

## Crystal Falls Parametric Monitoring Plan

To demonstrate ongoing compliance with emission limits, the Michigan Department of Environment, Great Lakes and Energy (EGLE) requested that Great Lakes Gas Transmission (GLGT) develop a parametric monitoring plan based on the onsite emission testing for Unit 802. The last test on Unit 802 was performed December 2, 2021. GLGT proposes to use fuel flow as the parameter to be monitored. The results from the December 2, 2021, test is summarized in Table 1 below.

Table 1

Test Load	NOx, lb/hr	Fuel Flow, Mscfh
High	55.357	121.79
Mid High	41.092	106.14
Mid Low	29.360	90.91
Low	21.237	77.86

GLGT operated Unit 802 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 (121.79 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) =  $0.7785 \times$  (fuel flow, Mscf/hr) – 40.445. The NOx permit limit is 89 pph. The highest measured NOx was 55.357 pph or 37.80% below the permit limit. The maximum fuel rate allowed shall be calculated from a linear regression model developed by plotting the average NOx pph emissions against the average fuel rate at each load point and extrapolating the average fuel rate to 84.55 pph NOx (5% below the permit limit). For the most recent stack test performed on December 2, 2021, this equates to a fuel flow limit of 160.56 Mscfh. For any future test, if the highest average NOx pph emission rate that was tested at is between 84.55 pph and 89 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 EGLE within one month after the test report for any future test is approved by EGLE.

# Unit 802 (GE LM1600)

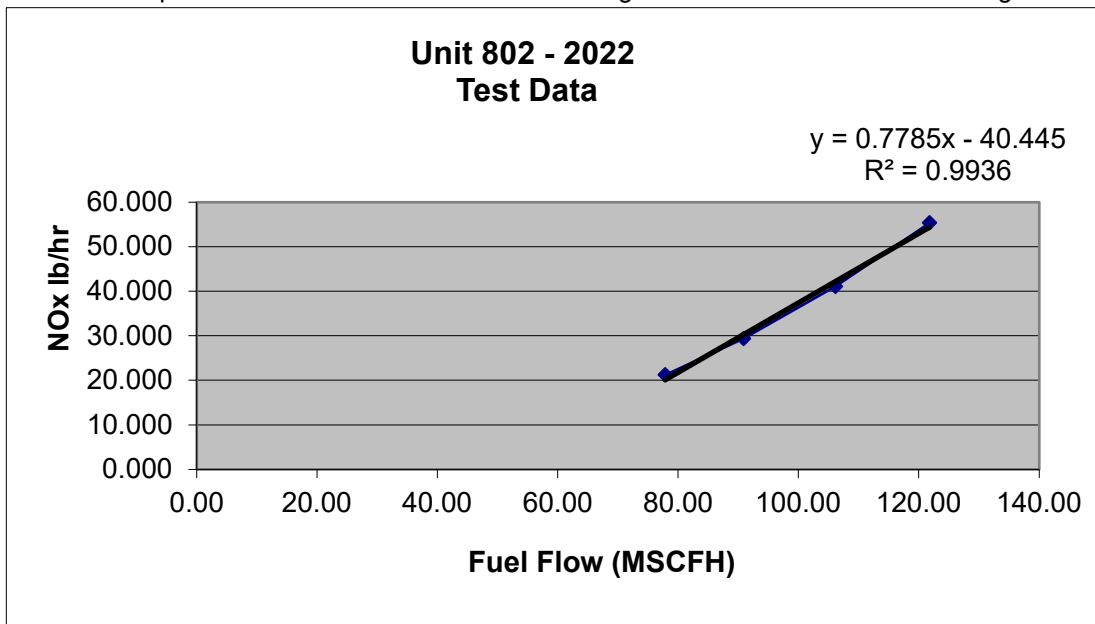
Crystal Falls Compressor Station No. 8

2022

## Emission Test and Operating Data Summary

Operating Load (range)	Fuel Usage (MSCFH)	NOx lb/hour
Low	77.86	21.237
Low-mid	90.91	29.360
Mid-high	106.14	41.092
High	121.79	55.357

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



Permit Limit 89 pph  
5% of Limit 84.55 pph  
 $y = 0.7785x - 40.45$   
 $x = 160.559 \text{ Mscf}$