

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

K246022302

FACILITY: Central Michigan University		SRN / ID: K2460
LOCATION: 1720 S. East Campus Drive, MOUNT PLEASNT		DISTRICT: Saginaw Bay
CITY: MOUNT PLEASNT		COUNTY: ISABELLA
CONTACT: Michael Walton , Director, Energy & Utilities		ACTIVITY DATE: 08/14/2013
STAFF: Sharon LeBlanc	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled site inspection-Facility in process of preparing ROP Renewal Application. sgl		
RESOLVED COMPLAINTS:		

Wednesday, August 14, 2013, S. LeBlanc arrived onsite to conduct a scheduled site inspection at the Central Michigan University (CMU) Power Plant (SRN K2460). The referenced facility is 1720 South East Campus Dr., Mount Pleasant Isabella County, Michigan. The facility operates under Renewable Operating Permit (ROP) No. Mi-ROP-K2460-2009 which was issued on June 2, 2009.

At the time of the inspection one permit modification had been approved for 69-13 (May 29, 2013), and finalization of second permit modification for (No.102-13) was anticipated to be completed that week. This later permit modification was finalized on August 15, 2013. M-001 and C-001 forms to incorporate as modifications of the ROP were received office on July 9, 2013 and September 12, 2013, respectively.

Mr. John Fernandez, Supervisor of Utility Operations and Mr. Michael Walton, Director of Energy & Utilities provided a tour of the facility and provided copies of requested information for the facility.

FACILITY DESCRIPTION

CMU is a state owned university located in Mt. Pleasant, Isabella County, Michigan. Located adjacent to the campus is a mix of residential, commercial and municipal properties.

The CMU Power Plant is located at the south of the intersection of South East Campus Drive and East Preston Street, and approximately 1 block west of Mission Street (AKA Business U.S. Hwy 127). The Power Plant provides steam for heat and electricity for the approximately 350 acre CMU Campus.

Historically, the first power plant for the university was constructed in 1892 where "terminal park" is now located. A second plant was constructed at what is now west hall and was replaced in 1961 by the present plant. At the time of initial construction the present power plant housed the two Natural Gas (NG) Wickes Boilers. The building was expanded as power needs grew and new equipment was added.

Emission Units identified in the ROP for the facility include:

- EU-BLR1 – Boiler #1, a 75K lb/hr (90 MMBTU/Hr) Wickes Steam Boiler
- EU-BLR2 – Boiler #2, a 75K lb/hr (90 MMBTU/Hr) Wickes Steam Boiler

The above two boilers can operate on NG, fuel oil or propane, and are reported to provide steam for campus heat. The two referenced units are also identified as FG-BLRS-1&2 as well as FG-POWERPLANT. The two referenced boilers act as backup to the main boiler (either EU-BLR4 or EU-BLR5).

- EU-BLR4 – Boiler #4, a 50K lb/hr (68.5 MMBTU/Hr) Wood boiler for campus heat and electricity
- EU-BLR5 – Boiler #5, a 100K lb/hr (117 MMBTU/Hr) boiler that acts as a waste heat boiler.
- EU-GASTURBINE – a 3,130 KW output (40MMBTU/HR input) Turbine for campus electricity.

Note the above three units are identified as part of FG-POWERPLANT. EU-BLR4 had operated until mid-December 2012 as the principal boiler for the university. At that time it was shut down and replaced by

EU-BLR5 as the principal boiler for the university. EU-BLR4 had been operated continuously and was fueled wood chips delivered to the facility by truck. Facility staff during previous inspections reported that the moisture content of the material ranges from 30-55 percent.

Boiler No. 3 was a summer boiler, operated at one time at the facility. But the boiler has been removed.

EU-BLR5 and EU-GASTURBINE had not been operated for a number of years due to inexpensive electricity costs. With rising electricity costs the facility brought the equipment back to operational status in 2010 to allow for more economic flexibility. Saginaw Bay District had received written notification of refurbishment activities associated with the facilities gas turbine and heat recovery steam generator (August 10, 2010). Refurbishment activities for EU-BLR5 and EU-GASTURBINE were conducted summer through fall of 2010, and included replacement of an economizer, work on the controls (new interface had been installed 2 years ago) and work on the refractory. Testing and startup activities for the units were completed on November 1, 2010. CMU staff reported that the State Boiler Inspector had been onsite at the start-up to confirm that EU-BLR5 met requirements. No issues were identified, and the unit began operation. It should be noted that as part of recent permit modifications EU-BLR5 and EU-GASTURBINE are now permitted to fire only NG.

In addition to the five (5) emission units referenced above, the facility reports two (2) Rule 287(c) exempt processes. These include:

- EU-PAINTING (EU9PAINTBOOTH) and
- EU-PRINTING (EUPRINTSVC).

Permit exempt equipment associated with the site include:

- The Elliot steam turbine, which generates electricity from steam from EU-BLR4 and EU-GASTURBINE;
- Three centrifugal chillers (electric); and
- One absorption chiller (lithium bromide).

In addition to the EUs identified above, The 2012 MAERS submittal also identified:

- one emergency generator (EU12),
- Storage tanks (EU-7OILTANK) and
- One Reporting Group (RGCAMPUSGAS) which reports natural gas use for 12 buildings on campus (EU-14 through EU-17 and EU-19 through EU-26).

REGULATORY SUMMARY

The referenced facility is a Category I, Major Source. A review of ROP data indicates that the facility has the potential to emit 100 tons of Carbon Monoxide (CO) and NOx. The facility is not considered a major source for Hazardous Air Pollutants (HAPs) because the potential to emit any single HAP regulated by the Federal Clean Air Act, Section 112 is less than 10 tons/ year for a single and less than 25 tons/year for any combined HAPs. A review of the ROP for the facility identified a limit of individual HAPs of 8.9 TPY and Total HAPs of 22 TPY for the entire source. No specific HAPs limits were identified.

The facility is considered a "synthetic minor" with regards to Prevention of Significant Deterioration (PSD) as the source has accepted legally enforceable permit conditions limiting steam production rates.

The facility is a stationary source subject to the following Federal Regulations:

Part of 40 CFR	Subpart	Category	Emission Unit	Comment
60	A & Db	Industrial- Commercial Steam Generating Units	EU-BLR5	>100 MMBTU/Hr
60	AA & GG	Stationary Gas Turbines	EU-GASTURBINE	Peak Input of >10 MMBTU/Hr
63	JJJJJJ	Industrial, Commercial and Institutional Boilers	EU-BLR1 EU-BLR 2 EU-BLR4	Dual Fuel Dual Fuel Biomass Fuel,
63	ZZZZ	Reciprocating Internal Combustion Engines	EU-12	Emergency Generator

Note that due to the limited amount of information regarding the emergency generator at the time of report preparation, no determination with regards to applicability of NSPS requirements has been made.

In addition, due to the pollution control device associated with EU-BLR4 and pre-control emissions of the control device above major source threshold levels PM the facility is subject to the Federal Compliance Assurance Monitoring (CAM) rules under Title 40 CFR, Part 64.

COMPLIANCE HISTORY

Complaints- A review of MACES and District Files indicate that no complaints are of record since summer 2010.

Reporting- The 2011 and 2012 Michigan Air Emission Reports (MAERs) for the facility were received in a timely manner, and a review of the submittal did not identify any omissions or errors.

A violation Notice was issued on April 24, 2012 for failure to submit annual and semiannual reports and certifications for 2011. A response and the required documents were submitted to the District on April 27, 2012. 2012 semiannual reports and certifications were submitted by the facility in a timely manner.

Inspections- The most recent Full Compliance Evaluation/scheduled site inspection for the facility was conducted January 12, 2011, with VE Observations conducted on June 21, 2011. At the time of the inspection, District Staff determined that the facility was in general compliance with it's ROP. A Full Compliance Evaluation was completed as a result of the referenced inspection.

Consent Order- CMU was issued Final Consent Order AQD No. 21-2002. Under the referenced document the facility was required to submit progress reports with referenced to energy conservation, pollution prevention and waste minimization under paragraph 16C of the referenced document. A review of records indicated that the facility had submitted the referenced documents in a timely manner, the last document of record being submitted on December 21, 2012,

A request to terminate the referenced consent order was submitted by the facility on January 30, 2013, and the document terminated on March 4, 2013.

Other- On April 1, 2013, AQD District Staff received a request from the facility for particulate matter verification testing required under EU-BLR4 Special Condition V.1. The referenced condition required the testing of the emission unit at least one year prior to expiration of the ROP. The facility indicated that the unit had been shut down December 2012, and that at present the unit was on standby condition, however due to the present economics and they had no intention of restarting and operating the unit.

District Staff agreed to a permit modification requiring the time clock for retesting to be started upon startup of the unit. As previously indicated the change in permit condition was made under permit modification 69-13 (May 29, 2013), with ROP Modification forms submitted on July 9, 2013.

On June 20, 2013, AQD District Staff received verbal and written notification of non-compliance with ROP EU-BLR5 Special Condition III.1, which limits the operation "for all fuels fired in the waste heat boiler, without the turbine" to no more than 10%. CMU staff indicated that they had only been operating the emission unit in conjunction with the turbine, and therefore believed they were following the requirements of their permit. On June 18, 2013, a consultant working with the facility on their database/spreadsheets for the power plant brought it to their attention that the condition actually limited the annual capacity of the total fuel combusted in the waste heat boiler (including supplemental firing during turbine operation) to 10% of the annual capacity. The facility shut down the waste heat boiler immediately upon the news and began the process of determining the next action(s). Ultimately the facility submitted a permit modification application for PTI 102-13. The permit modification was approved on August 15, 2013, and added NOx emission limits and testing in lieu of the 10% annual fuel capacity limit.

COMPLIANCE EVALUATION

Since the previous FCE inspection conducted January 12, 2011, the operational status of a EUBLR#4 has changed and the unit is now considered in maintenance standby. As previously indicated, EU-BLR5 and EUGASTURBINE were refurbished summer-fall 2010, and operation initiated in November 2010. The two emission units will upon approval of modifications to PTI-102-13 be the principal power sources for the plant. The two wickes boilers (EU-BLR1 & 2) were being operated alternately at the time of the inspection as the principal power sources will become the backup power sources.

Operational Status – The power plant was operational at the time of inspection. EU-BLR1 & 2 were being operated alternately in lieu of EU-BLR5 as the principal source of heat at the time of the site inspection, though only EU-BLR1 was in operation at the time. The steam flow at the time of the inspection was approximately 17 K lb/hour. EU-GASTURBINE was also in operation at the time of the inspection and was reported to be operating at 18K lb/hr at the time of the inspection

Process/Operational restrictions for FG-POWERPLANT includes a restriction that the permittee shall not produce more than 175,000 lbs of steam per hour based on a 12, month rolling time period. CMU staff reported a 12-month rolling daily maximum steam production rate of 117,000 lbs of steam per hour on January 22, 2013, 8 AM, well below permit limits.

Process/Operational restrictions for EU-BLR5 under the ROP includes Special Condition III.1, which limits the operation "for all fuels fired in the waste heat boiler, without the turbine" to no more than 10%. As previously indicated on June 18, 2013, CMU staff notified the AQD District office that their consultant working with the facility on their database/spreadsheets for the power plant brought it to their attention that they were in violation of the referenced. Upon notification of the violation the facility shut down the waste heat boiler immediately. The facility submitted a permit modification application No. 102-13. The permit modification was approved on August 15, 2013, and added NOx emission limits and testing in lieu of the 10% annual fuel capacity limit. The violation/deviation was reported electronically on June 18, 2013, as well as in Semi-annual report and certifications. No exceedance of emission limits was reported to have occurred.

Material Usage – Material limits identified in the ROP for the facility include: daily fuel oil limits for EU-BLR5, hourly fuel oil limits for FG-BLRS-1&2, and quarterly fuel oil limits for FG-POWERPLANT. Based on information provided during previous site inspection the facility has not used No. 2 Oil for over 5 years. Fuel types reported to have been used since the January 12, 2011, inspection included:

Emission Unit	Fuel Type Used
EU-BLR1	Natural Gas
EU-BLR2	Natural Gas
EU-BLR4	Wood Chips
EU-BLR5	Natural Gas

EU-GASTURBINE	Natural Gas
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Fuel use was in compliance with the conditions of the ROP for the facility.

EU-PAINTING (EU9PAINTBOOTH) and EU-PRINTING (EUPRINTSVC), the maintenance spray booth and campus printing operations, respectively as previously indicated are Rule 287(c) exempt processes. Requirements associated with the referenced emission units include a material limit of 200 gallons per month. The referenced emission units reported monthly use volumes well below the material limit. The reported usage reported for 2011 and 2012 for the paint booth and printing emission units was consistent for each of the referenced years and reported to be approximately; 86 gallons of soy based ink and 18 gallons of urethane coating. CMU representatives reported that they have switched to a non-VOC ink for their printing operations.

Emission Points/Limits -- Potential sources of contaminants identified onsite consist of contaminants associated the previously referenced emission units. Fugitive dust that may be associated with road way traffic is minimal due to the paved roads.

Emission Limits identified in the ROP consist of particulate emissions for EU-BLR4 (Test Protocol), NOx and SO2 limits for EU-BLR5, NOx for EU-GASTURBINE, SO2 for FG-BLRS-1&2, and Source Wide Haps Emission Limits. With respect to the particulate emission for EU-BLR4, the facility modified the applicable PTI (69-13) to allow for testing within 90-days of being put back into operation.

EU-BLR5 has only operated on natural gas since it was start-up in November 2010. NOx and SO2 emission for EU-BLR5 are calculated using AP-42/Webfire emission factors for a gas fired unit. Total NOx and SO2 emissions were reported at 21.91 tons and 0.01 tons, respectively. Well below the 110 and 28.9 ton per year NOx and SO2 rolling totals for the respective contaminants.

EU-GASTURBINE Nox emissions are limited to 125 tons per year when firing natural gas. NOx emissions are calculated by the facility based on AP-42/Webfire emission factors, and reported annual NOx emissions of less than half the 12-month rolling limit of 125 ton per year.

SO2 emissions for FG-BLR 1 & 2 are limited to 1.11 lb/MBTU heat input on a monthly basis, and are based on the total amount of fuel oil burned per hour in both of the boilers and the sulfur content of the fuel. As the facility has not been burning fuel oil it would appear that the conditions are not applicable at this time.

With respect to HAPs emissions the facility maintains monthly and 12-month rolling emission totals for individual and combined HAPs. The facility maintains the records on an electronic spreadsheet using EPA Webfire emission factors. A quick review of individual and combined HAP emissions for the facility appeared to indicate that emissions were well below source wide limits and in compliance with the permit.

Visible Emission (VE) limits are part of the general conditions of the ROP as well as Special Conditions for EU-BLR#4 and EU-BLR#5. Certified facility staff visually monitors and records daily VE observations. A select number of completed log sheets were reviewed as part of the inspection. Documents reviewed showed general compliance with the ROP. No VEs were observed for EU-BLR1 or EU-GASTURBINE at the time of the inspection.

Equipment Maintenance – CMU Staff reported that the facility maintains logsheets of operational parameters as well as any startup, shutdown and malfunction information as required by permit. When operating, EU-BLR#4 and associated pollution control equipment were monitored and appropriate maintenance activities conducted, and recorded in a bound log book by on duty staff. During the inspection District Staff reiterated the importance of maintaining complete and detailed records to meet the permit conditions. CMU Staff indicated that their operators have been instructed to document/record all inspections and corrective actions.

Monitoring and Record Keeping – Monitoring and recording practices noted during the August 14, 2013 site inspection appeared to be consistent with requirements outlined in the ROP. Operational records

maintained by the facility are recorded by EU operators from control room panels, and the data is input into spreadsheets to meet permit requirements. Hard copies are kept on three ring binders by month, going to files after a year.

Monitoring requirements for EU-BLR4 consist of VE for opacity from the associate stack each operating day, continuous monitoring of the pressure drop across the multicyclone, wet scrubbers and bag house, as well as the water flow rate to the wet scrubber. The referenced data continuously measured with appropriate devices and are logged every 4 hours by operators. Records reviewed were in general compliance with permit conditions.

Monitoring requirements for EU-BLR5 for the referenced permit consist of NOx and SO2 emission totals monthly and 12 month rolling as well as monitoring, records of fuel volumes combusted on a daily basis and the 12-month rolling average annual capacity factor for the emission unit (calculated monthly). As of July 2013, the facility reported NOx and SO2 emissions totaling 21.91 tons and 9.41 pounds total for the 12-month rolling total, well under the 12-month rolling total of 110 tons per year and 28.9 tons per year, respectively. No CEMS appear to be required for this facility at this time.

Monitoring requirements for EU-GASTURBINE included sulfur content of fuel being fired in the emission unit, monthly and 12-month NOx calculation records, startup, shutdown or malfunction records for the emission unit. On May 11, 2011, DTE Energy Representatives collected samples to determine the sulfur content in percent by weight for the natural gas used at the facility. The samples collected were reported to have a sulfur content of 0.0005 weight %, which is well below the 0.8 percent by weight sulfur content limit for EU-GASTURBINE. As of July 2013, NOx emissions for EUGASTURBINE were reported to be 43.26 tons, well below the 125 ton per year 12-month rolling total. .

Monitoring for FG-BLRS-1&2 is limited to written records of total fuel oil burned per hour and monthly SO2 calculations when burning fuel oil. As previously noted, no fuel oil has been used for combustion at the powerplant for over 5 years.

Monitoring and recordkeeping requirements for FG-POWERPLANT includes written records of the amount of steam produced per hour, natural gas burned per calendar quarter, fuel oil burned per calendar quarter and written records of percent sulfur content and BTU contents for each fuel oil delivery. Natural gas consumption records were available for review. AQD District Staff also confirmed that records of amount of steam produced per hour were available. These records are maintained on handwritten logs, and are input to determine daily max and daily averages. As previously reported, fuel oil has not been used onsite in over 5 years.

EU-PAINTING (EU9PAINTBOOTH) and EU-PRINTING (EUPRINTSVC), the maintenance spray booth and campus printing operations, respectively as previously indicated are Rule 287(c) exempt processes. Requirements associated with the referenced emission units include the monthly records of volume of coating used, as applied minus water in gallons, as well as documentation of any filter replacements for exhaust systems serving coating spray equipment. As previously indicated the referenced emission units reported volumes well below the material limit. The reported usage reported for 2011 and 2012 for the paint booth and printing emission units was consistent for each of the referenced years and reported to be approximately; 86 gallons of soy based ink and 18 gallons of urethane coating. CMU representatives reported that they have switched to a non-VOC ink for their printing operations

Testing - Verification testing of particulate emission rates for EU-BLR4 are required by permit. As previously indicated, the unit had been shut down December 2012, and was on maintenance standby condition. District Staff agreed to a permit modification requiring the time clock for retesting to be started upon startup of the unit. As previously indicated the change in permit condition was made under permit modification 69-13 (May 29, 2013), with ROP Modification forms submitted on July 9, 2013.

It should be noted that some testing was conducted on September 15, 2004, by the facility, however, District Staff and TPU review found the document and testing activities to be unacceptable for compliance purposes.

Special Condition V.1 for EU-GASTURBINE specifies that following startup of the emission unit that the

District Supervisor may require verification testing for nitrogen oxide emission rates. No request has been made to date.

Reporting – ROP associated records requested were maintained onsite, and were provided at the time of request for review, with records for more extended time frames requested for review offsite. With the exception of events/dates noted in other sections, the records appeared to be consistent with requirements outlined in the ROP.

SUMMARY

Wednesday, August 14, 2013, S. LeBlanc arrived onsite to conduct a scheduled site inspection at the Central Michigan University (CMU) Power Plant (SRN K2460). The referenced facility is 1720 South East Campus Dr., Mount Pleasant Isabella County, Michigan. The facility operates under Renewable Operating Permit (ROP) No. Mi-ROP-K2460-2009 which was issued on June 2, 2009.

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Mr. John Fernandez, Supervisor of Utility Operations and Mr. Michael Walton, Director of Energy & Utilities provided a tour of the facility and provided copies of requested information for the facility.

Based on information obtained as part of the August 14, 2013 site inspection, as well as subsequent data reviewed for the facility it appears that the facility is operating in general compliance with it's ROP.

NAME Sharon LeBlanc

DATE 9/26/2013

SUPERVISOR C. Pine