

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

N652628317

FACILITY: CMS Generation, Livingston Generating Station		SRN / ID: N6526
LOCATION: 155 N. Townline Road, GAYLORD		DISTRICT: Gaylord
CITY: GAYLORD		COUNTY: OTSEGO
CONTACT: Steve Ellison , Plant Operator		ACTIVITY DATE: 12/18/2014
STAFF: Gloria Torello	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: 2015 Site Inspection.		
RESOLVED COMPLAINTS:		

**Directions.** The facility is located in Otsego County, Livingston Township. From M-32 turn north onto North Townline Road, the facility is about ¼ mile north on the east side of the road.

**Application.** This facility is an electricity producing "peaking plant," meaning it operates mainly for short periods at "peak load" when demand for electricity is high. The facility contains four Dresser-Rand natural gas fired turbine units, with two engines each, driving electric generators. The turbine units are rated at 39 MW each. Water injection is used for NOx control.

**Permit.** On January 28, 2014 the AQD issued MI-ROP-N5626-2014. The ROP expires on January 28, 2019. The permit includes the four turbine units.

The facility does not have a CEMs system; instead the facility uses a Data Acquisition System (DAS) (also known as a Presumptive Emission Monitoring, PEM) to continuously monitor load levels of each turbine. The DAS, recorded via an Excell spreadsheet, interpolates the hourly average emissions of NOx and CO using equations derived from the applicable correlation curves, and calculates the lbs/hr and 12-month rolling tons/year emission rates to show compliance with permit emission limits.

The DAS continuously calculates the ratio of fuel burned in the turbines with water injected into them. The water is injected to reduce temperatures, thereby reducing the formation of nitrogen oxides. Keeping the proper ratio of fuel to water gives a reasonable assurance that nitrogen oxide emissions will remain within acceptable limits.

**Continuous Compliance Plan.** The Continuous Compliance Plan needs to be updated. The MI-ROP-N6526-2014, FGCOMBTURB, condition IX.1 requires a Continuous Compliance Plan. The plan was approved by the AQD on January 22, 2011. However, condition IX.1. requires the plan to be updated following each emission test. The last emission test results were submitted to AQD on September 6, 2012. AQD will request the permittee update the Continuous Compliance Plan.

**MAERS.** The 2014 MAERS included the four DRESSER RAND Turbines. The 2014 MAERS reported source total NOx emissions of 7.0 tons (224 tpy permitted), and CO emissions of 7.3 tons (224 tpy permitted). The 2014 MAERS used PEM as the emission basis for CO and NOx, and used MAERS emission factors for PM and VOC.

**Records.** AQD requested records to show compliance with the permit. The permittee supplied records including:

- Fuel and water injection flows by volume for each turbine,
- Water to Fuel ratio by volume for each turbine,
- Hours of operation of each combustion turbine unit for each calendar month,
- Calculation of the annual capacity factor for the facility,
- Natural gas usage on an hourly and monthly basis,
- Operating load with the associated water to fuel ratio,
- Calculations of NOx and CO emission on an hourly, monthly and 12-month rolling time period basis,
- Documentation that natural gas is burned, and
- Documentation of continuous monitoring of fuel consumption and of the ratio of water to fuel,
- Gas Certificate of Analysis.

**MACTS.** The combustion turbine engines are not subject to a MACT. The engines are subject to the:

- 40 CFR Part 60 Subpart GG Standards of Performance for Stationary Gas Turbines,
- Federal Acid Rain program promulgated in 40 CFR, Part 72,

- Clean Air Interstate Rule NO<sub>x</sub> annual trading program pursuant to Rules 802a, 803, 821, and 830 through 834/ CSAPR,
- Clean Air Interstate Rule NO<sub>x</sub> ozone season trading program pursuant to Rules 802a, 803 and 821 through 826,
- Clean Air Interstate Rule SO<sub>2</sub> annual trading program pursuant to Rule 420,
- Federal Compliance Assurance Monitoring (CAM) rule under 40 CFR, Part 64, for their nitrogen oxides limit in parts per million.

## MACES.

Facility information was reviewed and is up to date.

Regulatory Info includes:

EPA Class major, Fee Category 1. CMS is checked.

Regulatory Summary:

- NO<sub>x</sub> and CO are marked major; HAPs, Sox, Pb, PM, and VOC are marked minor.

Subject to:

- 40 CFR Part 60 Subpart GG,
- Permit (ROP) Title V.

Brochure: The inspection brochure will be forwarded to the permittee with the site inspection notes via email.

Compliance. A review of AQD files and MACES report generator show no outstanding violation.

Inspection. Mr. Steve Ellison, Plant Operator, met Gloria Torello, AQD, at the site during the site visit. The plant was not operating. Steve said the facility did not run much this past year. It was a cool summer and electricity from the plant was not needed. With the fluctuating cost of gas, the facility has not been starting the engines on a regular basis. Torello walked through the facility. One of the engines was down for maintenance. Records were requested and were submitted.

MI-ROP-N6526-2014. Permit Conditions: FGCOMBTURB

### I. EMISSION LIMIT(S)

I. 1,2,4, and 5. Testing in 2012 demonstrated each turbine has:

- NO<sub>x</sub> emissions below the 75 ppmvd at 15% O<sub>2</sub>, and below 624.0 #/hour; and
- CO emissions below the 0.48 #/million BTU, and 844.0 #/hour.

I.3 and 6. The 2014 MAERS reported source total NO<sub>x</sub> emissions of 7.0 tons (224 tpy permitted), and CO emissions of 7.3 tons (224 tpy permitted).

### III. PROCESS/OPERATIONAL RESTRICTION(S)

1. Only natural gas is burned in the turbines. A fuel analysis was provided.
2. Records from November 2014 show no unit approached 500 hours of operation in a 12-month rolling time period.
3. A screen shot shows the units operate at the water to fuel ratio established during testing.

### IV. DESIGN/EQUIPMENT PARAMETER(S)

- 1 & 2. The four combustion turbine units are equipped with a working water injection system, and a continuous monitoring system to monitor and record fuel consumption and water to fuel ratio. Alarms go off if a limit is not met.

**V. TESTING/SAMPLING**

1. & 2. Testing in 2012 demonstrated each turbine in compliance with the NOx limits in pmvd and #/hour; and CO emission limits in #/million BTU and #/hour. During testing the water to fuel ratio for NOx and CO emissions was established. The next test is needed in 2017.

**VI. MONITORING/RECORDKEEPING.**

1. The continuous monitoring and recording of the fuel and water injection flows is found on the screen shot, and on the End of Run Report.
2. The permittee continuously calculates and record the water to fuel ratio, by volume, for each combustion turbine unit, as seen in the records.
3. On the End of Month Report is recorded the hours of operation of each combustion turbine unit for each calendar month.
4. The permittee calculates the annual capacity factor for the facility for each calendar year. Records show a YTD capacity factor of 1.3%.
5. On the monthly End of Month Report is recorded the natural gas usage on and monthly basis for each combustion turbine unit. On the hourly Average Data Sheet is recorded the natural gas usage on an hourly basis. There is not a permit limit on natural gas usage.
6. See the screen shot for a record of continuous monitoring and recording of water to fuel ratio. Review of the record shows the set points are aligned with the stack testing results.
7. Records were provided of calculations of the NOx and CO emissions on an hourly, monthly, and 12 month basis.
8. A fuel analysis was provided.
9. 9-13. A review of records for CAM shows there was no excursion/exceedance, or monitor down time.

**VII. REPORTING**

The permittee is prompt in submitting required reports. No deviations were reported for the facility in the past year. The permittee chooses to submit the CAM report on a quarterly basis vs. the permitted semiannual basis.

When testing, the permittee has complied with deadlines for submitting plans, notifications, and results.

**VIII. STACK/VENT RESTRICTION(S)**

The stacks have not been modified and were permitted to be 250.8 x 145.2 inches maximum diameter, and 39 feet minimum above ground.

**IX. OTHER REQUIREMENT(S)**

1. The continuous compliance plan needs to be updated to include information from the 2012 testing.
- 2-9 Torello spoke with Brian Carely, AQD, to discuss compliance with the Acid Rain and CAIR permits. The AQD is responsible for writing the Acid Rain and CAIR permits, Brian Carely is the permit writer and contact for both. CAIR expired in December 2014 and was replaced with CSAPR. Field staff will await AQD's Tracy McDonald and Brian Carely's directive on how to proceed with the existing ROP containing CAIR conditions and implementation of CSAPR. Once MI AQD writes the acid rain permit, the permittee is responsible to work the US EPA for compliance.

10-11. In January 2015 the facility sent AQD the 2014 4<sup>th</sup> quarter CAM report. There was no activity that triggered CAM. At the ROP renewal process the CAM plan will need to be reviewed, and updated if needed.

12. There is no information in the file indicating the permittee is not complying Standards of Performance for Stationary Gas Turbines, Subparts A and GG.

Conclusions. The Continuous Compliance Plan needs to be updated, AQD staff will contact the permittee and set up a timeline to submit the updated plan. Based upon the site inspection and the information above, it is determined the permittee is in compliance with the conditions of permit MI-ROP-N6526-2014.

NAME Gloria Inello

DATE 4-16-15

SUPERVISOR 