

DEPARTMENT OF ENVIRONMENTAL QUALITY

AIR QUALITY DIVISION

FCE Summary Report

<b>Facility :</b> Consumers Energy D.E. Karn Facility	<b>SRN :</b> B2840
<b>Location :</b> 2742 N. Weadock Hwy.	<b>District :</b> Saginaw Bay
	<b>County :</b> BAY
<b>City :</b> ESSEXVILLE <b>State:</b> MI <b>Zip Code :</b> 48732	<b>Compliance Status :</b> Compliance
<b>Source Class :</b> MAJOR	<b>Staff :</b> Benjamin Witkopp
<b>FCE Begin Date :</b> 8/21/2017	<b>FCE Completion Date :</b> 8/21/2018
<b>Comments :</b> Facility operations and records are in order	

List of Partial Compliance Evaluations :

Activity Date	Activity Type	Compliance Status	Comments
08/21/2018	Scheduled Inspection	Compliance	Facility inspection and records review
05/31/2018	MACT (Part 63)	Compliance	Part 63 subpart UUUUU 1st Quarter MATS PM CEMS for Karn 1 & 2. Way below limit of 0.030 lb / MMBTU
05/31/2018	MAERS	Compliance	Submitted on time
03/30/2018	MACT (Part 63)	Compliance	Karn 1&2 MATS Semi Annual Compliance Report - no deviations.
03/30/2018	MACT (Part 63)	Compliance	Karn 3&4 MATS Semi Annual Compliance Report - no deviations
03/30/2018	ROP Annual Cert	Compliance	Karn 1 & 2. A 4q 2017 MATs report 1 day late. 8 times VE's not documented by spray dry absorber team in early January 2017 during transition from contractor to facility staff. Situation corrected. VN not warranted.
03/30/2018	ROP SEMI 2 CERT	Compliance	Karn 1 & 2. A 4q 2017 MATs report 1 day late. 8 times VE's not documented by spray dry absorber team in early January 2017 during transition from contractor to facility staff. Situation corrected. VN not warranted.
03/30/2018	CAM Excursions/Exceedances	Compliance	CAM excursions for Karn 1 & 2 - None, Monitor downtime previously reported on 10-30-17.

Activity Date	Activity Type	Compliance Status	Comments
03/30/2018	ROP SEMI 2 CERT	Compliance	Cert for Karn 3 & 4 for previously reported excess emissions in 2017. VN not warranted.
03/30/2018	ROP Annual Cert	Compliance	Cert for Karn 3 & 4 for previously reported excess emissions in 2017. VN not warranted.
03/30/2018	ROP SEMI 2 CERT	Compliance	Cert for Karn 3 & 4 for previously reported excess emissions in 2017. VN not warranted.
03/30/2018	CAM Excursions/Exceedances	Compliance	Fuel handling CAM excursions - none reported
03/30/2018	CAM monitor downtime	Compliance	Fuel handling monitor downtime - none reported
03/30/2018	ROP Annual Cert	Compliance	Combustion turbine - no deviations
03/30/2018	ROP SEMI 2 CERT	Compliance	Combustion gas turbine - no deviations
02/28/2018	Excess Emissions (CEM)	Compliance	Excess emissions report for opacity and SO <sub>2</sub> @ Karn 1 & 2 No excess emissions and minimal downtime due to QA/QC or other known causes.
02/28/2018	Excess Emissions (CEM)	Compliance	Excess emissions report for opacity, SO <sub>2</sub> , and NO <sub>x</sub> @ Karn 3 & 4 No excess emissions and minimal downtime due to malfunction or other known causes.
02/28/2018	MACT (Part 63)	Compliance	Part 63 subpart UUUUU (MATS) PM CEMS submittal to EPA. WAY below limit of 0.030 #/mmBTU

Activity Date	Activity Type	Compliance Status	Comments
02/08/2018	Telephone Notes		Voicemail from George Eurich at Consumers Karn Weadock: "Heads up – we have an issue with our Karn 1 Mercury CEMS umbilical. We lost a heater zone in it and we can't get it to temp. to perform an oxidizer cal. so it is affecting our QA/QC on the data. We have increased our ACI feed so as far as an emission limit problem, I'm not concerned about that, but we will end up having some significant monitor downtime this reporting period (I don't know if these are semi-annual for MATS or quarterly) but regardless wanted to give you the heads up that that's going on. Karen Kajiya-Mills and Tom Gasloli were notified also. We have requested that the manufacturer come in and fix it but they can't get here until at least the 19th and then we've got an outage on Karn 1 from the middle of March to the middle of April so that's really going to hurt us on our percentage of downtime but right now I think that's the only thing that's really looking ugly here."
12/19/2017	Stack Test	Compliance	Annual Relative Response Audit Stack Test PM results were extremely small in comparison to limits. CEMS response also all passed.
11/17/2017	Excess Emissions (CEM)	Compliance	Quarterly Excess Emission Reports for Opacity, SO <sub>2</sub> @ Karn 1 & 2. No excess emissions, Monitor downtime extremely small & due to QA/QC. Did have one blower issue for minimal time.
11/16/2017	Excess Emissions (CEM)	Compliance	Quarterly Excess Emission Reports for Opacity, SO <sub>2</sub> , NO <sub>x</sub> @ Karn 3&4. Opacity had small time of opacity issue due to near uncontrolled boiler swing. opac that was reported, SO <sub>2</sub> , and NO <sub>x</sub> had minimal or no excess emissions or downtime due to QA / QC

Activity Date	Activity Type	Compliance Status	Comments
09/18/2017	ROP Semi 1 Cert	Non Compliance	<p>The facility submitted the semi-annual cert for the first 6 months of 2017. Included in submittal package was deviation reports for Section 1 EUs of the ROP</p> <p>Deviations reported for Section 1 included missing a MATS report deadline by one day, and non-certified VE observation data recording for 8 days. The later was due to changes from contracted employees and company employees who were not familiar with the level of detail required. Both issues have been corrected.</p>
09/18/2017	CAM Excursions/Exceedances	Compliance	<p>The facility submitted the semi-annual cert for the first 6 months of 2017. Included in submittal package was deviation reports for Section 1 EUs of the ROP as well as CAM excursion/Exceedance Summary Reports for the Karn Plant (Section 1). These later reports indicated that no excursions or exceedances for the period had occurred. Note however, that the document indicated that various 6-minute averages of opacity were reported as part of the quarterly excess emission reports dated 4/27/2017 and 7/26/2017.</p> <p>During the first quarter of 2017, The opacity COMS for Karn #2 was reported to be down for 126 minutes (0.11% of operating time) over three days for the first quarter of 2017. The time was divided into 48 minutes for monitor equipment malfunction, 66 minutes for QA/QC Activities, and 12 minutes for other known causes.</p> <p>During the second quarter of 2017, the facility reported the COMS being down for both EUs for less than 0.1% of the total operating time for each unit. Karn #1 was reported down for a total of 36 minutes over two separate events. Karn #2 was reported down for a total of 114 minutes over 4 events.</p>

Activity Date	Activity Type	Compliance Status	Comments
09/18/2017	CAM monitor downtime	Non Compliance	<p>The facility submitted the semi-annual cert for the first 6 months of 2017. Included in submittal package was deviation reports for Section 1 EUs of the ROP as well as CAM excursion/Exceedance Summary Reports for the Karn Plant (Section 1). These later reports indicated that no excursions or exceedances for the period had occurred. Note however, that the CAM Monitor Downtime document indicated that various 6-minute averages of opacity were reported as part of the quarterly excess emission reports dated 4/27/2017 and 7/26/2017.</p> <p>During the first quarter of 2017, The opacity COMS for Karn #2 was reported to be down for 126 minutes (0.11% of operating time) over three days for the first quarter of 2017. The time was divided into 48 minutes for monitor equipment malfunction, 66 minutes for QA/QC Activities, and 12 minutes for other known causes.</p> <p>During the second quarter of 2017, the facility reported the COMS being down for both EUs for less than 0.1% of the total operating time for each unit. Karn #1 was reported down for a total of 36 minutes over two separate events. Karn #2 was reported down for a total of 114 minutes over 4 events. No other monitor downtime was reported for the EUs.</p>

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09/18/2017	ROP Semi 1 Cert	Non Compliance	<p>2017 First Quarterly Excess Emission reports for opacity, SO<sub>2</sub>, and NO<sub>x</sub> for Karn 3&amp;4. The referenced units have a combined stack, and are reported as KARN34. This most recent submittal indicated excess emissions with respect to opacity for the two units and referenced quarterly submittals dated 4/27/2017 and 7/26/2017. However, No opacity COMs downtime was reported for the first quarter.</p> <p>During the second quarter the opacity monitor (COM) for the units reported a total of 66 minutes of excess emissions (0.27% of operating time) over 4 events. Reasons for opacity exceedance events were reported to be predominantly due to adjusted boiler operating parameters. With respect to downtime, no downtime was reported for the COMS for the quarter.</p>
09/18/2017	ROP Semi 1 Cert	Non Compliance	<p>The semi-annual report for the first quarter of 2017, for Section 4 of the ROP, indicated that deviations with respect to EGCOALHAND-S4 had occurred on one date during the period. The deviation was reported to be one incomplete environmental check list round due to an oversight by the fuel handling department on June 28, 2017.</p>
09/18/2017	CAM Excursions/Exceedances	Compliance	<p>The CAM exceedance/excursion reporting submitted as part of the 2017 first semi-annual certification reporting for the facility indicated that no CAM exceedances or excursions had occurred with respect to the Coal handling Operations associated with Section 4 of the ROP.</p>

Activity Date	Activity Type	Compliance Status	Comments
09/18/2017	CAM monitor downtime	Compliance	<p>The 2017 first semi-annual certification reporting package for the facility contained a copy of the monitor downtime reporting form for EU-COALHAND-S4. The referenced form and associated cert form indicated that no monitor downtime had occurred for the referenced emission unit for the first half of 2017.</p>
09/18/2017	ROP Semi 1 Cert	Compliance	<p>The facility submitted the semi-annual cert for the first 6 months of 2017, and reported no deviations for the period. As the NG Fired combustion turbine associated with the Weadock Boilers has been inoperational and scheduled for demolition after decommissioning of the weadock boilers no deviations were anticipated.</p> <p>A letter dated September 14, 2017 was submitted independently by Consumers Power Co. indicating that the referenced EU was inoperable.</p>

09/18/2017	MACT (Part 63)	Non Compliance	<p>Karn 1 &amp; 2 MATS Semi-Annual Compliance Report for the first half of 2017. Note that the first page of the document indicates that there are no deviations from emission limits or from work practice standards to report. Boiler tune-ups, and performance tests appear to have completed on time, and where applicable test reports have been submitted in a timely manner.</p> <p>A review of the backup information provided indicated that there was a non-monitor malfunction for the SO2 monitor for Karn 1 totaling 6 hours for the period. In addition, the Karn 1 MATS PM CEMS appears to have been down for a total of 2 hour for QA/QC purposes for the period.</p> <p>With respect to Karn 2, the backup documentation for the MATS Report indicated that the HG monitor was down for a total of 249 hours for the period (6.48% of operating time) for the period. The downtime consisted of 24 hours for QA/QC activities, 164 hours of non-monitor malfunction and 61 hours of other known causes. A review of the coding indicated that the majority of the non-monitor equipment malfunctions were monitor calibration check errors. The company reports that these failed weekly calibration checks were due to failure to generate oxidized mercury calibration standards at the expected concentrations. These are believed to be the result of failure of specific solenoid valves used to generate the oxidized standards. Since replacing the valves fewer failure have been experienced. In addition, Karn 2 was reported to have the MATS PM CEMS down for a total of 3 hours for QA/QC purposes for the period and the MATS SO2 CEMS was reported down for 1 hour for other know causes during the period.</p> <p>Appendix B of the submittal contains records of fuel use (eastern vs western coal) for each unit on a monthly basis, as well as</p>
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09/18/2017	MACT (Part 63)	Non Compliance	the total gallons of oil.
09/18/2017	MACT (Part 63)	Compliance	The facility submitted a MATS Status Summary Report for Karn 3 & 4 (Section 2) of the ROP. The referenced document reported that no deviations from work practice standards have occurred for the first half of 2017. The facility also reports that as both boiler units qualify for the subcategory of limited use oil-fired units, emission limits are not applicable.

09/01/2017	CEM RATA	Compliance	<p>On July 10-12, 2017, Consumers Regulatory Compliance Testing Section and GE&amp;S Environmental &amp; Laboratory Services Dept conducted Mercury CEMS Rata testing on CEMS associated with EUKARN1 and EUKARN2. Testing was conducted to satisfy US EPA requirements under 40 CFR Part 63, Subpart UUUUU, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Coal and Oil fired Electric Utility Steam Generating Units. AKA the Mercury and Air Toxics (MATS) Rule.</p> <p>EUKARN1 is a dry bottom tangential coal-fired boiler with fuel-oil startup capabilities and supplemental co-firing for flame stabilization and mill outages. Multiple pollution control devices are in use by the referenced boiler. The SCR system is for the control of NOX, the pulse-jet fabric filter baghouse controls PM and the spray dryer absorbers control SO2 and other Acid gases. Mercury control is achieved with activated carbon injection and is used on an as needed basis to comply with the MATS mercury emission limit.</p> <p>Testing for EUKARN1 and its associated CEMS was conducted on July 10 and 11, 2017. EUKARN1 has a rated heat input of 2500 MMBTUs/hr and a gross electrical output of 272 megawatts (MWg), At testing the average unit load was approximately 257 MWg HG RATA results for the 9 test runs evaluated indicated a mean difference of 0.156, and a standard deviation of 0.0527 resulting in a relative accuracy of 11.84.</p> <p>Testing for EUKARN2 and its associated CEMS was conducted on July 11 and 12, 2017. EUKARN2 has a rated heat input of 2540 MMBTUs/hr and a gross electrical output of 277 megawatts (MWg), At testing the average unit load was approximately 210 MWg. Testing results for CEMS associated with</p>
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09/01/2017	CEM RATA	Compliance	<p>EUKARN2 reported a mean difference of 0.022, a standard deviation of 0.0441 and a relative accuracy of 15.78.</p> <p>Both units were reported to meet the standard RA criteria, and to have passed the alternative acceptance criteria under the MATS regulations. This means less than or equal to 20% of mean RM or less than 0.5 ug/scm Hg . As indicated both reported relative accuracies less than the 20% and Hg of less than 0.5 ug/scm..</p>
08/29/2017	CEMS Test Observation	Compliance	NOx, SO2, CO2 CEMS RATA for Karn 3&4 (Section 2 of ROP).

Name: *BS Zuthoff*

Date: 10-29-18

Supervisor: *C. Hare*