

Wakefield Parametric Monitoring Plan

In order to demonstrate ongoing compliance with emission limits, the Michigan Department of Environment, Great Lakes and Energy (MDEGLE) requested that Great Lakes Gas Transmission (GLGT) develop a parametric monitoring plan based on the onsite emission testing for Unit 701. The last test on Unit 701 was performed December 18, 2018. GLGT proposes to use fuel flow as the parameter to be monitored. The results from the December 18, 2018 test are summarized in Table 1 below.

Table 1

Test Load	NOx, lb/hr	Fuel Flow, Mscfh
High	98.56	186.90
Mid High	66.64	154.52
Mid Low	54.17	137.55
Low	37.83	111.697

GLGT operated Unit 701 at the maximum load based on the ambient and pipeline conditions the day of the test. GLGT should not be limited strictly to the highest fuel flow achieved during the test (186.90 Mscfh). Ambient temperature may limit the fuel flow during an emission test. Typically, the colder the ambient temperature, the more fuel the unit may consume. In addition, pipeline conditions at the time of the test, including line pack and the natural gas available to flow through the pipeline, may affect the load (and consequently the fuel flow) the engine can achieve.

Attachment 1 correlates the fuel flow to the NOx emissions using a regression analysis. The correlation is y (NOx emissions, lb/hr or pph) = $0.8097 \times$ (fuel flow, Mscf/hr) – 55.262. The NOx permit limit is 123 pph. The highest measured NOx was 98.56 pph or 19.9% below the permit limit. The maximum fuel rate allowed shall be calculated from a linear regression model developed by plotting the average NOx pph emission against the average fuel rate at each load point and extrapolating the average fuel rate to 116.85 pph (5% below the permit limit). For the most recent stack test performed on December 18, 2018, this equates to a fuel flow of 212.5 Mscfh. For any future test, if the highest NOx pph emission rate that was tested at is between 116.85 pph and 123 pph, the average fuel rate at that NOx emission rate shall be the maximum fuel rate allowed. An updated parametric monitoring plan shall be submitted to MDEGLE within one month after the test report for any future test is approved by MDEGLE.

Unit 701 (GE LM2500)

Wakefield Compressor Station No. 7

12/18/18

Emission Test and Operating Data Summary

Operating Load (range)	Fuel Usage (MSCFH)	NOx lb/hour
Low	111.70	37.83
Low-mid	137.55	54.17
Mid-high	154.52	66.64
High	186.90	98.56

Note: Heat input calculated based on actual fuel usage and actual heat content during test

