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INITIAL CERTIFICATION REPORT
CONTINUOUS OPACITY
MONITORING SYSTEM (COMS)
CONSUMERS ENERGY
JHC-2 DUCT
WEST OLIVE, MI

Source Designation:

JHC-2 Duct
Consumers Energy
West Olive, Michigan

Concerning:

Teledyne Monitor Labs, Inc. 560 Opacity Monitor

Prepared by:

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Jamie Triplett
Regulatory Affairs Coordinator

April 28, 2016

Date

SECTION I – GENERAL INFORMATION

Teledyne Monitor Labs, Inc. was contracted by Consumers Energy to certify a continuous opacity monitoring system (COMS) on the JHC-2 Duct at the facility in West Olive, Michigan. The COMS installed on the JHC-2 Duct consists of a Teledyne Monitor Labs 560 Opacity Monitor. COMS certification was performed in accordance with 40CFR60, Appendix B, Performance Specification 1.

The objective of the certification is to demonstrate the compliance status of the COMS installed to measure exhaust opacity from the JHC-2 Duct. Table I below provides information required by 40CFR60, Appendix B, Performance Specification 1.

Table I. General information about COMS.

Instrument Manufacturer:	Teledyne Monitor Labs Inc.
Instrument Model Number:	560
Instrument Serial Number:	5602840
Month Manufactured:	December 2015
Monitor Pathlength:	2.896 meters
Emission Outlet Pathlength:	5.791 meters
Full Scale, % Opacity:	100
Applicable Standard, % Opacity:	21.0
Pathlength Correction Factor:	2.000
Upscale Calibration Value, % Opacity:	24.8
Calibrated Attenuator Values, % Opacity:	
Low:	16.08
Mid:	29.49
High:	45.49
Responsible Person for Operational Test Period:	¹ Unknown

¹ Affiliated with Consumers Energy.

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**SECTION II – DESIGN SPECIFICATION
TEST RESULTS**



As required by 40CFR60, Appendix B, Performance Specification 1, this instrument complies with the design specifications of Section 2. Table II below provides the design specification test results.

Table II. Design specification test results.

Peak Spectral Response:	520 nm
Mean Spectral Response:	525.3 nm
Response above 700 nm, % of Peak:	0.00
Response below 400 nm, % of Peak:	0.20
Angle of View: (horizontal / vertical)	2.37 / 1.89 degrees
Angle of Projection: (horizontal / vertical)	1.59 / 1.59 degrees
Results of Optical Alignment Sight Test:	Passed
Unit Actually Tested (serial number/date):	5602832 / 12/3/15

A Certificate of Conformance is provided in Appendix A that illustrates that the first analyzer randomly sampled from that month's production was tested according to 40CFR60, Appendix B, Performance Specification 1, and satisfactorily met all requirements of 40CFR60, Appendix B, Performance Specification 1, Section 2.1. The certificate of conformance includes the results of each test performed for the analyzer sampled during the month the analyzer installed was produced.

**SECTION III – PERFORMANCE
SPECIFICATION TEST RESULTS**



As required by 40CFR60, Appendix B, Performance Specification 1, this instrument complies with the performance specifications of Section 8. Table III below provides the performance specification test results.

Table III. Performance specification test results.

Optical Alignment	Passed
Calibration Error, Low Range, % Opacity:	1.28
Calibration Error, Mid Range, % Opacity:	0.49
Calibration Error, High Range, % Opacity:	0.51
Response Time, Upscale:	5.00 seconds
Response Time, Downscale:	5.40 seconds
24-Hour Zero Drift, % Opacity:	0.06
24-Hour Calibration Drift, % Opacity:	0.48
Averaging Period Check, Low Range Error, % Opacity:	0.92
Averaging Period Check, Mid Range Error, % Opacity:	0.49
Averaging Period Check, High Range Error, % Opacity:	0.51

The performance specification test results and raw data are in Appendix B. The analyzer was tested according to 40CFR60, Appendix B, Performance Specification 1, Section 8 and satisfactorily met all performance specification requirements.

SECTION IV – STATEMENTS



Operational Test Period After completion of the preliminary field adjustments and field certification tests, the COMS was operated for a 168-hour period. The 168-hour operational test period occurred from April 11 - 18, 2016. The COMS analyzed the effluent gas for opacity and produced a permanent record of the COMS output, except during times of instrument zero and upscale calibration checks. During this period, there was no unscheduled maintenance, repair, or adjustment. During the operational test period, the zero and calibration drift test procedures were performed.

SECTION V – CONCLUSION



Analyzer 5602840, installed on the JHC-2 Duct, was tested according to 40CFR60, Appendix B, Performance Specification 1, and satisfactorily met all performance specification requirements. Certification testing, and the subsequent evaluation, was completed on April 28, 2016. Supporting documentation is included in this report.