

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

N357034981

FACILITY: GENESEE POWER STATION LIMITED PARTNERSHIP		SRN / ID: N3570
LOCATION: G 5310 NORTH DORT HIGHWAY, FLINT		DISTRICT: Lansing
CITY: FLINT		COUNTY: GENESEE
CONTACT: Mitch Hefner , EHS Coordinator		ACTIVITY DATE: 05/18/2016
STAFF: Julie Brunner	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Self-initiated partial inspection in coordination with an observation of a stack test for Genesee Power Station (ROP No. MI-ROP-N3570-2012)		
RESOLVED COMPLAINTS:		

On May 18, 2016, I conducted a self-initiated partial inspection in coordination with an observation of a stack test for Genesee Power Station (N3570). This facility was last inspected on July 28, 2015. The testing is required by ROP No. MI-ROP-N3570-2012 and 40 CFR 63, Subpart DDDDD. The testing of EU-BOILER was for mercury (Hg), particulate matter (PM), and hydrogen chloride (HCl). The test plan was approved on May 3, 2016.

Emission unit description for EUBOILER:

EU-BOILER	The 35 MW electric generation group consists of the wood waste boiler, a selective non-catalytic reduction (SNCR) system, a mechanical multi-cyclone separator (MMS), and an electrostatic precipitator (ESP). The boiler has a spreader-stoker design and is rated at 523 MMBtu/hr, and able to produce 345,000 pounds steam/hr.
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Contacts:

Mr. Mitch Hefner, Genesee Power Station, Environmental Health & Safety Coordinator, phone: 810-785-4144, Mitchell.hefner@cmsenergy.com

Mr. Ken Desjardins, Genesee Power Station, General Manager, phone: 810-785-4144, ext 222, ken.desjardins@cmsenergy.com

Other Personnel On-site:

Mr. Mark Fletcher, CMS Energy Enterprises, Director - Environmental Health & Safety, phone: 313-336-4673, Mark.fletcher@cmsenergy.com

Ms. Tammy Vantil, environmental consultant, tvantil@comcast.net

Stack Testers:

Mr. Derek Wong, PhD, P.E., Bureau Veritas, Director & VP, phone: 248-344-2669, derek.wong@us.bureauveritas.com

Mr. Brian Young, Bureau Veritas, Senior Project Manager, phone: 248-344-3020, brian.young@us.bureauveritas.com

Lee and two personnel on the stack.

DEQ-AQD Personnel:

Ms. Julie Brunner, Inspector, Lansing District Office, phone: 517-284-6789, brunnerj1@michigan.gov

Mr. Dave Patterson, TPU, Lansing Central Office, phone: 517-284-6782, pattersond2@michigan.gov

Facility Description:

Genesee Power Station is a 35 Megawatt (MW) power plant consisting of one spreader-stoker boiler rated at 523 MMBtu/hr. The boiler is permitted to fire natural gas for start-up, wood-waste, animal bedding (which is no longer used), and tire derived fuel (TDF). The power plant is owned and operated by Consumers Energy (CMS).

The fuel for the boiler is stored uncovered on the ground over seven (7) acres with a six-foot deep clay liner. Bulldozers are used to move the pile of fuel to be processed and fed to the boiler.

The power plant is located in the Dort Carpenter Industrial Park, Genesee Township, Flint. The industrial park is joined by commercial and industrial property at its western boundary. To the north and east is agricultural and residential property. On the southern boundary begins the City of Flint which is urban residential.

Regulatory Overview:

Genesee Power (GP) is a major source of nitrogen oxides (NOx), carbon monoxide (CO), and hazardous air pollutants (HAPs). It is considered a major 40 CFR 70 source and is operating per the conditions contained in Renewable Operational Permit (ROP) No. MI-ROP-N3570-2012. This ROP was issued on August 24, 2012 and expires on August 24, 2017. An administratively complete ROP Renewal Application is due between February 24, 2016 and February 24, 2017.

EU-BOILER at the stationary source is subject to the National Emission Standard for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters promulgated in 40 CFR 63, Subpart DDDDD as an existing source. The source was conducting stack testing for emissions of particulate matter (PM), mercury (Hg) and hydrogen chloride (HCl) for the first time to demonstrate compliance with the Boiler MACT. The effective date of the regulation was January 31, 2016. Testing is required to be completed by July 29, 2016.

MAERS:

The facility reports to MAERS. It is considered a Category I source and is fee subject. The 2015 MAERS reporting was audited and the following emissions were reported for EU-BOILER:

CO – 128.50 tpy

NOx - 119.80 tpy

Sulfur dioxide (SO₂) - 25.60 tpy

Particulate matter ≤ 10 microns (PM10) – 48.08 tpy

Particulate matter ≤ 2.5 microns (PM2.5) – 39.96 tpy

Volatile organic compounds (VOC) – 7.6 tpy

Inspection:

I arrived at 9:30 AM. The weather conditions were sunny with a temperature of ~60°F. A small amount of odor from the back gate where the wood fuel pile is located was identified, and no opacity was observed from the stack off-site.

I then proceeded to the front drive and meet Dave Patterson (AQD-TPU) in the parking lot of the administration building.

I met with Ken Desjardins, Mitch Hefner, and Dennis (GP staffer) to discuss the purpose of my visit. I gave a brief overview of the inspection process with an "Environmental Inspections" brochure given to Mitch before heading to the testing trailer.

Testing was underway. Tammy Vantil and Bureau Veritas staff were in the testing trailer. Tammy is a consultant brought in for all things Boiler MACT related. The first test run started at 8:00 AM. PM and Hg were being tested. A port change was planned so the first run was expected to finish at 10:10 AM. The test runs were 2-hour in duration to get a large enough volume of sample for Hg. Lee was monitoring the test parameters. Sample train setup and sample recovery was in trailer, and two (2) testers were on the stack with the probes. Brian Young had the sample recovery (wet lab) with Method 29 procedures outlined and posted on the wall. It takes 1 – 2 hours to rinse and collect samples after the run. The samples are sent to the lab for analysis and it takes 15 days to get results.

Testing was being conducted with the boiler at a full load of 35 megawatt (MW) and steam load was being monitored. The fuel was 100% wood which is worse-case for HCl according to Tammy. (The facility does run a percentage of TDF mixed with the wood, but apparently the TDF can act as a sorbent when mixed with wood.) Communication between the boiler control room and testing staff for the start and stop of each test run was occurring.

From the testing trailer, Mitch, Tammy and I went first to the continuous emission monitoring system (CEMS)

room. The CEMS were installed in 2010 replacing a previous system. The CEMS measures NO_x, SO₂, and flow per Part 75, and CO and opacity per Part 60.

At 10:06 AM, the instantaneous readings from the CEMS were as follows:

Opacity – 1.2% to 1.4%

CO – 264 ppm to 451 ppm (this number varies a lot)

SO₂ – 14.63 ppm

NO_x – 105.6 ppm

Genesee Power is a dispatch plant. The power plant is on all the time but dispatched at either 10 MW or 35 MW depending on demand. Outages are scheduled twice a year in the spring and in the fall. Last year, the boiler was off-line for 85 days for a turbine upgrade.

When called on, the plant has approximately one (1) hour (minimum of two (2) hours to stabilize) to get up to load. When brought up, the boiler generally stays up for 8 hours (or 4 – 6 hours). A dispatch plant is rare (based on the power purchase agreement), but CMS has a few.

The fuel yard is clay-lined, 5 to 7-acres and is a two-pile system. The stack out pile is the in-coming wood fuel, and the feed pile is the oldest pile. A road divides the two piles. The facility moves the stack out pile to the feed pile within 48-hours to minimize odors. The piles are moved with dozers. The wood piles feed to the clarification building where large chunks of wood are screened out. The large chunks go down a chute, are piled, and a grinder is bought in later.

Mid-Michigan Recycling (MMR) provides the fuel. (They have staff on-site.) MMR gets waste-wood from Livonia and other mid-Michigan collection centers where utilities and residents can bring in brush and tree trimmings to the MMR yards.

Beside the wood piles is a TDF bunker. A backhoe is used to feed a hopper which feeds / blends 2% tire chips with the wood. The system automatically shuts down when the 20 tons per calendar day permit limit is reached. The TDF is pre-sized and contains some sidewall wires. Not all metal can be removed from the tires in processing. The TDF has a higher Btu content than wood, and will cause spikes in CO. So the feed rate of TDF is closely controlled / monitored.

The bottom ash (wet), and fly ash from the ESP and multi-clone ash are removed from the boiler and go to separate bunkers. They are then moved to a separate covered storage building where all ash is mixed. If the ash gets dry it becomes concrete like. A waste hauler comes on Tuesday to empty the ash out of the building by Thursday.

The boiler is a shaker-stoker where wood is feed from the top at the end of the boiler, and air is added to feed the combustion process. A shaker screen moves off the ash that falls to the bottom. CO spikes when the screen is shaking. The boiler actually hangs from the ceiling. This is to allow for expansion in the boiler due to heat. Two (2) steam turbines used to generate electricity are located right across from the boiler.

In the control room, three (3) operators were overseeing the boiler operations. There was a controls operator, a fuel operator, and a yard operator. Mark Fletcher (CMS) was in the control room. He consults with Mitch on environmental issues for the facility and covers six to seven CMS facilities.

A screen shot of the operations screen was obtained showing stack flow, load, boiler operating parameters, CEMS output, and calculations. There are red alarms/alerts for high values.

At 11:15 am, the following values were recorded:

Opacity – 1.2% (6-minute average)

SO₂ – 15.5 lb/hr (1-hr block average)

I also obtained the June 17, 2016 daily operating report for NO_x, CO, SO₂, and opacity. The daily reports are run from midnight to midnight. The following 24-hour rolling averages for June 17, 2016 were calculated by the monitoring system:

Pollutant	Monitor Results	Permit Limit
NOx	0.176 lb/MMBtu	0.20 lb/MMBtu
NOx	34.9 lb/hr	104.6 lb/hr
CO	0.236 lb/MMBtu	0.35 lb/MMBtu
CO	44.3 lb/hr	183.1 lb/hr
SO ₂	9.1 lb/hr	35.4 lb/hr
Opacity	1.9%	10%

For opacity and flow, new monitors were installed last year. Monitoring Solutions is the Data Acquisition System (DAS) provider. They also QA/QC the data before it goes to the Clean Air Markets Division (CAMD).

At a recent outage, the opacity meter was taken down re-calibrated and reinstalled.

- Ports were fixed.
- An annual clear stack was performed.

Run #2 started at 10:55 AM (announced over the radio to control room). During the 2nd test run, I observed the two (2) people on the stack testing platform moving the probe (getting flows) during the test. In the testing trailer, the 2nd run was going well. The testing of EUBOILER appeared to be preceding according to the approved test plans. Complete PM, Hg, and HCl test results won't be available until after the lab analysis. All stack test results will be submitted and reviewed at a later time.

A brief meeting was held with Mitch, Ken, Mark, and Tammy before I left the facility. I did not identify any compliance issues and the operations looked good. We also briefly discussed submittal of the ROP Renewal application. The application will probably not be submitted until September after the Boiler MACT testing is completed.

I left the facility at 12:26 PM.

Summary:

The facility appeared to be in compliance with the applicable rules and regulations, and ROP No. MI-ROP-N3570-2012.

NAME Julie P. Brown

DATE 4/27/16

SUPERVISOR [Signature]