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November 19th, 2012

David Lykken- Director of Pipeline Safety Program  
State of Washington Utilities and Transportation Commission  
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Pipeline Safety Program

Subject: Response to 2012 Natural gas Distribution Integrity Management Program Inspection

Dear Mr. Lykken,

This letter is intended to address all probable code violations. We specifically are addressing how and when we plan to bring the probable violations into full compliance. The inspection was conducted on August 21st through August 22<sup>nd</sup>, 2012 in Boise, ID.

The following is in response to the nine probable violations:

### PROBABLE VIOLATIONS

#### **1. WAC 480-93-180(1) Plans and procedures.**

*(1) Each gas pipeline company must have and follow a gas pipeline plan and procedure manual (manual) for operation, maintenance, inspection, and emergency response activities that is specific to the gas pipeline company's system. The manual must include plans and procedures for meeting all applicable requirements of 49 CFR §§ 191, 192 and chapter 480-93 WAC, and any plans or procedures used by a gas pipeline company's associated contractors.*

#### **FINDINGS:**

CNG does not have a written procedure for the categorization of leaks as detailed in PHMSA's form: *INSTRUCTIONS FOR COMPLETING FORM PHMSA F 7100.1-1 (Rev. 01/11)*. As a result, CNG's DIMP program leak categorizations do not match PHMSA's instructions for the annual report. CNG's DIMP procedure 6.2 states that the categories should match the annual report.

#### **Cascade Response:**

CNGC will update the written DIMP Plan leak procedure definitions to match the definitions in PHMSA instructions. CNGC will also provide training to district personnel on PHMSA leak classification definitions and on completing leak reports.

**2. CFR §192.1005, What must a gas distribution operator (other than a master meter or small LPG operator) do to implement this subpart?**

*No later than August 2, 2011 a gas distribution operator must develop and implement an integrity management program that includes a written integrity management plan as specified in § 192.1007*

**Findings:**

CNG's DIMP plan (Plan) has been written but is not fully implemented and validated. CNG's risk model is based in part on inaccurate data from leak repair and classification records. The additional or accelerated actions (AA's) that have been identified and implemented are not fully supported by the risk model. AA's that support the highest risk based on the risk model have not been implemented.

**Cascade Response:**

CNGC concurs that the DIMP Plan has not been fully implemented and validated. CNGC will address the inaccurate data from leak repair and classification records as outlined in Probable Violation 1 and by reviewing, identifying and resolving discrepancies in CNGC's leak record database. CNGC will then validate the revised risk model by March 31, 2013. The written DIMP Plan will be revised to include additional instructions regarding AA's identification and implementation.

**3. CFR §192.1007(a)(2) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

- (a) Knowledge. An operator must demonstrate an understanding of its gas distribution system developed from reasonably available information.*
- (2) Consider the information gained from past design, operations, and maintenance.*

**FINDINGS:**

PHMSA guidance material states that operators should use location, material composition, piping sizes, joining methods, construction methods, date of installation, soil conditions (where appropriate), operating and design pressures, history, operating experience performance data, condition of system, and any other characteristics important to understanding its system. CNG's Plan addresses some, but not all of this information.

CNG's Plan should better detail how this information was used and why some information was not included in their plan.

CNG personnel indicated that information such as system over pressurization records, patrol records or differences in soil and corrosion rates were not used in identifying potential threats.

**Cascade Response:**

CNGC's written DIMP Plan will be updated to include the required elements as stated in this Probable Violation.

**4. CFR §192.1007(a)(3) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(a) Knowledge. An operator must demonstrate an understanding of its gas distribution system developed from reasonably available information.*

*(3) Identify additional information needed and provide a plan for gaining that information over time through normal activities conducted on the pipeline (for example, design, construction, operations or maintenance activities).*

**FINDINGS:**

It appears that CNG's Risk Model does not accurately reflect known risks, partially due to unknown data and partially due to inaccurate data mainly related to leak repair records. CNG's Plan, Section 2.5.2.1, does not clearly identify what additional information is needed and how this information will be gathered over time.

**Cascade Response:**

CNGC's Risk Model will be updated to accurately reflect known risks. CNGC's written DIMP Plan will be updated to clearly identify the required additional information and how the information will be gathered.

**5. CFR §192.1007(a)(5) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(a) Knowledge. An operator must demonstrate an understanding of its gas distribution system developed from reasonably available information.*

*(5) Provide for the capture and retention of data on any new pipeline installed. The data must include, at a minimum, the location where the new pipeline is installed and the material of which it is constructed.*

**FINDINGS:**

CNG's Plan, Section 2.5.4 refers to data that must be recorded for newly installed facilities. The information to be recorded does not include the specification, grade of steel or type of plastic, manufacturer, coating, etc.

PHMSA has published an FAQ describing what information must be collected for new pipelines. Below is an excerpt from FAQ, C.4.a.4, published November 11, 2010:

**C.4.a.4 What data will be required to be collected for new gas pipelines going in the ground?**

*The DIMP regulation prescribes two minimum data elements that must be captured and retained on any new distribution pipelines: the location where the new pipeline is installed and the material of which it is constructed. Pipeline, defined in §192.3, means all parts of those physical facilities through which gas moves in transportation, including pipe, valves, and other appurtenance attached to pipe, compressor units, metering stations, regulator stations, delivery*

stations, holders, and fabricated assemblies. Additionally, operators must collect data about new gas pipelines which will be needed to assess current and future threats and risks to the pipeline's integrity. This includes information about the characteristics of the pipeline's design, operations, and the environmental factors where the pipeline is installed.

**PHMSA guidance material states that:**

Material is more than just "steel" or "plastic." It should include the specification, grade of steel or type of plastic, manufacturer, coating, etc. In accordance with the definition of "pipeline" in §192.3, this includes valves and other appurtenances through which gas flows.

**Cascade Response:**

CNGC's written DIMP Plan will be updated to include the required information for newly installed pipelines.

**6. CFR §192.1007(b) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(b) Identify threats. The operator must consider the following categories of threats to each gas distribution pipeline: corrosion, natural forces, excavation damage, other outside force damage, material or welds, equipment failure, incorrect operations, and other concerns that could threaten the integrity of its pipeline. An operator must consider reasonably available information to identify existing and potential threats. Sources of data may include, but are not limited to, incident and leak history, corrosion control records, continuing surveillance records, patrolling records, maintenance history, and excavation damage experience.*

**FINDINGS:**

- a. CNG's Plan, Section 3.2, categorizes the threats incorrectly. Section 6.2 requires that leaks be categorized by cause and that this categorization match the information on the annual distribution report. PHMSA has instructions for filling out the annual distribution report (INSTRUCTIONS FOR COMPLETING FORM PHMSA F 7100.1-1 (Rev. 01/11)) which also includes leak categorization by cause. CNG's Plan does not match this categorization.
- b. CNG's leak repair records are also suspect in how they record leak cause. CNG's annual reports for 2007, 2008, 2009 and 2010 do not match the construction defects and material failure report required by WAC 480-93-200(7)(c).
- c. CNG's Plan has not clearly identified all potential threats. Potential threats are threats where the operator has not experienced a leak (i.e., release of gas) but they have conditions conducive to the threat. Examples include:
  - Trenchless technology used in the area – unknowingly bored thru sewer or water lines
  - Future utility/road improvement projects
  - Customer built structures over existing pipelines
  - Over-pressurization events
  - Instances of pipe damage (including damage to tracer wire) that did not result in a release
- d. CNG's Plan does not reasonably subdivide the system to identify existing and/or potential threats. Records indicate that the corrosion rate is approximately six times higher for mains installed in Western WA compared to Eastern WA. This may be due to

- environmental factors related to soil conditions.
- e. CNG's Plan does not specify whether Continuing Surveillance records are being considered or incorporated into CNG's Plan.
  - f. Per CNG personnel, maintenance history such as system over-pressurization events are not considered or incorporated into CNG's Plan.
  - g. Per CNG personnel, patrolling records are only considered if a leak has occurred. The intent of this code is to consider all information that may be indicative of potential threats such as information that could be identified during patrols. CNG's Plan should detail how this information is reviewed and why it is not necessary to identify potential threats.

**Cascade Response:**

Probable Violation 6 Finding a

CNGC's written DIMP Plan threat categories will be updated.

Probable Violation 6 Finding b

CNGC will review the annual leak record reports and the Construction Defects and Material Failure annual reports. If any corrections are necessary, CNGC will update the annual leak records and/or submit corrected Construction Defects and Material Failure report. Additionally, CNGC will address future reporting as stated in Probable Violation 1.

Probable Violation 6 Finding c

CNGC's written DIMP Plan will be updated to include all potential threats.

Probable Violation 6 Finding d

CNGC's written DIMP Plan will be updated to include subdivision information to identify existing and/or potential threats.

Probable Violation 6 Findings e, f, and g

CNGC's written DIMP Plan will be updated to include details regarding Continuing Surveillance, maintenance history (i.e. over-pressurization) and patrolling records that could be considered in potential threat identification.

**7. CFR §192.1007(c) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(c) Evaluate and rank risk. An operator must evaluate the risks associated with its distribution pipeline. In this evaluation, the operator must determine the relative importance of each threat and estimate and rank the risks posed to its pipeline. This evaluation must consider each applicable current and potential threat, the likelihood of failure associated with each threat, and the potential consequences of such a failure. An operator may subdivide its pipeline into regions with similar characteristics (e.g., contiguous areas within a distribution pipeline consisting of mains, services and other appurtenances; areas with common materials or environmental factors), and for which similar actions likely would be effective in reducing risk*

**FINDINGS**

- a. CNG's Plan is unclear on how risk weighting factors were validated or justified.

- b. Explicit guidelines and process formality were not provided to support use of SME's in risk analysis. No guidelines are established for who can be considered an SME. Per CNG personnel, SME information may be used to override the Plan's risk model when implementing AA's, but no procedures have been established detailing how and when this may be done.
- c. CNG's plan is unclear on how the risk model will be validated, what information will be provided to SME's and how the SME's input will be utilized. The risk model does not appear to match actual threats to CNG's system(s). Records were not clear as to what information was provided to SME's for validation. Some records indicated only corrosion and pipe replacement issues were discussed.
- d. CNG personnel stated they were still struggling with results that don't match actual risks. The risk model appears to be flawed due to inconsistent leak repair records, inaccurate leak repair records, excessive unknown data and unclear procedures on how SME's input is utilized.

**Cascade Response:**

Probable Violation 7 Findings a

CNGC's written DIMP Plan will be updated with instructions for assigning and validating risk weighting factors.

Probable Violation 7 Findings b

CNGC's written DIMP Plan will be updated to include instructions for the use of Subject Matter Experts in risk analysis.

Probable Violation 7 Findings c

CNGC's written DIMP Plan will be updated to define the risk model validation process, documentation requirements, and the role of Subject Matter Experts.

Probable Violation 7 Findings d

CNGC's written DIMP Plan and Risk Model will be updated as stated in this response letter. Once implemented, these updates will ensure that the results will match actual risks.

**8. CFR §192.1007(d) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(d) Identify and implement measures to address risks. Determine and implement measures designed to reduce the risks from failure of its gas distribution pipeline. These measures must include an effective leak management program (unless all leaks are repaired when found)*

**FINDINGS**

- a. CNG's Plan does not have detailed procedures for implementing actions to reduce risk. The plan should include:
  - Procedures on how measures will be implemented to reduce risks based on CNG's risk model (table 5.1 gives examples but no details)
  - Schedule for implementation of the measure(s) to reduce risk
- b. The additional measures implemented by CNG are not based on the risk model. As an

example, the risk model indicated that in some areas within WA State, materials and improper operations were the number one and number two highest risks but no AA's have been implemented to reduce these risks such as training, procedures review, leak program evaluation, additional leak surveys etc.

- c. CNG's Plan does not adequately require a documented justification for decisions regarding additional preventive and mitigative measures. CNG's Plan does indicate that additional measures above and beyond code requirements are in place, such as accelerated leak surveys etc., but it does not tie these measures into its Plan or associate them with AA's based on the risk model.

**Cascade Response:**

**Probable Violation 8 Finding a**

CNGC will update the written DIMP Plan with detailed instructions for implementing actions to reduce risk.

**Probable Violation 8 Finding b**

CNGC's written DIMP Plan will be updated to include additional instructions regarding AA's identification and implementation.

**Probable Violation 8 Finding c**

CNGC's written DIMP Plan will be updated with instructions for additional preventive and mitigative measures.

**9. CFR §192.1007(d) What are the required elements of an integrity management plan?**

*A written integrity management plan must contain procedures for developing and implementing the following elements:*

*(e) Measure performance, monitor results, and evaluate effectiveness.*

*(1) Develop and monitor performance measures from an established baseline to evaluate the effectiveness of its IM program. An operator must consider the results of its performance monitoring in periodically re-evaluating the threats and risks. These performance measures must include the following:*

*(i) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) of this subchapter (or total number of leaks if all leaks are repaired when found), categorized by cause;*

*(ii) Number of excavation damages;*

*(iii) Number of excavation tickets (receipt of information by the underground facility operator from the notification center);*

*(iv) Total number of leaks either eliminated or repaired, categorized by cause;*

*(v) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by material; and*

*(vi) Any additional measures the operator determines are needed to evaluate the effectiveness of the operator's IM program in controlling each identified threat.*

**FINDINGS**

CNG's Plan, section 6.4 and 6.5, does not have detailed procedures indicating what trends would be considered abnormal and what documents, databases, spreadsheets, etc., will be used for trend analysis. The procedures do not have thresholds that would require

additional measures or that would indicate that AA's are not adequately addressing the associated threats.

**Cascade Response:**

CNGC's written DIMP Plan will be revised to include detailed procedures for trend analysis.

Please contact Jeremy Ogden, Director of Engineering Services with questions or comments at 509-734-4509.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Eric Martuscelli". The signature is stylized and written in a cursive-like font.

Eric Martuscelli,  
Vice President, Operations  
Cascade Natural Gas Corporation