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June 18, 2004

Alan E. Rathbun
Pipeline Safety Director
Washington Utilities and Transportation Commission
P.O. Box 47250
1300 S. Evergreen Park Dr. SW
Olympia, WA 98504

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Dear Mr. Rathbun:

Subject: 2003 Natural Gas Safety Inspection for Bellingham/Mount Vernon and Wenatchee/Moses Lake Districts (PG-030438 and PG-030435 respectively)

Thank you for your report concerning the December 2003 to March 2004 inspection of our Bellingham, Mount Vernon, and Wenatchee Districts. Cascade's responses to the findings of the report are as follows.

WUTC - VIOLATIONS

1. **49 CFR 192.285, Plastic pipe: qualifying persons to make joints.**
 - (a) No person may make a plastic pipe joint unless that person has been qualified under the applicable joining procedure by:
 - (1) Appropriate training or experience in the use of the procedure; and
 - (2) Making a specimen joint from pipe sections joined according to the procedure that passes the inspection and test set forth in paragraph (b) of this section.
 - (b) The specimen joint must be:
 - (1) Visually examined during and after assembly or joining and found to have the same appearance as a joint or photographs of a joint that is acceptable under the procedure; and
 - (2) In the case of a heat fusion, solvent cement, or adhesive joint;
 - (i) Tested under any one of the test methods listed under §192.283(a) applicable to the type of joint and material being tested;
 - (ii) Examined by ultrasonic inspection and found not to contain flaws that would cause failure; or
 - (iii) Cut into at least three longitudinal straps, each of which is:
 - (A) Visually examined and found not to contain voids or discontinuities on the cut surfaces of the joint area; and
 - (B) Deformed by bending, torque, or impact, and if failure occurs, it must not initiate in the joint area.

WUTC Finding:

Cascade Natural Gas (CNG) is testing, qualifying and using plastic pipe joiners to make heat fusion butt joints without conducting either the ultrasonic inspection detailed in 192.285(b)(2)(ii) or by the bending, torque, or impact test 192.285(b)(2)(iii)(B).

Cascade Response:

During the inspection Mr. Rukke found that Cascade's Company Procedure 607 – PE Main and Service Construction heater plate butt fusion joiner qualification procedures required the Part 192.285(b)(2)(iii)(A) visual examination, but did not require the deformation tests of Part 192.285(b)(2)(iii)(B). An immediate bulletin was sent to both of Cascade's testing labs so that the deformation test would be performed from that point forward. A copy of the bulletin is attached.

Cascade's Company Procedure 607 will be updated to fully incorporate Part 192.285. We will continue to perform the tests prescribed by the bulletin in the interim.

2. **49 CFR 192.13, General**

(c) Each operator shall maintain, modify as appropriate, and follow the plans, procedures, and programs that it is required to establish under this part.

WUTC Finding:

Parts 192.285(b)(2)(ii) and 192.285(b)(2)(iii)(B) require that when qualifying persons to make plastic pipe joints that the joints be examined by either an ultrasonic inspection or that they be subjected to a bending, torque, or impact test. CNG procedure CP 607.215 does not require that specimen joints be tested by either method.

Cascade Response:

Cascade's CP 607.215 does require a bending, torque, or impact test for heater plate sidewall fitting tests, electro-fusion coupler joint tests, and electro-fusion sidewall fitting tests.

CP 607.215 does not require a bending, torque, or impact test for heater plate butt fusion tests. We are currently performing the required tests per the attached bulletin. Cascade's Company Procedure 607 is being updated to incorporate the requirements of Part 192.285(b)(2)(iii)(B) for heater plate butt fusion tests.

3. **49 CFR 192.721, Distribution systems: Patrolling.**

- (a) The frequency of patrolling mains must be determined by the severity of the conditions which could cause failure or leakage, and the consequent hazards to public safety.*
- (b) Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage must be patrolled -*
 - (1) In business districts, at intervals not exceeding 4 1/2 months, but at least four times each calendar year; and*
 - (2) Outside business districts, at intervals not exceeding 7 1/2 months, but at least twice each calendar year.*

WUTC Finding:

The Mt Vernon quarterly Patrols were conducted on April 25, 2002 and again on September 19, 2002. This exceeds the maximum quarterly patrol timeframe of 4 ½ months by approximately 10 days.

Cascade Response:

We are examining our management practices for scheduling all maintenance and calibration tasks and will make changes as necessary. We will increase our efforts Company-wide to prevent this scheduling problem in the future.

4. **49 CFR 192.739, Pressure limiting and regulating stations: Inspection and testing.**

Each pressure limiting station, relief device (except rupture discs), and pressure regulating station and its equipment must be subjected at intervals not exceeding 15 months, but at least once each calendar year, to inspections and tests to determine that it is-

- (a) In good mechanical condition;*
- (b) Adequate from the standpoint of capacity and reliability of operation for the service in which it is employed;*
- (c) Set to control or relieve at the correct pressures consistent with the pressure limits of §192.201(a); and*
 - (d) Properly installed and protected from dirt, liquids, or other conditions that might prevent proper operation.*

WUTC Findings:

- (a) **Mount Vernon District, City of Burlington, Regulator Station R-28.**
Maintenance was not performed on regulator station R-28 during the calendar year 2003. Documentation indicates that on June 6, 2003 personnel attempted to perform annual maintenance but couldn't due to an inoperable valve. CNG was unable to provide any further documentation indicating that maintenance was performed on this regulator station after December 9, 2002.

- (b) **Bellingham District, City of Ferndale, Regulator Station R-137.**
Maintenance was performed on June 15, 2002 and then again on September 20, 2003. This exceeded the maximum 15-month timeframe by approximately 5 days.

Cascade Response:

- (a) **Burlington, Regulator Station R-28** – On June 6, 2003, personnel were sent out to inspect the station, but performing the standard maintenance was prevented due to an inoperable valve. They reported this on the form and submitted it to their General Manager. This report was not processed correctly, and the task was recorded as completed.

Subsequent to Mr. Rukke's inspections, the inoperable valve was replaced on March 17, 2004 and the regulator station maintenance was performed on June 10, 2004.

If this task had been processed correctly, the appropriate maintenance would have been performed on time. We will issue additional training to appropriate personnel regarding the requirements to "complete" regulator station maintenance and for the reporting of items requiring further action.

- (b) **Ferndale Regulator Station R-137** – This regulator station was not placed into our maintenance scheduling system correctly. The error was discovered near the 15 month deadline for the maintenance. The work was scheduled, but not completed by the deadline.

We will review our process for adding regulator stations to our scheduling system and make appropriate improvements to our management practices.

5. **49 CFR 192.741(c), Pressure limiting and regulating stations: Telemetering or recording gauges.**

If there are indications of abnormally high- or low-pressure, the regulator and the auxiliary equipment must be inspected and the necessary measures employed to correct any unsatisfactory operating conditions.

WUTC Findings:

Documentation indicated that the following regulator stations exceeded their established Maximum Allowable Operating Pressure (MAOP):

- (a) **Arlington R-86.** The MAOP of this system is 249 psig. Records indicate that from March 2002 until October 2003 the pressure exceeded 249 psig approximately 70 times. (pressure charts checked and changed once each week)

- (b) **Anacortes – Commercial (no regulator # on documentation).** The MAOP is of this system is 10 psig. Records indicate that from June 2002 through January 2003 the pressure exceeded 10 psig 5 times. (pressure charts checked and changed once each week)
- (c) **Burlington 1955 S. Burlington Blvd. (no regulator # on documentation).** The MAOP of this system is 42 psig. Records indicate that from March 2003 until May 2003 the pressure exceeded 42 psig 7 times. (pressure charts checked and changed once each week)
- (d) **Burlington R-19.** The MAOP of this system is 42 psig. Records indicate that from December 2002 until March 2003 the pressure exceeded 42 psig 17 times. (pressure charts checked and changed once each week)

In the majority of these indications of abnormally high pressures CNG failed to conduct the necessary inspections of the regulator and or auxiliary equipment such as the pressure recording charts. Due to records indicating 2 different pressures on 1 system fed by multiple regulators Staff requested that CNG conduct an inspection of the pressure recording chart at R-86. This recording chart was found to be reading approximately 20 psig above the actual operating pressure. CNG does not conduct scheduled calibration of recording charts and according to records many of the devices in the Mt. Vernon district are undependable and frequently inoperable.

Cascade Response:

We have examined our management of pressure chart review process, and are currently working to improve our performance.

The following changes to our pressure monitoring practices are in place, or will soon be enacted.

1. On June 4, 2004, we revised our Company Procedure 735 – System MAOP and Review that covers pressure chart monitoring activities. We included detailed guidelines for pressure chart review, specifically stating indications that must be reported to Managers, Gas Control, and/or Engineering. The update also includes new standardized records requirements for pressure chart processes.
2. We performed additional training for District General Managers regarding their review of the pressure charts. The training included the requirements of the new CP 735, and the actions to take when a problem is discovered.
3. We provided additional training for personnel that remove and log pressure charts so that they know the appropriate indications to report to their General Managers and are familiar with the Company Procedure 735 instructions.
4. We are reviewing manufacturer's recommended practices for the calibration of pressure charts operated by Cascade. We will begin an appropriate pressure chart maintenance program by September 1, 2004.

6. **49 CFR 192.747, Valve maintenance: Distribution systems.**

Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year.

WUTC Findings:

The following valves exceeded the maximum 15 month timeframe for maintenance:

- (a) **Bellingham District, City of Ferndale, valve V-123.** Maintenance was performed on May 21, 2002 and then again on September 2, 2003. This exceeded the maximum 15-month timeframe by approximately 12 days.
- (b) **Bellingham District, City of Bellingham, valve V-168.** Maintenance was performed on March 28, 2002 and then again on September 2, 2003. This exceeded the maximum 15-month timeframe by approximately two months and 4 days.
- (c) **Bellingham District, City of Sumas, valve V-82.** Maintenance was performed on May 17, 2002 and then again on September 2, 2003. This exceeded the maximum 15-month timeframe by approximately 16 days.

Cascade Response:

We are examining our management practices for scheduling all maintenance and calibration tasks, and will make changes as necessary. We will increase our efforts Company-wide to prevent this scheduling problem in the future.

7. **WAC 480-93-188 (2), Gas Leak Surveys (maintenance and calibration of instruments)**
Repeat violation

Maintenance and calibration of instruments. All instruments used in leak detection and evaluation shall be maintained, calibrated, and operated in accordance with the latest applicable manufacturers' specifications, methods, and procedures unless alternative specifications, methods, and procedures have been approved by an appropriate governmental agency.

WUTC Findings:

CNG requires calibration of combustible gas indicators (CGI's) semi-annually and flame ionization (FI) units prior to each use. This frequency is based on the manufacturer's recommended calibration frequency. Staff reviewed calibration records indicating that CNG has not met the required frequency. Records indicate that calibration frequencies for the following instruments did not meet the minimum requirements:

Note: Staff is only listing instruments from the second half of 2001 to the present. Missed calibration dates prior to this date were previously addressed.

- a. **Det Pk III, serial #9040.** According to system surveillance records, this instrument was used to conduct leak surveys on 10/10/2003, 10/3/2003, 9/30/2003, 12/10/2002, 7/9/2002, 6/28/2002, 6/21/2002, 4/25/2002, 4/23/2002, and 4/2/2002. CNG was unable to provide calibration records for these dates.
- b. **Det Pk III, serial #9308.** According to system surveillance records, this instrument was used to conduct leak surveys on 10/10/2003, 10/3/2003, 9/30/2003, 6/21/2002, 4/25/2002, 4/23/2002 and 4/2/2002. CNG was unable to provide calibration records for these dates.
- c. **Det Pk II, serial #3397.** According to system surveillance records, this instrument was used to conduct leak surveys on 7/9/2002 and 6/28/2002. CNG was unable to provide calibration records for these dates.
- d. **Gascope 53, serial #7078.** According to calibration records this instrument was not calibrated semi-annually in 2001.
- e. **Gastrac II, serial #7078.** According to calibration records this instrument was not calibrated semi-annually in 2001.
- f. **Gastrac II, serial #17521.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- g. **Gastrac II, serial #17570.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- h. **Gastrac II, serial #18762.** According to calibration records this instrument was not calibrated semi-annually in 2002.

- i. **Gastrac II, serial #18763.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- j. **Gastrac II, serial #28392.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- k. **Gastrac II, serial #E31047.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- l. **Gastrac II, serial #M12286.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- m. **Gascope 60, serial #4531.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- n. **Gascope 60, serial #4555.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- o. **Gascope 60, serial #6003.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- p. **Gascope 60, serial #4531.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- q. **Gascope 53, serial #11043.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- r. **Gastrac II, serial #16523.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- s. **Gastrac II, serial #17564.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- t. **Gastrac II, serial #19926.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- u. **Gastrac II, serial #19927.** According to calibration records this instrument was not calibrated semi-annually in 2003.
- v. **Gastrac II, serial #M7065.** According to calibration records this instrument was not calibrated semi-annually in 2002.
- w. **Gascope 60, serial #5498.** According to calibration records this instrument was not calibrated semi-annually in 2002.

Cascade Response:

Regarding items (a), (b), and (c); the technicians performed the calibrations, but did not record the calibrations. We will issue training to all personnel regarding calibration frequency, and record-keeping for these types of instruments.

We are examining our management practices for scheduling all maintenance and calibration tasks, and will make changes as necessary. We will increase our efforts Company-wide to prevent this scheduling problem in the future.

AREAS OF CONCERN

WUTC Area of Concern 1

Staff reviewed leak records which indicated that CNG personnel were using a Hydrogen Flame Ionization (HFI) unit to grade leaks found during leak surveys in the Bellingham area. WAC 480-93-187(2)(s) requires that the magnitude of CGI reads be recorded at appropriate locations which are part of the classification procedure contained in Table 1 of WAC 480-93-186 (codified as WAC 480-93-18601). CNG can not comply with this requirement using only an HFI unit.

Cascade Response:

CNG Bellingham District General Manager was instructed that using a combustible gas indicator, or equivalent, to detect underground migration was the best practice. Bellingham personnel were instructed that an underground probe and survey must be conducted to adequately determine the extents of a leak. Bellingham District has changed its practices, and this leak investigation issue is resolved.

A review of our records shows that all leaks reviewed by Mr. Rukke were investigated and repaired. The majority of the leaks were repaired within 14 days of detection, many on the day they were detected.

WUTC Area of Concern 2

Records indicate that Bellingham district pressure recorders, which are used to comply with the CFR Part 192.741 pressure monitoring requirements, are excessively non-functional. The condition and non-functionality of the recorders could potentially lead to non-compliance with the pressure monitoring requirements of CFR Part 192.741.

Cascade Response

The problems are with an obsolete model pressure recorder that Cascade uses. We will replace or retire these recorders.

WUTC Area of Concern 3

Staff reviewed leak records that were missing information such as pressure test records, leak grade and locations of CGI reads. This information is required to be documented by WAC 480-93-187 and WAC 480-93-188 (pressure tests).

Cascade Response

We will improve our record keeping of these documents. Our technicians perform the required checks, but sometimes fail to write them onto the leak report form.

WUTC Area of Concern 4

CNG does not have a calibration schedule for pyrometers. Pyrometers are used to verify fusion iron temperatures. Fusion irons that are out of the specified temperature ranges could affect the integrity of the pipeline joints that are produced.

Cascade Response

We will implement a pyrometer calibration program in accordance with the pyrometer manufacturer's recommendations.

WUTC Area of Concern 5

CNG does not have a calibration or accuracy check schedule for pressure recording devices or gauges. Pressure recording devices and gauges are an integral part of monitoring pipeline systems.

Cascade Response

We will implement a pressure recording device calibration as noted in our response to WUTC Violation 5 (see above).

Cascade has a calibration schedule for key pressure gauges used for regulator maintenance. These gauges are calibrated at least once every year. A tag that is placed on the face or back of the individual gauge documents the calibration. We will review our gauge calibration schedule and update the schedule if necessary to meet our needs for accuracy and reliability.

WUTC Area of Concern 6

CNG does not maintain the required atmospheric corrosion survey records. CNG records atmospheric corrosion surveys by exception, which only indicates areas requiring remedial action. Staff was not able to determine whether CNG is in compliance with the requirements of CFR Part 192.481.

Cascade Response

This topic has been brought up in previous inspections. We are currently performing formal atmospheric corrosion surveys as detailed in Cascade's responses to Docket #UG-02706. A UG-02706 finding stated that Cascade's atmospheric corrosion survey documentation was insufficient.

After that finding, we implemented new procedures to document the surveys. Documents of atmospheric corrosion checks for regulator stations, above ground valves, and odorizer stations

were shown to Mr. Rukke during the inspection. Meter survey documentation will be generated when the first survey groups are completed. Full details of our atmospheric corrosion survey program can be found in Company Procedure 754 which is attached for reference.

WUTC Area of Concern 7

Staff reviewed records such as pressure logs that did not adequately identify the MAOP's of various systems. An example is CNG's Arlington system fed by regulator R-86. Staff reviewed the pressure logs for this system which had the MAOP of 250 psig crossed out and an MAOP of 400 psig written above it. Neither of these numbers are correct as the MAOP of this system is 249 psig. CNG should clearly identify each system MAOP and document it on the appropriate paperwork. In the example cited above, the pressure logs are used to monitor system pressures and to indicate when Commission notification is required.

Cascade Response

We have implemented the use of a new pressure log form that has a space for the MAOP to be written. The Company's pressure chart logs will be updated and reviewed to ensure that the correct MAOPs are listed.

WUTC Area of Concern 8

CNG does not have an atmospheric corrosion survey program in place for the inspection of pipelines under supports, straps or other places where moisture accumulation is possible and could cause corrosion. Staff inspected Wenatchee station O-06 and observed the pipeline coating flaking off under the support straps. The support straps were in direct contact with the pipeline and it appeared that moisture frequently accumulated under the straps. At Staff's request CNG personnel removed the support straps and inspected, cleaned, and re-coated the pipeline.

Cascade Response

We will incorporate inspection of this type of location into our atmospheric corrosion survey program.

The areas under the support straps did not have any material loss and were in good condition.

WUTC Area of Concern 9

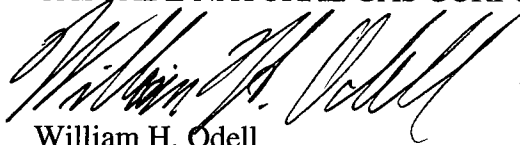
Staff reviewed casing survey records for the Bellingham district which indicated that at least one casing was not surveyed for electrical isolation on an annual basis as required by WAC 480-93-115. The survey documentation indicated that CNG personnel could not find the casing vents to conduct the survey. Staff, along with CNG personnel visited the casing site and the vents were clearly visible. CNG should implement a program to verify survey results in areas where it is indicated that a certain function or compliance requirement can't be performed.

Cascade Response

This is similar to the findings of WUTC Violation 4(a). Technicians noted they had difficulty completing the survey on the form, but the notation was overlooked and the task marked as complete in our schedule. We will make certain that personnel report problems in a manner that prevents this from reoccurring.

Sincerely,

CASCADE NATURAL GAS CORPORATION



William H. Odell
Chief Operating Officer

CASCADE NATURAL GAS CORPORATION
OPERATIONS BULLETIN

#04001
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To: Operations Bulletin Distribution List

From: Keith Meissner

RE: Plastic Butt Fusion Qualifications

Date: April 9, 2004

As part of becoming qualified to perform heat fusion butt joints, each person must create acceptable fusions that pass both visual inspections and destructive tests. CP 607.215(a) describes these requirements.

.215 Polyethylene heat fusions are tested with the following procedures:

- a. Heater Plate Fusion - Butt fusion - All sizes*
 - 1. Visual Test: Visually inspect the entire fusion, noting the size and uniformity of the double rollback bead and the alignment of the two pipe sections. The pipe manufacturer's guide for fusion qualification may be used to compare the actual fusion to photographs of correct fusion results. The fusion may be disqualified solely based on the visual inspection.*
 - 2. Destructive Test:*
 - a. Allow joint to cool for a minimum of one hour before subjecting it to test.*
 - b. Cut the fusion into four sections.*
 - c. Visually inspect the internal areas of the fusion that are exposed by the cuts, noting the size and uniformity of the double rollback bead, the alignment of the two pipe sections and any cracks or voids in the fusion area. The pipe manufacturer's guide for fusion qualification may be used to compare the actual fusion to photographs of correct fusion results.*
 - d. If any cracks, voids or discontinuity exist in the fusion, the fusion is rejected.*

It has come to my attention that the butt fusion tests prescribed by CP 607.215(a) do not meet the requirements of the Part 192 Pipeline Safety Codes. The following changes to operations are effective immediately:

- 1. Individuals supplying butt fusions to Division for testing must make sure their test sections are at least 12 inches long, with the fusion centered in the section. No other changes are necessary for Welders submitting tests.**
- 2. Division inspectors shall add bend tests to their examination of butt fusion straps. Bent straps that show failures or gaps after bending shall be rejected as a failed test.**

All personnel shall follow the procedures described below in place of the current CP 607.215(a) and CP 607.216 until CP 607 can be revised and released.

CASCADE NATURAL GAS CORPORATION
OPERATIONS BULLETIN

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- .215 Polyethylene heat fusions are tested with the following procedures:
- a. Heater Plate Fusion - Butt fusion - All sizes
 1. Visual Test: Visually inspect the entire fusion, noting the size and uniformity of the double rollback bead and the alignment of the two pipe sections. The pipe manufacturer's guide for fusion qualification may be used to compare the actual fusion to photographs of correct fusion results. The fusion may be disqualified based solely on the visual inspection.
 2. Destructive Test:
 - a. Allow joint to cool for a minimum of one hour before subjecting it to test.
 - b. Cut the fusion into four straps. Each strap shall be approximately 12 inches long with the fusion centered in the strap. The straps shall be approximately 1 inch wide for 2-inch diameter or larger pipe. The straps shall be approximately 1.5 times the wall thickness in width for pipes smaller than 2-inch diameter.
 - c. Visually inspect the internal areas of the fusion that are exposed by the cuts, noting the size and uniformity of the double rollback bead, the alignment of the two pipe sections and any cracks or voids in the fusion area. The pipe manufacturer's guide for fusion qualification may be used to compare the actual fusion to photographs of correct fusion results. If any cracks, voids or discontinuity exist in the fusion, the fusion is rejected.
 - d. Bend each strap until the ends of the strap touch. If any failure or gaps occur in the joint area, the fusion is rejected.
- .216 Butt fusion test sections should be cut to an overall length of 12 inches with the fusion centered in the section and identified with the welder number or name of the person making the fusion. The fusion may not be cut into straps before shipment.

Cascade Natural Gas Corporation
COMPANY PROCEDURE

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TITLE: ATMOSPHERIC CORROSION CONTROL

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- .04 REGULATOR, VALVE, AND ODORIZER STATIONS
- .05 INDUSTRIAL METER SETS
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- .08 OPERATOR QUALIFICATION

Cascade Natural Gas Corporation
COMPANY PROCEDURE

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TITLE: ATMOSPHERIC CORROSION CONTROL

SCOPE

Above-ground, gas carrying pipe and equipment shall be periodically surveyed for atmospheric corrosion. This procedure defines atmospheric corrosion, survey requirements, remedial actions, and records for atmospheric corrosion surveys.

.01 PROTECTION FROM ATMOSPHERIC CORROSION

- .011 Above ground metallic pipe and equipment shall have a protective coating applied to prevent or inhibit atmospheric corrosion of the facility. Cascade CP 710, Coating and Painting Standards describes the use and application of protective coatings approved for use on Cascade's facilities.
- .012 All protective coatings require periodic inspection and maintenance to ensure they perform their intended function. Ineffective coating or a lack of coating may allow corrosion, pitting and otherwise detrimental material loss.
- .013 For this CP, "above ground pipe" is intended to mean any pipe or facility that is not buried in earth and is exposed to air. The term "General Manager" indicates either the General Manager or an assigned Supervisor.

.02 VISUAL INSPECTION FOR ATMOSPHERIC CORROSION

- .021 Above ground steel pipe, meter sets, risers, valves, regulators, piping in vaults, etc. shall be visually examined for evidence of coating damage and atmospheric corrosion by all personnel during the course of their regular work and as part of the surveys described in this CP. Corrosion problems found shall be noted and given to the General Manager for remedial action.
- .022 The following criteria are to be used to determine the condition of all gas carrying steel pipe or equipment exposed to the air:
 - a. **GOOD**
"Good" condition ranges from showing no trace of rust, pitting or rust scales, to having some rust spotting but no pitting nor rust scale. Paint or coating must be adhering, and show no significant cracking or peeling.

Rust scale is identified by the flaking off of surface material.

Cascade Natural Gas Corporation
COMPANY PROCEDURE

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TITLE: ATMOSPHERIC CORROSION CONTROL

.02 VISUAL INSPECTION FOR ATMOSPHERIC CORROSION (Continued)

b. FAIR

"Fair" condition ranges from a light coating of rust to uniformly heavy, but shallow, coating of rust. No scaling and slight to shallow pitting may be present. Paint may show cracking or peeling. As an example, a "fair" rating will usually require only minor rust clean up and re-painting.

If any exterior metal or coating condition meets the criteria for "Fair" condition, then the condition shall be considered as "Fair".

c. POOR

"Poor" condition has rust scaling or severe pitting, either of which is deeper than 20% of the wall thickness, or has frequent pitting (as opposed to isolated pitting described in "Fair" above). "Poor" would also be indicated if there is significant paint or coating lost, cracking, or peeling. As an example, a "poor" rating will exhibit pipe wall loss and requires repair or replacement.

If any exterior metal or coating condition meets the criteria for "Poor" condition, then the condition shall be considered as "Poor".

.023 Pipe and equipment rated "poor" shall be replaced if it cannot be field repaired or otherwise restored to at least "fair" condition. The urgency of the replacement will depend on the individual condition found and on operating parameters (i.e. population density, operating pressure).

.024 If the coating alone was the cause for a "Fair" or "Poor" rating, and the metal underneath still qualifies as "Good", the pipe may be recoated, as specified in CP 710, and this will upgrade the condition to "Good".

.03 RESIDENTIAL & COMMERCIAL METER SETS

.031 Atmospheric corrosion surveys of each residential & commercial meter sets, as well as inactive service risers and high-pressure service sets (farm taps, HPSS) for residential and commercial customers will be performed at least once every 36 months, but not to exceed 39 months.

Cascade Natural Gas Corporation
COMPANY PROCEDURE

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TITLE: ATMOSPHERIC CORROSION CONTROL

- .03. RESIDENTIAL & COMMERCIAL METER SETS (Continued)
- .032 General Managers shall use shutdown section numbering to assign, track, and record the atmospheric corrosion surveys. Each district is divided up in three parts or areas containing shut down sections (Area I, II, III). Shutdown areas shall be assigned to an area by Engineering. A list of the active and inactive service lines in a shutdown section, including those services with HPSS, may be printed from the Customer Information System (Premise – Type “MACS” from the main menu to access Atmospheric Corrosion Survey report print screen. The report will print to the workstation’s default Premise printer.).
- .033 Personnel shall grade each meter set and/or service riser listed in the shutdown section using the visual inspection criteria in section .02. If a meter set or riser is noted as being “Fair”, or “Poor”, notes should be taken of the condition in the space provided. An individual completing a set of meters should indicate by signing and dating the page of the report they completed.
- .034 If the service address is served by a HPSS, personnel shall locate the HPSS and grade it for atmospheric corrosion condition according to the criteria of section .02. If a HPSS is noted as being “Fair”, or “Poor”, notes should be taken of the condition.
- .035 Upon completion of the survey, personnel shall submit the completed work order, list of service addresses, and any notes taken of “Fair” and “Poor” meters, risers, or HPSS to the General Manager. Areas requiring no additional action should be noted as “No Atmospheric Corrosion Problems Found” on the work order.
- .036 The General Manager shall issue work orders for the repainting or repair of the “Fair” and “Poor” meters, risers, or HPSS noted on the survey. Appurtenances requiring repair due to loss of metal or damage shall be scheduled for remedial action within 90 days of the report, or sooner depending on the condition found. Appurtenances needing paint or surface rust cleanup should be scheduled for remedial action within 6 months of the report. Completed copies of all remedial action work orders shall be stored in the District Atmospheric Corrosion file.
- .037 The General Manager shall keep a list of the shutdown sections completed during a calendar year. At the end of the calendar year, the General Manager shall send a copy of the list to Engineering. The General Manager shall ensure the completion of the atmospheric corrosion survey for a shutdown section is recorded into the Ellipse database. Shutdown sections survey completion shall be reviewed by Engineering to ensure that routes are completed according to schedule.

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.04 REGULATOR, VALVE, AND ODORIZER STATIONS

.041 Regulator stations, valve stations, and odorizer stations are surveyed for atmospheric corrosion at least once every 15 months during facility maintenance. See CP 745, CP 740, and CP 747 respectively for further information. Records are kept on form CNG 287 as part of the annual maintenance records.

.042 Personnel performing the testing and maintenance shall indicate the condition of the facility piping in the boxes marked "Paint":

- a. Indicate "good" if the set has been assessed to be in "Good" condition as described in .022a.
- b. Indicate "bad" if the set is assessed to be either "Fair" or "Poor" as described in .022b and .022c. Explain the condition in the comments section of the form 287 so that the General Manager understands what was found and can schedule the appropriate maintenance.

.043 If maintenance is required, be sure the General Manager understands the concern when the completed form is submitted.

.044 The General Manager shall ensure remedial work is performed. Upon completion of the remedial work, the form 287 copy and a copy of the work order shall be placed into the District's atmospheric corrosion files.

.045 Equipment requiring corrosion repairs or further investigation should be scheduled for action within at least 90 days, depending on the condition found. Equipment requiring only coating repair should be scheduled for action within 6 months of the report.

.046 Equipment in vaults shall be inspected in the same manner as above ground pipe.

.05 INDUSTRIAL METER SETS

.051 Industrial meters shall be surveyed for atmospheric corrosion at least once each year during scheduled facility testing and calibration. Records of this work are kept on form CNG 306A.

.052 Personnel performing the testing and calibration shall indicate the condition of the set in the boxes marked "Paint":

- c. Indicate "good" if the set has been assessed to be in "Good" condition as described in .022a.
- d. Indicate "bad" if the set is assessed to be either "Fair" or "Poor" as described in .022b and .022c. Explain the condition in the comments section of the form 306A so that the General Manager understands what was found and can schedule the appropriate maintenance.

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.05 INDUSTRIAL METER SETS (Continued)

- .053 All form 306A reports that indicate "bad" shall be photocopied, and the photocopy given to the General Manager to schedule remedial work.
- .054 If maintenance is required, be sure the General Manager understands the concern when the completed form is submitted.
- .055 The General Manager shall ensure remedial work is performed. Equipment requiring corrosion repairs or further investigation should be scheduled for action within at least 90 days, depending on the condition found. Equipment requiring only coating repair should be scheduled for action within 6 months of the report.
- .056 Upon completion of the remedial work, the form 306A copy and a copy of the work order shall be placed into the Districts atmospheric corrosion files.

.06 OTHER ABOVE GROUND PIPING

- .061 The District shall survey above ground piping locations such as bridge crossings, canal crossings, unintended exposures, inactive large meter sets, etc. for atmospheric corrosion. General Managers should ensure that above ground piping locations not examined as part of another atmospheric corrosion survey are included in this survey.
 - a) Each location shall be examined for atmospheric corrosion and be graded according to .02.
 - b) General Managers shall ensure that locations are surveyed at least once every 36 months, not to exceed 39 months interval.
 - c) The Atmospheric Corrosion Patrol Log shall be used to record the completion of the survey. The District shall record the completion of atmospheric corrosion surveys for each location identified, indicating the date of the survey, who performed the survey, and make note of the condition. The survey shall also be recorded into the Ellipse tracking database.
 - d) The Atmospheric Corrosion Patrol Log shall be periodically reviewed by the District General Manager to ensure that all applicable locations are listed on the patrol. Copies of Logs are stored on the Company shared hard drive (S:\Operations & Maintenance\Atmospheric Corrosion Patrols).

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.07 RECORDS

.071 Districts shall maintain an Atmospheric Corrosion file with the compliance records required in this procedure. Remedial actions and records of completed surveys shall be stored in this file.

.072 Atmospheric corrosion survey records shall be kept for a minimum of five years.

.073 Corrosion survey records for regulators, valves, odorizers (CNG 287), and industrial meter sets (CNG 306A) shall be stored and retained according to the respective Company Procedure governing those maintenance activities.

.074 Each survey shall be recorded into the Ellipse tracking database. Questions regarding Ellipse can be directed to IT Helpdesk, or the appropriate SuperUser.

.08 OPERATOR QUALIFICATION

.081 OQ Task 1260 is required to perform external corrosion evaluations.

.082 Personnel assigned to Atmospheric Corrosion Surveys must be qualified for task 1260.