



NORTH SLOPE BOROUGH
DEPARTMENT OF PUBLIC WORKS

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Scott K. Danner, Director

January 28, 2019

Chris Hoidol
Acting Director, Western Region
US Department of Transportation
Pipeline and Hazardous Materials Safety Administration
12300 W. Dakota Ave. Suite 110
Lakewood, CO 80228

Subject: Notice of Probable Violation CPF-2019-0002

Mr. Hoidol,

The North Slope Borough, represented by the Department of Public Works writes in response to the Notice of Probable Violation dated January 15, 2019. The Notice reads that on March 27 through March 31, 2017 a representative of the Pipeline and Hazardous Materials Safety Administration (PHMSA) pursuant to Chapter 601 of 49 United States Code (U.S.C.) inspected the Barrow Gas Field Transmission Line.

As a result of the inspection PHMSA alleges that the Borough has committed probable violations of the Pipeline Safety Regulations, Title 49, Code of Federal Regulations (CFR) PHMSA points to the following two items as:

1. § 192.463 External corrosion control: Cathodic protection (a) and Appendix D to Part 192 Criteria for Cathodic Protection and Determination of Measurements (I) (A) (II) (IV) and;
2. § 192.465 External corrosion control: Monitoring (d)

PHMSA writes "In regard to Item Number 1 of the Notice pertaining to the gas line not meeting cathodic protection criteria, the Operator should ensure that the entire pipeline meets cathodic protection criteria as required by 49 CFR 192" and;

"In regard to Item Number 2 of the Notice pertaining to the failure of the Operator correct the deficiencies included in the Taku Engineering *October 2016 Barrow Transmission Natural Gas Pipeline Cathodic Protection Survey Report (Study)* by Taku Engineering, LLC, the Operator must follow the recommendations in the Study pertaining to the Operator's 49 CFR 192 regulated gas line and facilities: The Operator must modify the connections for the bonded below grade anode ribbon to the transmission line with interruptible connections and repair by replacement the failed structure lead wires at all test stations"

The January 15, 2019 Notice concludes: "Within 270 days after receipt of the Final Order, the North Slope Borough Public Works shall comply with Items 1 & 2 of this compliance order and submit documentation of compliance to the Director for review and approval. Item 2 of this compliance order is closed only upon written approval by the Director of the Western Region"

As it applies to item #1 the Department of Public Works writes in response after consultation with its cathodic protection system Design Engineer of record; Coffman Engineers. The PHMSA Notice dated January 15, 2019 points to the finding of inspection in March 2017. Since the March 2017 inspection, the Borough proactively implemented an extensive upgrade to the Barrow Gas Transmission Pipeline cathodic protection system. A new impressed current linear anode (AnodeFlex) cathodic protection system was designed and constructed from 2017 through 2018 and it was successfully commissioned in 2018. The entire pipeline now has adequate levels of cathodic protection (see the attached Coffman Engineers cathodic protection commissioning report).

After discussion and review between the Borough and Coffman Engineers, it should be noted that following the precedence set by Alyeska Pipeline for pipelines with direct bonded galvanic anodes attached to the pipeline, cathodic protection coupons were installed along the Barrow Gas Transmission Pipeline so that representative instant-off pipe-to-soil measurements can be obtained (a combination of criteria 1 and 3 in the report and a combination of sections 6.2.2.1.2 and 6.3.2 of NACE SPO 169-2007).

When Alyeska Pipeline was required to enhance their cathodic protection monitoring by PHMSA, three options were given to Alyeska. **Option 1** was to dig up all the direct bonded anode connections and route the anodes and pipe test leads to aboveground test stations. This was deemed impractical and the highest risk to damaging the pipeline. Similarly, the Borough concluded that it would be necessary to dig up almost the entire pipeline (exact anode connection locations to the pipeline are unknown) and the substantial risk to damaging the pipeline and potential loss of critical utilities to the community was an unacceptable risk without a redundant pipeline in place and was also deemed impractical (a risk versus benefits approach).

Option 2 was to develop cathodic protection coupon technology that would allow for obtaining instant-off measurements at representative locations along the pipeline. Again to reference Alyeska, in cooperation and acceptance by PHMSA, successfully developed and implemented this technology. The Borough will also use this industry recognized technology going forward to demonstrate that the Barrow Gas Transmission Pipeline has adequate levels of cathodic protection. **Option 3** was to raise the pipe-to-soil potential measurements 100 mV above the existing potentials (a combination of criteria 2 and 3 in the report and a combination of sections 6.2.2.1.3 and 6.3.2 of NACE SPO 169-2007). Alyeska has used this option where inadequate or marginal levels of cathodic protection exists. In addition to adequate levels of cathodic protection being verified at the coupon test station locations, the Borough proactively raised the level of protection along the entire pipeline by over 100 mV (verified by performing a close interval survey before and after the AnodeFlex system was installed), which further substantiates that the entire pipeline has adequate levels of protection and the integrity of the asset is being achieved.

In conclusion, the Borough committed extensive financial resources during the two year period 2017 through 2018 where over \$13,000,000.00 in funds were expended for cathodic protection upgrades, and has used sound engineering practices, established criteria, and industry recognized methods to achieve adequate levels of cathodic protection on the Barrow Gas Transmission Pipeline.

As it applies to items #1 and #2 please see the attached Coffman Engineers cathodic protection system upgrade commissioning report on the following pages. This report documents that remedial action was undertaken, and deficiencies were corrected. After PHMSA review of the information provided here, please notify my office in writing if this response and supporting documentation is satisfactory.

Respectfully,



Scott K. Danner, Director
North Slope Borough
Department of Public Works