

NORTH SLOPE BOROUGH

DEPARTMENT OF PUBLIC WORKS

P.O. Box 350

Barrow, Alaska 99723

Phone: 907-852-0489



Scott K. Danner, Director

December 2, 2020

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

Re: Response to Notice of Probable Violation Proposed Civil Penalty and Compliance Order (CPF 5-2020-0010)

Mr. Hubbard,

On November 18, 2020 the Borough Office of the Mayor received Warning Letter **CPF 5-2020-0010** from the Pipeline Hazardous Materials and Safety Administration (PHMSA) re; the Barrow natural gas pipeline and Nuiqsut natural gas pipeline. The warning letter, points to PHMSA inspections completed with date references of December 9 through 13, 2019 and March 10, 2020. PHMSA writes it is alleged the Borough committed "probable violations" and cites the following under the Code of Federal Regulations, and in which the Borough issues the following replies:

ITEM # 1 § 192.203 Instrument, Control and sampling pipe and components."

Issue Summary: "On the Barrow natural gas pipeline, the control line between the Primary Gas Handling Facility and Pipeline Valve Station 1 is not protected from anticipated causes of damage as required by **§ 192.203(b)(9)**"

Response: The North Slope Borough (the "Borough") believes that the subject line is well supported and well protected in its current configuration. However, in order to address this issue, within 30-days, a licensed Professional Mechanical Engineer will assess the line configuration, materials of construction, operation and routing. The engineer will make a determination as to whether or not changes are required in order to comply with § 192.203.

If the engineer determines that the existing configuration is in compliance with § 192.203, he will produce a signed, stamped document with supporting documentation and drawings. These will be forwarded to the Director of the Western Region for review.

If the engineer determines that the existing configuration is not in conformance with § 192.203, within 90-days (and in accordance with the NOPV) the engineer will provide a stamped engineering design package to modify the configuration to bring it into compliance with § 192.203. This design and plan will be forwarded to the Director of the Western Region for review.

Within 90-days of receipt of a notice of non-objection from the Director of the Western Region, The Borough will implement the changes (in accordance with the NOPV). Within 30-days of the completion of construction, the Borough will provide as-built drawings and photographs to the Director of the Western Region to confirm that the work has been completed.

ITEM # 2 § 192.465 External Corrosion Control: Monitoring

Issue Summary: “North Slope Borough Energy Management (NSBEM) failed to take prompt remedial action to correct deficiencies found during their 2017, 2018, and 2019 cathodic protection (CP) monitoring of the Nuiqsut natural gas pipeline. CP inspections completed in 2017, 2018, and 2019 found locations along the buried portion of the Nuiqsut natural gas pipeline that did not meet one or more applicable criteria contained in appendix D of part 192.”

Response: The Borough’s corrosion engineering consultants believe that the pipeline may be situated in permafrost for much of the length of the buried section of the pipeline. Where the pipe is located in permafrost, it will not be possible to polarize the pipe surface and effectively apply cathodic protection (CP). However, the corrosion rate of steel is effectively zero in frozen soils, negating the practical need for cathodic protection in those locations.

Most of the recommendations put forth in recent Nuiqsut Pipeline cathodic protection survey reports, were developed with the intent to better define the pipe environment and the effectiveness of the CP system. The recommended changes include the replacement of damaged test stations, and the addition of new test points in low potential areas. In all cases, the new test station designs will include cathodic protection coupons, and thermistors. The addition of the thermistors will allow the Borough to confirm whether the pipe is in frozen soils and the CP coupons are intended to demonstrate whether the CP system will be effective if there is periodic thawing around the pipe.

Installation of the new test stations will also provide us with the opportunity to directly inspect the pipe for coatings or corrosion damage and the presence of frozen soils around the pipe. These conditions will be documented at each site.

Existing geotechnical data is not sufficient to definitively determine whether the pipe is in permafrost or not. It also does not account for energy (heat) that the pipe itself may be adding or removing from the surrounding environment. The direct inspections associated with test station installations, are expected to provide definitive data concerning the presence of ice around the buried pipeline.

The timeline laid out in PHMSA’s notice may present some challenges. This work cannot be completed in the summer because the equipment needed to implement these changes would cause significant damage to the tundra. The construction work must be completed when the Alpine Ice Road is in place (to accommodate mobilization of equipment) and there is sufficient snow cover to protect the tundra from tracked vehicles. That limits this work to mid-February to mid-April.

The Borough will move forward with engineering design for the changes, and complete installation of the proposed test points in early 2021. However, even in non-permafrost areas, the ground on the North Slope can remain frozen at pipe depth until late in the Summer. Meaningful test data for the system cannot realistically be collected until August, which will fall outside of the timeframe provided in PHMSA’s notice.

We respectfully request that the Director modify paragraph B1 of the Proposed Compliance Order, to allow **365**-days to make to proposed changes to the system, collect additional test data, and provide a detailed report delineating the viability of meeting cathodic protection criteria on the pipeline. This proposal assumes that installation of the test stations is accomplished in early 2021.

If, based on the information collected in late 2021, it is determined that the pipeline is not in permafrost, and that remedial cathodic protection can be effective, the CP upgrade designs would be completed in late 2021 and implemented between February and April of 2022. Frozen soil conditions would prevent testing to confirm the effectiveness of the CP upgrades until August of 2022, when seasonal soil thawing will have substantially occurred.

Pursuant to that schedule, we request that Paragraph B3 of the Proposed Compliance Order be modified from “provide to the Director of the Western Region the records associated with that work within **90** days of completion” to “provide to the Director of the Western Region the records associated with that work within **270** days of completion.

ITEM # 3 § 192.467 External corrosion control: Electrical isolation

Issue Summary: “The buried segment of the Nuiqsut natural gas pipeline was not electrically isolated from other underground metallic structures and was not electrically interconnected with those structures and cathodically protected as a single unit. Cathodic protection inspection reports completed in 2017, 2018, and 2019 noted that a bare copper wire was bonded to the Nuiqsut transmission pipeline, which bypassed the di-electric isolation flange kit at the pressure reducing valve (PRV) at the downstream end of the pipeline, shorting the pipeline to the PRV's grounding system. The PRV skid and the pipeline are not electrically interconnected and cathodically protected as a single unit. The operator removed the grounding wire during the March 10, 2020 site inspection but could not verify that the pipeline was isolated from PRV facility piping.”

Response: The isolation kit at the PRV is tested for effectiveness during the Annual Cathodic Protection (CP) Survey. The isolation kit was tested for functionality in September of 2020. Functionality testing indicated that the isolation kit is starting to fail (80% effective). Previous Annual CP Surveys indicated the isolation kit was functional but noted the bare copper wire defeated isolation. In accordance with the Proposed Compliance Order, the Borough will repair and re-test the failing isolation kit within 180-days and provide records to the Director within 30-days of construction completion.

ITEM # 4 § 192.467 External corrosion control: Electrical isolation

Issue Summary: “NSBEM failed to make inspections and electrical tests to assure that electrical isolation is adequate at the upstream end of the buried segment of the Nuiqsut natural gas pipeline. During the March 10, 2020 inspection, PHMSA observed potential lack of isolation between the pipeline and the buried, bare steel vertical support members (VSMs) which support the above ground pipeline. The VSMs were not intended to be electrically interconnected with the pipeline and protected as a single unit. Specifically, PHMSA observed that the pipeline is not equipped with an insulating device (for example a dielectric insulating flange) to electrically isolate the buried segment from the above-ground segment.....”

Response: The North Slope Borough repaired coating damage on the entire above-grade section of the pipeline with the exception of a short section near the HDD above-to-below grade transition. The repair methodologies at all of the other VSN & HSMs consisted of repairing any coating damage and encapsulating the pipe in a fiber reinforced polymer (FRP) wear guard to protect the coatings from future damage (see photo below).



The wear guard materials installed in 2018 are non-conducting and provide mechanical and electrical isolation between the pipe and support components (horizontal members and U-bolts).

The only support not addressed in this manner is the last HSM immediately adjacent to the soil/air transition at HDD. (below).



This coating repair, inspection and mechanical protection procedures used in 2018, will be utilized to address the lack of isolation at the HSM near the HDD Site. This will be completed within 180-days. The Borough will provide records to the Director within 30-days of construction completion.

During future Annual CP Surveys, a fixed cell moving ground continuity test will be performed between the closest VSMs and the pipe lead in Test Station No. 7. This test will verify electrical isolation has been achieved between the pipe support and the Nuiqsut pipeline. Results of these tests will be included in the annual CP survey reports.

ITEM # 5 § 192.479 Atmospheric corrosion control: General.

Issue Summary: “The operator did not clean and coat each portion of the Nuiqsut natural gas pipeline that was exposed to the atmosphere as required by § 192.479(a), nor did they meet the exceptions to the requirement to do so under paragraph § 192.479(c). Between 2010 and 2018, the Nuiqsut natural gas pipeline operated without adequate atmospheric corrosion control coating and with corrosion present that was beyond that of a light surface oxide. In addition, the operator failed to demonstrate that the corrosion would not affect the safe operation of the pipeline before the next scheduled inspection per § 192.479(c)(2).”

Response: With the exception of a short section of piping adjacent to the HDD aboveground to belowground transition (shown below), the North Slope Borough repaired all damaged coatings on all piping in the aboveground section of the Nuiqsut Pipeline in 2018.



This area adjacent to HDD, is the same area mentioned in Item # 4 (above). As stated in Item # 4, that area will be stripped, cleaned, inspected, documented and recoated with 180-days (in the winter of 2020-21).

The Borough will provide a written assessment and maintenance plan for the Nuiqsut Pipeline aboveground coatings in accordance with Paragraph D.1 of PHMSA’s Proposed Compliance Order. However, the Borough is not requesting an exemption from atmospheric corrosion control per §192.479(c). It is the Borough’s intent to annually inspect and repair any damage to the pipeline coatings or wear guards. These inspections and repairs will be documented and reported in accordance with Paragraph D.2 of the Compliance Order.

ITEM # 6 § 192.481 Atmospheric corrosion control: Monitoring.

Issue Summary: “Consecutive atmospheric corrosion inspections of aboveground portions of the Barrow natural gas pipeline occurred in July 2014 and then in September 2018, which exceeded the maximum 39-month inspection interval for pipelines located onshore.”

Response: The Borough understands that through an administrative oversight, the interval between atmospheric inspections was 50-months, which is in excess of the maximum 39-month interval. The Borough self-corrected this oversight and brought themselves into current compliance with PHMSA’s requirements. We respectfully request that the proposed fine be reconsidered in light of the Borough’s actions to self-correct this oversight prior to any notice from PHMSA.

ITEM # 7 § 192.481 Atmospheric corrosion control: Monitoring.

Issue Summary: “During their September 2018 atmospheric corrosion inspection, NSBEM failed to inspect every portion of the Barrow natural gas pipeline that was exposed to the atmosphere for evidence of atmospheric corrosion. Specifically, the NSBEM failed to inspect the “S-Curve” separator at Valve Station 2 and its associated aboveground piping and valves

as part of the September 2018 atmospheric corrosion inspection. The report for the September 2018 atmospheric corrosion inspection shows the boundaries of the areas of the pipeline that NSBEM inspected (piping circuit diagrams and tabulated inspection data). This report shows that NSBEM omitted the "S-Curve" and its associated aboveground piping from that inspection. During the December 10, 2019 inspection, PHMSA observed wide-spread coating failures and atmospheric corrosion at this location.

Response: The Borough will comply with the Proposed Compliance Order. We will conduct an atmospheric corrosion inspection of the S Curve vessel and associated valves with 90-days, repair corrosion protection measures within 90-days of the inspection and provide PHMSA with repair inspection records within 30-days of the repairs.

ITEM # 8 § 192.481 Atmospheric corrosion control: Monitoring.

Issue Summary: "NSBEM failed to inspect the Nuiqsut natural gas pipeline at soil-to-air interfaces and under thermal insulation. The Nuiqsut pipeline has thermal insulation at the soil-to-air interfaces, but atmospheric corrosion records for inspection reports 2014 and 2017 showed that NSBEM inspected the pipeline but did not inspect soil-to-air interfaces and areas under thermal insulation, as required by § 192.481(b)."

Response: The Borough will comply with the Proposed Compliance Order. We will excavate the soil -to-air interface within **180** days and conduct any necessary repairs at the time of the inspection. The condition of the pipe, insulation and coatings will be documented. Any repairs will also be documented and communicated to PHMSA within 30-days of the assessment.

ITEM # 9 § 192.614 Damage prevention program.

Issue Summary: "NSBEM's damage prevention program failed to include the identity, on a current basis, of persons who normally engage in excavation activities in the area in which the pipeline is located. During the inspection, NSBEM personnel stated that they did not maintain a list of any such excavators."

Response: The NSB Gas Field Operations will comply with the Proposed Compliance Order, amending our mailing list for damage prevention notifications to include excavators, both local and distant, who frequently use the one-call system for Barrow and Nuiqsut areas within 90 days of receipt of the Final Order. The NSB Gas Field Operations also takes all the 811 calls and performs all locates under this system. The Gas Field Operations also retains a record from all locates and contractors that may dig near the BUECI pipeline.

ITEM # 10 § 192.616 Public awareness.

Issue Summary: "NSBEM failed to follow the general recommendations of API RP 1162. Specifically, NSBEM did not annually complete an audit or review of the Public Awareness Program's implementation, as required in Section 8.3 of API RP 1162. During the inspection, NSBEM provided to PHMSA personnel a completed internal self-assessment worksheet for 2018; however, NSBEM personnel stated that an audit or review for the years prior to 2018 was never completed. NSBEM did not provide justification as to why compliance with that provision was not practicable or necessary for safety."

Response: The NSB Gas Field Operations recognized this issue and have self-corrected. We will continue to comply with this requirement in the future.

ITEM # 11 § 192.616 Public awareness.

Issue Summary: "NSBEM's 2019 Public Awareness flyer, which was used to educate the public in Nuiqsut on the physical indications of a possible release, stated that "Natural gas smells like rotten eggs." NSBEM's Nuiqsut natural gas pipeline is un-odorized, thus the information provided to the public in the flyer failed to educate the public as required by the regulation."

Response: The NSB Gas Field Operations agree with PHMSA that the Public Awareness flyer used to educate Nuiqsut should specify that the pipeline gas is not odorized and may have no smell at all. The flyer has been modified to reflect this correction.

ITEM # 12 § 192.707 Line markers for mains and transmission lines.

Issue Summary: "On the Barrow natural gas pipeline, NSBEM failed to place and maintain line markers along each section of its transmission line that is located aboveground in an area accessible to the public. There is an above-ground portion of the Barrow pipeline located on a causeway that is accessible to the public that did not have pipeline markers on either side."

Response: The NSB Gas Field Operations annually replaces markers that are either damaged by snow machines, recreational vehicles or foot traffic at the causeway. The Gas Field Operations proactively responded to PHMSA's mention of this discrepancy from the 2019 audit and installed pipeline markers in April 2020 on both sides of the aboveground causeway and also in the middle facing the adjacent parallel walkway.

ITEM # 13 § 192.739 Pressure limiting and regulating stations: Inspection and testing.

Issue Summary: "NSBEM failed to inspect each pressure regulating station at least once each calendar year at intervals not to exceed 15 months. The Barrow natural gas pipeline's pressure is regulated by six pressure control valves (PCVs) at two facilities (specifically, PCV214A, PCV214B, PCV237A, and PCV237B at the Primary Gas Handling Facilities and PCV001 and PCV002 at the South Gas Handling Facility). These PCVs are the primary pressure control on the pipeline; they reduce the pressure from the upstream gathering system (maximum 900 psig) to the Barrow natural gas pipeline's normal operating pressure (approximately 290 psig). NSBEM provided records showing that the pressure regulating stations on the Barrow natural gas pipeline were inspected on June 11, 2016 and December 7, 2017, which exceeded the maximum 15-month interval."

Response: The NSB Gas Field Operations understand that through an administrative oversight, the interval between the 2016 and 2017 PCV inspections was 18-months which is 3-months beyond the maximum 15-month interval required. We respectfully request that the proposed fine be reconsidered as Gas Field Operations have self-corrected this specific oversight and has met this annual requirement for inspection in each subsequent year since the noted oversight.

ITEM # 14 § 192.739 Pressure limiting and regulating stations: Inspection and testing.

Issue Summary: "NSBEM failed to ensure that a pressure control valve, PCV-214A, was "in good mechanical condition" during its June 2016 inspection. PCV-214A is a Pressure Control Valve at the PGHF, which is a pressure regulating facility for the Barrow natural gas pipeline. The worksheet for the June 2016 inspection indicated that there was audible leak-by at PCV-214A and that the valve needed to be re-built, but the operator had not repaired the valve by the December 2017 inspection (the leak-by was still present and noted on the December 2017 inspection worksheet). During PHMSA's 2019/2020 inspection the operator stated that the leak-by had still not been repaired."

Response: We have attached email correspondence from the valve manufacturer representative, confirming that the subject valve, when operating in accordance with manufacturer's tolerances, is expected to flow approximately 88 scfm when closed (see attached email from Andrew Zaragoza who is the Applications Engineering Manager with PCE Pacific Corporation). This correspondence supports that the valve in question remains in good mechanical condition.

In accordance with the device manufacturer's tolerances for performance, PCV-214A remains in "good mechanical condition". With this documentation in-hand, we respectfully request that you remove the \$58,000 proposed fine.

ITEM # 15 § 192.743 Pressure limiting and regulating stations: Capacity of relief devices.

Issue Summary: "NSBEM failed to test in place or review the capacity of the relief devices at the pressure regulating stations in the Primary Gas Handling Facility (PGHF) and South Gas Handling Facilities (SGHF). The PGHF and SGHF both have pressure regulating stations that reduce the pressure from the gathering system (maximum approximately 900 psi) to the Barrow transmission pipeline's operating pressure (typically 290 psi). PSV 360 and RV005 are the relief valves in the PGHF and SGHF, respectively. NSBEM stated during the inspection that they had never tested the devices in place nor reviewed the capacity calculations."

Response: The Borough will comply with the Proposed Compliance Order. We will mobilize a licensed professional engineer to assess the system and calculate the required capacity for each device (In accordance with § 192.743). The findings, and a work plan delineating any required changes, will be provided to the Director within 90-days.

Upon receipt of a notice of non-objection from the Director, the required changes will be completed within 90-days. Within 30-days of completion, documentation of the repairs will be provided to the Director.

ITEM # 16 § 192.807 Recordkeeping.

Issue Summary: “NSBEM failed to retain Operator Qualification (OQ) records prior to 2016. Personnel operating pipelines for the North Slope Borough work under contract; the operator stated that, in 2016, the prior contract company, operating on behalf of the North Slope Borough, destroyed the OQ records.”

Response The current NSB Gas Field Operator, Tikigaq/Conam LLC, recognized this short coming when they assumed responsibility and immediately instituted and currently maintains an Operator Qualification Program through NCCER.

Please contact my office if there may be any further questions or clarification needed.

Respectfully,

Joe Ramirez

Joe Ramirez, Division Program Manager
North Slope Borough
Department of Public Works

Cc; Harry K. Brower Jr., Mayor North Slope Borough
Scott K. Danner, Director Department of Public Works
Dale Kisse, Tikigaq/Conam LLC