

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

P079748241

FACILITY: Upper Michigan Energy Resources Corp.		SRN / ID: P0797
LOCATION: West of the intersectio of Eagle Mills & Pioneer Roads, NEGAUNEE		DISTRICT: Upper Peninsula
CITY: NEGAUNEE		COUNTY: MARQUETTE
CONTACT: Laura Jarmuz , Senior Engineer - Environmental		ACTIVITY DATE: 03/20/2019
STAFF: Joe Scanlan	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled initial inspection to observed stack testing and determine compliance with PTI# 35-17.		
RESOLVED COMPLAINTS:		

### FACILITY AND REGULATORY DESCRIPTION

F.D. Kuester Generating Station electric generation facility is owned by Upper Michigan Energy Resources Corporation (UMERC) and will be operated by PIC for the first 12 months of operation. The facility is located in Negaunee Township (Marquette County) in an industrial zone sited in the southeast quadrant of the intersection of County Road 492 and M-35. The Kuester facility is one of two generating stations constructed to replace the WEC Energy Group Presque Isle Power Plant (PIPP), which was retired from operation as F.D. Kuester and its smaller sister facility, the A.J. Mihm Generating Station in Pelki (Baraga County), went online for electrical production in March of 2019.

The seven (EURICE1 through EURICE7) reciprocating internal combustion engines (RICE) are housed inside a building with an exterior resembling a warehouse with concrete walls, interior sound attenuation panels, a double-layer roof, using heavy-duty steel panels with sound attenuation, silencers on air intake and exhaust systems and ultra-low-noise radiators. Sound testing results indicate the facilities each operate between 25 and 36 decibels—the engines are difficult to hear from outside the building when operating.

All major functions in the generating station are monitored and controlled remotely by operators from Green Bay and Milwaukee, Wisconsin. Local, plant-based computer controls support the operation by continuously monitoring and reporting ignition conditions, pressures, temperatures, flow rates, etc. The facility employs total remote start, stop and loading functionality, with on-site personnel focused on maintenance and support activities. The main control room and offices are attached to the engine bay.

The RICE units are Wartsilla W18V50SG natural gas-fired, four-stroke, lean burn, spark-ignition units and are coupled to 18,817 kW electric generators. The facility produces a total net generating capacity of 128.1 MW. Each of the seven engines have 18 cylinders, are 46 feet long and 20 feet tall and weigh approximately 325 tons. Each engine is cooled by 24 radiator fans that reject heat from a closed-loop circulating antifreeze (coolant) system. F.D. Kuester Generating Station has a total of 168 fans. Major overhaul on these engines occurs every 20,000 hours.

Engines have a full-load consumption of natural gas of 152 MMBtu per hour. The engines use selective catalytic reduction with urea injection for control of nitrogen oxides and an oxidation catalyst for control of carbon monoxide, volatile organic compounds and hazardous air pollutants. The exhaust system is located outside the building and includes silencers, air quality control systems and stacks. The seven engine exhaust systems are then ducted to a single, common 130-foot stack via a manifold.

The RICE units are a new Title V source and are currently permitted under PTI# 35-17 and are subject to 40 CFR Part 60 Subpart JJJJ and 40 CFR Part 63 Subpart ZZZZ (RICE MACT) which enforces emission limits for NOx, CO, VOCs, and PM. The emergency generator (EUEMERGEN) is a 1,470 HP (1,000 kW) natural gas-fueled emergency RICE unit and is also subject to 40 CFR Part 60 Subpart JJJJ. A 2.0 MMBtu natural gas-fired heater (EUHEATER1) is subject to 40 CFR Part 63, Subpart DDDDD.

UMERC is in the process of completing the initial ROP application for the Kuester station and has requested a pre-application meeting with district AQD staff. Initial ROP application deadline is 12 months after the date of notification of initial operation, which is February 5, 2020.

### INSPECTION

My contacts at the site were Ms. Laura Jarmuz (Senior Engineer,UMERC), Mr. Justin Kowalski (Senior Environmental Consultant, UMERC), and Mr. Glen Snider (O&M Supervisor, PIC). Ms. Jarmuz has been

providing environmental oversight for UMERC during the construction of the generating station, however her responsibilities will transfer to Mr. Kowalski who will remain the permanent UMERC representative on site. The generating station will be operated by Mr. Snider during the first year of operation, after which responsibilities will transfer to UMERC staff.

At the time of inspection the facility was undergoing initial compliance testing to meet the demonstration requirements for emission rates in accordance with PTI# 35-17 and 40 CFR Part 60 Subpart JJJJ. Mostardi Platt was the contractor hired to conduct the initial compliance testing. Mr. Tom Gasloli of EGLE AQD Technical Programs Unit was on site to observe the sampling and overall test. Gas and PM were sampled separately for each engine, each requiring 3 test runs per engine. EURICE3 was being tested at the time of my initial arrival; EURICE1 had completed testing the day prior (3/19/2019). EURICE2 had a small fuel line leak and was being diagnosed and repaired, so the contractor skipped testing EURICE2 after completing EURICE1 and began testing on EURICE3. Engines 4-7 were subsequently tested in the immediate days following (EURICE4 tested on 3/21; EURICE5 tested 3/28; EURICE6 tested 3/26; EURICE7 tested 3/27).

I monitored operation of EURICE3 and EURICE4 during testing on 3/20 and 3/21, respectively. Engines operated at full load per test requirements. A continuous parameter monitoring system (CPMS) is installed at the inlet of each engines selective catalytic reduction (SCR) to continuously measure SCR and oxidation catalyst inlet temperature. I observed and recorded process data including engine RPM, kW output, inlet temperature & pressure drop of the SCR oxidation catalyst, and urea injection flow rate.

JJJJ & ZZZZ Compliance Test Observations EURICE3 & EURICE4

	EURICE3 (Run 2)	EURICE4 (Run 2)
Engine RPM	15907	15849
kW Output	18865	18858
Press. Drop @ SCR	0.14	0.15
Inlet temp @ SCR	709°F	711°F
Urea injection rate	7.0 gph	7.9 gph

All process data observed and recorded was within the test and engine operational parameters. Recordkeeping for all operational data is recorded and stored on site and also stored off site in a UMERC server.

#### SUMMARY

The facility is in compliance with PTI# 35-17, verified via emissions testing completed in March of 2019. There were no problems or issues with sampling, testing, or overall operation of the engines at time of inspection.

Test results were received on May 3, 2019. FGENGINES has emission limits for NOx, CO, VOCs, PM 10 and PM 2.5 per 40 CFR Part 60 Subpart JJJJ. NOx emissions for EURICE1, 3, 5, and 7 were approaching the permit limit during testing, however this can be addressed by adjusting the urea injection system. See attached test results.

FGENGINEMACT4Z has formaldehyde emissions established per 40 CFR Part 63 Subpart ZZZZ and are well within the RICE MACT emission rate limits; average formaldehyde emissions for the seven engines was 0.6 ppmvd, far below the MACT limit of 14 ppmvd. Notification of compliance with the RICE MACT was received from the facility May 7, 2019.

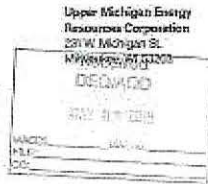
Initial ROP application is due February 5, 2020, with expected issuance of initial ROP no later than February 2021.



**UNITED PARCEL SERVICE**

May 2, 2019

Mr. Joseph Scanlan  
Michigan Department of Environment, Great Lakes, and Energy  
Air Quality Division  
1504 West Washington Street  
Marquette, MI 49855



**Subject:** F.D. Keuster Generating Station  
Negaunee, Michigan  
Permit to Install 35-17 and 40 CFR Part 60 Subpart JJJJ  
EURICE1, EURICE2, EURICE3, EURICE4, EURICE5, EURICE6, and EURICE7  
Compliance Emissions Test Report Submittal

Dear Mr. Scanlan:

Upper Michigan Energy Resources Corporation (UMERC) respectfully submits the results of reciprocating internal combustion engine (RICE) initial compliance testing conducted at the F.D. Keuster Generating Station units EURICE1, EURICE2, EURICE3, EURICE4, EURICE5, EURICE6, and EURICE7 during the period March 19-29, 2019.

The results demonstrate compliance with the conditions of Permit To Install 35-17 and 40 CFR Part 60 Subpart JJJJ. A summary of results by emission unit is presented below.

Source	Pollutant	Test Result	Permit Limit
EURICE1	NOx	2.8 lb/hr	3.0 lb/hr
EURICE1	NOx	4.7 ppmvd @ 15% O2	62 ppmvd @ 15% O2
EURICE1	CO	2.3 lb/hr	5.5 lb/hr
EURICE1	CO	6.3 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE1	VOC	3.0 lb/hr	5.5 lb/hr
EURICE1	VOC	6.4 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE1	TPM	0.058 lb/hr	3.72 lb/hr

Source	Pollutant	Test Result	Permit Limit
EURICE2	NOx	1.0 lb/hr	3.0 lb/hr
EURICE2	NOx	1.8 ppmvd @ 15% O2	62 ppmvd @ 15% O2
EURICE2	CO	1.2 lb/hr	5.5 lb/hr
EURICE2	CO	3.3 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE2	VOC	1.0 lb/hr	5.5 lb/hr
EURICE2	VOC	1.8 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE2	TPM	0.005 lb/hr	3.72 lb/hr

Image 1(K1) : Keuster JJJJ test results

Mr. Joseph Scarlat  
 F. D. Kuester Generating Station Test Report Subtotal  
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Source	Pollutant	Test Result	Permit Limit
EURICE3	NOx	2.8 lb/hr	3.0 lb/hr
EURICE3	NOx	4.7 ppmvd @ 15% O2	82 ppmvd @ 15% O2
EURICE3	CO	2.7 lb/hr	5.5 lb/hr
EURICE3	CO	7.3 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE3	VOC	3.9 lb/hr	5.5 lb/hr
EURICE3	VOC	6.9 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE3	TPM	0.586 lb/hr	3.72 lb/hr

Source	Pollutant	Test Result	Permit Limit
EURICE4	NOx	0.8 lb/hr	3.0 lb/hr
EURICE4	NOx	1.2 ppmvd @ 15% O2	82 ppmvd @ 15% O2
EURICE4	CO	1.0 lb/hr	5.5 lb/hr
EURICE4	CO	2.7 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE4	VOC	1.2 lb/hr	5.5 lb/hr
EURICE4	VOC	2.0 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE4	TPM	0.602 lb/hr	3.72 lb/hr

Source	Pollutant	Test Result	Permit Limit
EURICE5	NOx	2.8 lb/hr	3.0 lb/hr
EURICE5	NOx	4.7 ppmvd @ 15% O2	82 ppmvd @ 15% O2
EURICE5	CO	2.3 lb/hr	5.5 lb/hr
EURICE5	CO	6.8 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE5	VOC	0.8 lb/hr	5.5 lb/hr
EURICE5	VOC	1.7 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE5	TPM	0.660 lb/hr	3.72 lb/hr

Source	Pollutant	Test Result	Permit Limit
EURICE6	NOx	1.9 lb/hr	3.0 lb/hr
EURICE6	NOx	3.2 ppmvd @ 15% O2	82 ppmvd @ 15% O2
EURICE6	CO	1.2 lb/hr	5.5 lb/hr
EURICE6	CO	3.2 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE6	VOC	1.2 lb/hr	5.5 lb/hr
EURICE6	VOC	2.2 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE6	TPM	0.493 lb/hr	3.72 lb/hr

Source	Pollutant	Test Result	Permit Limit
EURICE7	NOx	2.6 lb/hr	3.0 lb/hr
EURICE7	NOx	4.7 ppmvd @ 15% O2	82 ppmvd @ 15% O2
EURICE7	CO	2.3 lb/hr	5.5 lb/hr
EURICE7	CO	6.8 ppmvd @ 15% O2	270 ppmvd @ 15% O2
EURICE7	VOC	2.4 lb/hr	5.5 lb/hr
EURICE7	VOC	4.5 ppmvd @ 15% O2	60 ppmvd @ 15% O2
EURICE7	TPM	0.546 lb/hr	3.72 lb/hr

Image 2(K2) : Kuester JJJJ test results

Mr. Joseph Scarian  
 1524 West Washington Street  
 Marquette, Michigan 49855  
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Enclosed please find the following Mottardi Pilot test reports:

- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE1 Culler Duct, Negaunee, Michigan, Project No. M191105A, March 19, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE2 Culler Duct, Negaunee, Michigan, Project No. M191105B, March 23, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE3 Culler Duct, Negaunee, Michigan, Project No. M191105C, March 20, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE4 Culler Duct, Negaunee, Michigan, Project No. M191105D, March 21, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE5 Culler Duct, Negaunee, Michigan, Project No. M191105E, March 27, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE6 Culler Duct, Negaunee, Michigan, Project No. M191105F, March 28, 2019
- Compliance Emissions Test Report, Performed for: Upper Michigan Energy Resources Corporation, At The: F.D. Kuester Generating Station, EURICE7 Culler Duct, Negaunee, Michigan, Project No. M191105G, March 28 and 29, 2019

If you have any questions or need additional information, please contact me at (414) 221-2389 or laura.jarmuz@umenergyatcorp.com.

Sincerely,



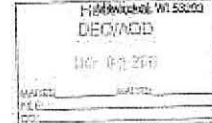
Laura Jarmuz  
 Senior Engineer

- cc: Karen Kajja-Mills, Technical Programs Unit, EGLE, Air Quality Division  
 Ed Lancaster, District Supervisor, EGLE, Air Quality Division—w/o enclosures  
 Scott Johnson, UMERC—electronic w/o enclosures  
 Justin Kowalski, UMERC—electronic w/o enclosures

Image 3(K3) : Kuester JJJ test results



Upper Michigan Energy Resources Corporation  
 231 W. Michigan St.  
 Marquette, MI 49855



**UNITED PARCEL SERVICE**

May 2, 2019

Mr. Joseph Scarian  
 Michigan Department of Environment, Great Lakes, and Energy  
 Air Quality Division  
 1524 West Washington Street  
 Marquette, MI 49855

Subject: F.D. Kuester Generating Station  
 Negaunee, Michigan  
 Permit to Install 35-17 and 40 CFR Part 63 Subpart ZZZZ  
 EURICE1, EURICE2, EURICE3, EURICE4, EURICE5, EURICE6, and EURICE7  
 Compliance Emissions Test Report Submittal

Dear Mr. Scarian:

Upper Michigan Energy Resources Corporation (UMERC) respectfully submits the results of respirating internal combustion engine (RICE) Maximum Achievable Control Technology (MACT) initial compliance testing conducted at the F.D. Kuester Generating Station units EURICE1, EURICE2, EURICE3, EURICE4, EURICE5, EURICE6, and EURICE7 during the period March 19-29, 2019.

The results demonstrate compliance with the conditions of Permit To Install 35-17 and 40 CFR Part 63 Subpart ZZZZ. A summary of results by emission unit is presented below.

Source	Pollutant	Test Result	RICE MACT Emission Limit
EURICE1	Formaldehyde	0.9 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE2	Formaldehyde	0.5 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE3	Formaldehyde	0.8 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE4	Formaldehyde	0.3 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE5	Formaldehyde	0.7 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE6	Formaldehyde	0.6 ppmvd @ 15% O2	14 ppmvd @ 15% O2
EURICE7	Formaldehyde	0.6 ppmvd @ 15% O2	14 ppmvd @ 15% O2

Enclosed please find the following Mottardi Pilot test report:

- Semiannual RICE MACT Compliance Emissions Test Report, Upper Michigan Resource Corporation, F.D. Kuester Generating Station, EURICE1, EURICE2, EURICE3, EURICE4, EURICE5, EURICE6, EURICE7, Negaunee, Michigan, Project No. M191105H, March 19 through March 28, 2019

Image 4(K4) : Kuester ZZZZ test results

001-10581-00000  
EPA Kuester Drinking Water Risk WACI Test Report Summary  
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If you have any questions or need additional information, please contact me at (414) 221-2389 or [Laura.Jermuz@wisconsin.gov](mailto:Laura.Jermuz@wisconsin.gov).

Sincerely,

*Laura Jermuz*  
Laura Jermuz  
Senior Engineer

cc: Karen Kujawa-Milly, Technical Programs Unit, EGLE, Air Quality Division  
Ed Nien, Director Air and Radiation, US EPA Region V  
Ed Lancaster, District Supervisor, EGLE, Air Quality Division—w/o envelope  
Scott Johnson, UAFRC—electronic info enclosure  
Justin Kowalski, UAFRC—electronic info enclosure

Enclosure  
1. Missouri Dept Project No. M191105H Report

**Image 5(K5) : Kuester ZZZZ test results**

NAME *Joseph Jermuz*

DATE *8/16/19*

SUPERVISOR *ELF*