

**DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Stack Test Observation**

B372128631

<b>FACILITY:</b> ANR Pipeline - Reed City Compressor Station		<b>SRN / ID:</b> B3721
<b>LOCATION:</b> 7677 230th Ave., REED CITY		<b>DISTRICT:</b> Cadillac
<b>CITY:</b> REED CITY		<b>COUNTY:</b> OSCEOLA
<b>CONTACT:</b>		<b>ACTIVITY DATE:</b> 02/26/2015
<b>STAFF:</b> Kurt Childs	<b>COMPLIANCE STATUS:</b> Compliance	<b>SOURCE CLASS:</b> MAJOR
<b>SUBJECT:</b> 40 CFR 63 Subpart ZZZZ catalyst emission reduction testing.		
<b>RESOLVED COMPLAINTS:</b>		

**ANR Pipeline Company Reed City Compressor Station; 40 CFR 63 Subpart ZZZZ catalyst formaldehyde emission reduction testing.**

MI-ROP-B3721-2014; FGMACTZZZZ, EURC011 and EURC012

Date of Test: 2/26/2015

Test Company: Bureau Veritas/Prism; Brian Young/Lindsey Wells

ANR (Transcanada) Representative: Steve Marsh.

AQD Representatives: Jeremy Howe, Kurt Childs.

Weather Conditions: Clear, 5 degrees F, light winds.

Scope of Test: Subpart ZZZZ requires that, following replacement of the engine catalytic converter, a performance test be conducted to re-establish operating variables (catalyst inlet temperature and differential pressure) and demonstrate compliance with either the emissions reduction or emission concentration limits of the subpart. ANR Reed City has chosen to comply with the 76% Formaldehyde emissions reduction limit for EURC011 and EURC012 two identical 660hp 4SRB compressor engines. ANR has recently installed new catalytic converters on both engines. Evaluation of emissions reduction is made by measuring analyte (formaldehyde) concentrations before and after the catalyst. For this test these measurements are made using Fourier Transform InfraRed Spectroscopy (FTIR), USEPA Method 320.

Prior to previous testing at the site I had taken the Transcanada online safety orientation and an on-site orientation. I met with Mr. Steve Marsh who was coordinating the testing and was collecting operating data for the test report. He was observing plant operating data on the plant computer system and manually recording the catalyst differential pressure, inlet and outlet temperatures, engine horsepower and torque output (load) and engine RPM every 15 minutes. This information is monitored and recorded by the computer system and reports can be designed to pull this data out as they are for compliance with catalyst inlet temperature monitoring in the ROP. Fuel use for each engine is not directly monitored but fuel parameters such as pressure, differential pressure and temperature are monitored and can be used to back calculate the usage. This information will be provided to the testers for inclusion in the final report.

During the second and third test runs on EURC012 I observed and recorded the following process operating data:

Parameter	2 <sup>nd</sup> Run	3 <sup>rd</sup> Run	3 <sup>rd</sup> Run
Catalyst Differential Pressure	2.06"	2.08"	2.09"

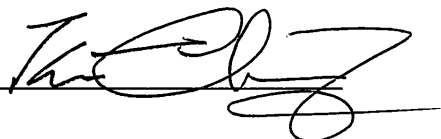
Catalyst Inlet Temperature	1146	1148	1150
Catalyst Outlet Temperature	1218	1219	1223
Engine Horsepower	536	539	540
Engine Torque	85%	86%	86.7%

The ROP requires that catalyst inlet temperature and differential pressure is required to be maintained in accordance with parameters established during this testing. The ROP requires differential pressure not vary more than 2" from that measured during the test and inlet temperature be within 750 to 1250 degrees F.

At the time I arrived Bureau Veritas and Prism were on-site and set up with a trailer next to the compressor engine stacks, The second of three 1 hour test runs on EURC012 was under way. Exhaust gasses were collected using sample probes located in the exhaust duct in front of and behind the catalyst on 50 ft. umbilicals that lead to the trailer. Vacuum pumps were drawing the exhaust gasses through the probe and to the two "MultiGas" FTIR instruments. Oxygen content of the exhaust gas was also being sampled and monitored by a separate instrument. Ms. Wells was operating the FTIRs and Mr. Young was operating the O2 monitor and handling sample probe duties.

During the test Ms. Wells explained the calibration procedures and evaluation of the instrument data which requires complex interpretation from a "gas method" program on a lap top computer that is connected to the instrument. The FTIR scans the entire sample which consists of many compounds but formaldehyde is the only one of interest for this test so that data must be separated out by the software.

Preliminary data from the inlet and outlet FTIRs indicated an emissions reduction rate of 98% according to Mr. Young. The ROP requires a 76% reduction. I left the site following the conclusion of the 3rd test run on EURC012 testing of EURC011 was to take place that afternoon. Mr. Howe stayed to observe the set-up and initial testing of EURC011.

NAME  DATE 3-1-15 SUPERVISOR 