulations at the time of the completion of this evaluation. This is based on successful and timely stack testing, demonstrating compliance with applicable emission limits while establishing required water: fuel injection rates; and subsequent maintenance of the required water injection rates. Moreover, the facility has minimized startup/shutdown conditions, during which most deviations/reportable "excess emissions" have historically been generated.

ATTACHMENTS:

A Ada Cogeneration NOx Hourly Log - June 18, 2014

B NOx Hourly Log - June 17, 2014

C June 2014 NOx Water Gas Ratios

D Monthly Emissions Summary (Current)

NAME



DATE

6/28/14
7/9/14

SUPERVISOR



(minor correction) SL