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January 18, 2018

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State of Washington

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UTC

Pipeline Safety Program

Mr. Sean Mayo
Pipeline Safety Director
Washington Utilities and Transportation Commission
1300 South Evergreen Park Drive SW
P. O. Box 47250
Olympia, Washington 98504-7250

Subject: 2017 Natural Gas Standard Inspection – NW Natural Columbia Gorge Unit
(Insp. No. 7241)

Dear Mr. Mayo:

On October 16-26, 2017, the Washington Utilities and Transportation Commission (WUTC) staff conducted a standard inspection of NW Natural's (NWN) Columbia Gorge Unit. The inspection included a records review and inspection of the pipeline facilities, and indicates four probable violations as noted in the enclosed report and one area of concern, which unless corrected could potentially lead to future violations of state and/or federal pipeline safety rules. This letter is in response to the findings of Inspection No. 7241, dated November 17, 2017.

PROBABLE VIOLATIONS

1. **49 CFR §192.463(a) External corrosion control: Cathodic protection**
(a) Each cathodic protection system required by this subpart must provide a level of cathodic protection that complies with one or more of the applicable criteria contained in appendix D of this part. If none of these criteria is applicable, the cathodic protection system must provide a level of cathodic protection at least equal to that provided by compliance with one or more of these criteria.

Finding(s):

49 CFR 192 Appendix D Section II says voltage (IR) drops other than those across the structure electrolyte boundary must be considered for valid interpretation of the voltage measurement. When reviewing NWN's annual cathodic protection (CP) measurements, staff asked NWN if they take instant-off measurements, which is a common way to consider IR drop. NWN indicated that they do not take instant-off measurements and could not prove that IR drop had been taken into consideration.

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NW Natural Response:

NWN welcomes the opportunity to discuss how IR drop is taken into consideration and how this requirement is being met. Staff referenced CFR 49 CFR 192 Appendix D Section II, and one common method of considering IR drop which is via the use of instant-off pipe to soil measurements. NWN indicated during the inspection that instant-off readings are not currently utilized for consideration of IR drop issues. However, NWN does recognize the significance of considering IR drop as demonstrated by methods and verbiage in NWN's Standard Practice Washington 463 (SPW) – Cathodic Protection Systems, section 3.1.2 (Attachment A).

Consideration is defined to mean application of sound engineering practice to determine the significance of IR drops by methods such as:

- Evaluating the physical and electrical characteristics of the pipe and its environment
- Determining whether or not there is physical evidence of corrosion.

Both of these methods are in accordance with the National Association of Corrosion Engineers (NACE) SP0169 - Control of External Corrosion on Underground or Submerged Metallic Piping Systems. These methods mentioned above are demonstrated by use of Pipe Inspection Reports. Whenever steel pipe is exposed, NWN uses this electronic form to gather specific information regarding the characteristics of the pipeline and its environment. The various types of information that are gathered include items such as "ON" Pipe to Soil readings, pipe depth, soil type/conditions, and indications of corrosion, pitting, or other unusual corrosion conditions. Additionally, NWN has criteria for investigation and/or remedial action via an automated report if the "ON" pipe to soil reading is found to be more positive than -0.90V. In the event that such criteria is discovered, it is verified by corrosion technicians, problem reports are generated and submitted for corrective action, if necessary.

2. **WAC 480-93-188(3)(a) Gas leak surveys**

(3) Each gas pipeline company must conduct gas leak surveys according to the following minimum frequencies:

(a) Business districts - At least once annually, but not to exceed fifteen months between surveys. All mains in the right of way adjoining a business district must be included in the survey;

Finding(s):

NWN did not provide records to show that leak surveys had been performed annually not to exceed fifteen months within business districts. There are areas within Bingen and White Salmon that are business districts as defined in WAC 480-93-005(3). These specific areas are areas that NWN agreed to add to their list of business districts after reviewing findings from WUTC's last inspection of Columbia Gorge in 2014 (See letter titled "NW Natural's Amended Response to Inspection of the Columbia Gorge (#5818)" dated January 22, 2015). From the review of main leak survey records, it appears that the gas mains in these business districts have not been leak surveyed since 2013 and 2008 before that.

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NW Natural Response:

NWN has added Business Districts in White Salmon and Bingen to the compliance application. These sites were surveyed in December 2017 and are aligned to be surveyed on an annual basis moving forward. The inspection details are attached for your review – (Attachment B) NWN Columbia Gorge - Business District Survey Inspections 2017. NWN would like to assure staff that while the Business District surveys were not completed as previously agreed to per NW Natural's Amended Response to Inspection of the Columbia Gorge (#5818) dated January 22, 2015, Bingen and White Salmon have been surveyed a total of nine times since 2008. Tables below list the surveys completed in each location from 2008 to present. These records are available for review at staff's request.

White Salmon	
3/21/2008	Business District
6/26/2008	Distribution Main
4/23/2009	Business District
5/14/2009	Services
5/13/2010	Business District
5/15/2012	Services
7/6/2013	Distribution Main
7/14/2015	Services
12/14/2017	Business District

Bingen	
3/21/2008	Business District
6/25/2008	Distribution Main
4/24/2009	Business District
5/14/2009	Services
5/13/2010	Business District
5/18/2012	Services
7/6/2013	Distribution Main
6/24/2015	Services
12/14/2017	Business District

3. **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 C.F.R. §§ 191, 192 and chapter 480-93 WAC, and any plans or procedures used by a gas pipeline company's associated contractors.

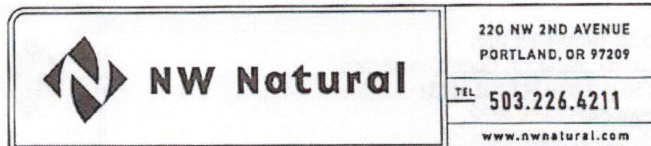
Finding(s):

NWN's definitions of Business District and Special Building do not incorporate all the areas and buildings that would be incorporated by the WAC definitions of Business District and High Occupancy Structure.

NWN's definition of a Business District requires that the area containing gas facilities be 1000 continuous feet and the gas facilities must be predominantly under continuous pavement. These extra requirements of 1000 continuous feet and under continuous pavement are not included in the WAC definition and exclude areas that would be considered business districts under WAC 480-93-005(3).

NWN conducts Special Building leak surveys annually not to exceed fifteen months. This is seen by staff to be the equivalent of High Occupancy Structure leaks surveys which are also required to be leak surveyed annually not to exceed fifteen months. NWN's definition of Special Building does not align with the definition of High Occupancy Structure as defined in WAC 480-93-005(14). The WAC definition could include

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buildings such as grocery stores, office buildings, mills, etc. None of these types of buildings are included in NWN's definition of Special Building, therefore, will not be leak surveyed annually not to exceed fifteen months.

NW Natural Response:

NWN understands staffs concerns. Even prior to this inspection, an initiative was submitted to NWN's Cornerstone committee to review definitions of Business Districts and Special Buildings.

It is NWN's goal to produce and implement a business process that is map-centric and repeatable to capture all areas that meet the current WAC 480-93-005 definition. Utilizing our mapping system the GIS team will acquire the most recent and available land use information from cities and counties within NWN's service territory. In conjunction with online aerial imagery, an analysis will be performed to identify business district and High Occupancy structures areas that meet the intent of WAC 480-93-005.

NWN expects to have the initiative plan completed December 31, 2018 and will update staff when the process is finalized.

4. **49 CFR §192.615(b)(3) Emergency plans**

(b) Each operator shall:

(3) Review employee activities to determine whether the procedures were effectively followed in each emergency.

Finding(s):

According to NWN, review of employee activities during an emergency occurs on a sampling basis similar to normal operations tasks as a part of their QA/QC program. Code requires that a review be completed for each emergency. NWN was unable to provide a record showing they had completed a review of employee activities for each emergency.

NW Natural Response:

NWN welcomes the opportunity to discuss the variety of ways emergencies are reviewed including but not limited to the Quality Assurance Program review process.

- NWN is continually enhancing the Quality Assurance Program (QA) related to emergency orders and recently added more inspections related to emergency response activities and procedure effectiveness to include damages. NWN does perform several emergency QA inspections and additional processes where reviews are completed. Attachments of these reviews are included in this response and are as follows:
- QA completes on-site inspections for Carbon Monoxide Detector emergency calls (Attachment C).
- QA completes on-site and post inspections for odor at the meter emergency calls (Attachment D & E)

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- QA completes on-site and post inspections for unknown inside emergency calls (Attachment F & G)
- QA completes on-site and post inspections for unknown outside emergency calls (Attachment H & I)
- QA completes on-site inspections for damages (Attachment J)
- Incident Review Council reviews and evaluates emergency response activities regarding reportable gas-related incidents and other operational activities, as necessary. During each review, several items are discussed; response times, employee resources, processes and procedures. Each incident is evaluated and any findings are documented. Please see attached samples of an event where follow up was identified (Attachment K) during the review and another where follow up was not needed (Attachment L). This is detailed in Standard Practice 617, Investigation of Accidents, Incidents, and Material Failures - section 3.2 (Attachment M).
- Damages are reviewed by the respective Field Construction Supervisor for the geographic area where the damage occurred. Report of Damage (Attachment N) is completed by employees on-site and reviewed and approved by the Field Supervisor. Often, Field Supervisors are on-site during the damage and are able to review the actions of NW Natural employees.
- The Emergency Response Committee meets monthly to discuss improvements and enhancements related to response times, emergency procedures, and emergency related QA Inspections. This committee is made up of several representatives from different departments including, Resource Management, Training, Emergency Call Center, Damage Prevention, Construction Supervision, Customer Service Supervision, and Code Compliance.


After discussions with WUTC staff NWN recognizes the need to revisit its current definition of what constitutes an emergency order and enhance its current process regarding the review of employee activities during an emergency. A Cornerstone initiative will be created to investigate the emergency order review processes. NWN will update staff on the progress of this initiative as appropriate.

AREAS OF CONCERN OR FIELD OBSERVATIONS

1. **49 CFR 192.479(a) Atmospheric corrosion control; General.**
(a) Each operator must clean and coat each pipeline or portion of pipeline that is exposed to the atmosphere, except pipelines under paragraph (c) of this section.

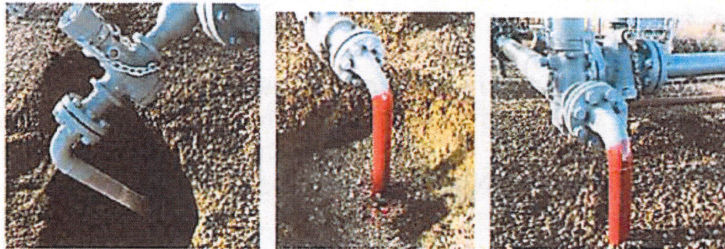
During the field inspection of the Klickitat Gate Station, staff noted that there was visible corrosion at the soil-to-air interface of regulator station piping. The 2016 gate station inspection by NWN indicated that no corrosion was present at this station.

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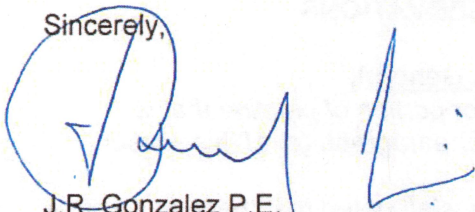
 NW Natural	220 NW 2ND AVENUE PORTLAND, OR 97209
	TEL: 503.226.4211
	www.nwnatural.com

NW Natural Response:

NWN appreciates staffs concern and would like to assure staff that this has been corrected.
Please see before and after photos below-



Sincerely,



J.R. Gonzalez P.E.
Senior Manager, Code Compliance
s7b1022



Title: Cathodic Protection Systems

Revision: 11 (Supersedes Rev. 10, 2/3/16) Approved: R.R. Truair, 3/27/17

Reviewed:

Reviewed:

1. SCOPE

This standard practice establishes the criteria used by the company to determine acceptable levels of cathodic protection for buried steel structures.

2. POLICY

Each cathodic protection system must have a negative (cathodic) potential of at least 850 mV with the cathodic protection applied. The amount of cathodic protection must be controlled so as not to damage the protective coating or the pipe.

3. PROCEDURE

3.1 Standard Cathodic Protection Criteria

1. NW Natural's standard cathodic protection criteria is a negative (cathodic) potential of at least 850 mV with the cathodic protection applied. Measure this potential with respect to a saturated copper-copper sulfate reference electrode-containing electrolyte.
2. For valid interpretation of the voltage measurement, consider voltage drops other than those across the structure-to-electrolyte boundary. Consideration means the application of sound engineering practice in determining the significance of voltage drops by methods such as:
 - Measuring or calculating the voltage drop
 - Reviewing the historical performance of the cathodic protection system
 - Evaluating the physical and electrical characteristics of the pipe and its environment
 - Determining whether or not there is physical evidence of corrosion

3.2 Alternate Test Criteria

All company potential surveys are based upon the -850 mV criteria. However, the following criteria are equally acceptable. If used, they require specific notes on the report in which they appear indicating the corresponding test criteria.

3.2.1 Polarization Voltage Shift

1. One alternate test criteria is a minimum of 100 mV of cathodic polarization between the structure surface and a copper-copper sulfate reference electrode-containing electrolyte. Measure the formation or decay of polarization to satisfy this condition.
2. The polarization voltage shift is determined by interrupting the protective current and measuring the polarization decay. When the current is initially interrupted, an immediate voltage shift occurs. Use the voltage reading



after the immediate shift as the base reading from which to measure polarization decay.

3.2.2 Comparative Voltage

Another alternate test criterion is a voltage at least as negative (cathodic) as that originally established at the beginning of the Tafel segment of the E-log-I curve.

Make voltage measurements using the procedure specified in section 3.2.1 above. Record current values (amps) at the same instant the potentials are recorded.

3.3 Unacceptable Criteria

The 300 mV shift criteria as specified in 49 CFR Part 192, Appendix D, section I. A.(2), is not an acceptable criteria, as it is no longer recognized by NACE.

3.4 Cathodic Protection Surveys

Test the cathodic protection system as indicated in SPW 465, External Corrosion Control: Monitoring.

4. RELATED COMPANY INFORMATION

SPW 483 – Corrosion Control Remedial Action

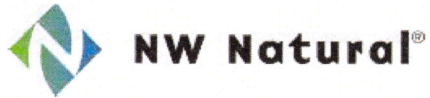
5. REFERENCE CODES AND STANDARDS

49 CFR 192.463 – External corrosion control: Cathodic protection

Appendix D to Part 192 – Criteria for cathodic protection and determination of measurements

WAC 480-93-110 – Corrosion control

B

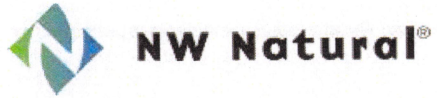


**Business District Survey Inspections
Columbia Grg WA Resource Center
12/8/2014 thru 12/18/2017**

Created By NNGls7b

Created On 12/18/2017 12:53:09 PM

Inspection Date	Inspected By	Survey Method	Instrument S/N	Inspection Comments	
NWN ID: 10303-04 Plat ID: 1-002-145			DOWNTOWN WHITE SALMON	White Salmon	WA
12/14/2017	clt	Walking	[1200445008] [8101251006]		
NWN ID: 10304-04 Plat ID: 1-004-146			DOWNTOWN BINGEN	Bingen	WA
12/14/2017	clt	Walking	[1200445008] [8101251006]		



**Business District Survey Inspections
Columbia Grg WA Resource Center
12/8/2014 thru 12/18/2017**

Created By NNG\s7b

Created On 12/18/2017 12:53:09 PM

Parameters:

Date Range: 12/8/2014 - 12/18/2017

Operating District(s): 01 - Portland, 02 - Central Coast, 03 - Clark County, 04 - North Willamette, 05 - Central Willamette, 06 - South Willamette, 07 - Columbia Grg OR, 08 - Columbia Grg WA, 09 - South Coast, 10 - North Coast

Service Center(s): 08 - Columbia Grg WA

C

QA Inspection Report

Inspection ID # 14603

Inspection Date: 01/22/16

Start Time: 8:45 AM

End Time: 9:45 AM

Inspected By: [REDACTED]

Inspection Type: On Site

Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED]

NWN

Customer Field Service 2

Work Order #: 010949880	Leakage #:	Type of Work: 4000 - CFS-CO detector alarms (w/illn
Address: 17235 SE WOODWARD CT 97236		
City: PORTLAND	State: OR	
Plat ID: 1-033-048	Resource Center: MT SCOTT	

Overall Comments:

Item	Class	Rating	Correction	Comment
Worksite Setup / Appearance & Presentation				
Personal Protective Equipment	B	Satisfactory		
Picture ID card	D	Satisfactory		
First Aid / Burn kit on site	D	Satisfactory		
Fire extinguisher available (as required)	B	Satisfactory		
Certification Check				
Individuals are qualified to perform tasks observed	B	Satisfactory		
Current manuals and qualification cards produced	B	Satisfactory		FOM and OQ cards are up to date.
Instrument and Tooling Check				
All gauge calibration updates current	B	Satisfactory		
Gauges properly stored	B	Satisfactory		
CGI calibration updates current	A	Satisfactory		
Proper CGI start up procedure	B	Satisfactory		
Locator operable	D	Satisfactory		
Meter Sets/Pressure				
Proper handling/storage of meters observed	C	Satisfactory		
Documentation				
Appropriate PCAD status	D	Satisfactory		
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		
F-6016 left when appropriate/completed accurately	C	Satisfactory		
Proper brochures/stickers/tags or signs left (as required)	D	Satisfactory		
House Piping				
Existing houseline observed to meet NWN standards/or appropriately addressed	B	Satisfactory		

Heating

Burner functioning properly/or appropriately addressed	C	Satisfactory
Pilot/ignition functioning properly/or appropriately addressed	C	Satisfactory
Proper combustion air per code/or appropriately addressed	C	Satisfactory
Appropriate condition and function of venting/or appropriately addressed	C	Satisfactory
Acceptable fan motor/blower/filter condition/or appropriately addressed	D	Satisfactory
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory
Proper procedures followed	C	Satisfactory

F16 to keep return air vent open and to block louvers closed.

Investigating Inside Odor Calls

Takes readings at appropriate locations	A	Satisfactory
Takes appropriate action to identify odor source	B	Satisfactory
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory

Total # of Items Inspected:	29
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Total # of Corrections:	0
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% Satisfactory:	100.0%
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D

QA Inspection Report

Inspection ID # 14784

Inspection Date: 02/11/16
Start Time: 9:00 AM
End Time: 9:20 AM

Inspected By: [REDACTED]
Inspection Type: Post
Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED] NWN Customer Field Service 2

Work Order #: 010982883	Leakage #:	Type of Work: 4300 - CFS-Odor at meter
Address: 3555 GHIGLIERI CT 97068		
City: WEST LINN	State: OR	
Plat ID: 1-053-033	Resource Center: SOUTH CENTER	

Overall Comments:

Item	Class	Rating	Correction	Comment
Meter Sets/Pressure				
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Documentation				
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		
Proper brochures/stickers/tags or signs left (as required)	D	Satisfactory	2# tape.	

Total # of Items Inspected: 4

Total # of Corrections: 0

% Satisfactory: 100.0%

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QA Inspection Report

Inspection ID # 9942

E

Inspection Date: 07/08/14
Start Time: 2:00 PM
End Time: 2:15 PM

Inspected By: [REDACTED]
Inspection Type: Post
Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED] NWN Customer Field Service 2

Work Order #: 010002096	Leakage #:	Type of Work: 4300 - CFS-Odor at meter
Address: 1225 KALMIA ST # LW 97448		
City: JUNCTION CITY	State: OR	
Plat ID: 2-209-023	Resource Center: EUGENE	

Overall Comments:

Item	Class	Rating	Correction	Comment
Meter Sets/Pressure				
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Documentation				
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		

Total # of Items Inspected: 3

Total # of Corrections: 0

% Satisfactory: 100.0%

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QA Inspection Report

Inspection ID # 11576

Inspection Date: 01/22/15
 Start Time: 9:15 AM
 End Time: 10:00 AM

Inspected By: [REDACTED]
 Inspection Type: On Site
 Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED] NWN Customer Field Service 2

Work Order #: 010338217	Leakage #:	Type of Work: 4800 - CFS-Odor unknown inside
Address: 2913 NW 172ND TER 97006		
City: BEAVERTON	State: OR	
Plat ID: 1-028-012	Resource Center: SUNSET	

Overall Comments:

Item	Class	Rating	Correction	Comment
Worksite Setup / Appearance & Presentation				
Personal Protective Equipment	B	Satisfactory		
Picture ID card	D	Satisfactory		
First Aid / Burn kit on site	D	Satisfactory		
Fire extinguisher available (as required)	B	Satisfactory		
Certification Check				
Individuals are qualified to perform tasks observed	B	Satisfactory		
Current manuals and qualification cards produced	B	Satisfactory		
Instrument and Tooling Check				
All gauge calibration updates current	B	Satisfactory		
Gauges properly stored	B	Satisfactory		
CGI calibration updates current	A	Satisfactory		
Proper CGI start up procedure	B	Satisfactory		
Locator operable	D	Satisfactory		
Documentation				
Appropriate PCAD status	D	Satisfactory		
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		
F-6016 left when appropriate/completed accurately	C	Satisfactory		
Proper brochures/stickers/tags or signs left (as required)	D	Satisfactory		
House Piping				
Existing houseline observed to meet NWN standards/or appropriately addressed	B	Satisfactory		
Water/Pool Heating				
Burner functioning properly/or appropriately addressed	C	Satisfactory		

Pilot/ignition functioning properly/or appropriately addressed	C	Satisfactory		
Proper condition of temperature/pressure drain pipe/or appropriately addressed	C	Satisfactory		
No spillage detected/or appropriately addressed	A	Satisfactory		
Proper combustion air per code/or appropriately addressed	C	Satisfactory		
Appropriate condition and function of venting/or appropriately addressed	C	Satisfactory		
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Proper procedures followed	C	Unsatisfactory	On-Site	Didn't check for spillage at draft diverter. We discussed on site.

Heating

Burner functioning properly/or appropriately addressed	C	Satisfactory
Pilot/ignition functioning properly/or appropriately addressed	C	Satisfactory
Proper appliance elevation observed in garage/or appropriately addressed	C	Satisfactory
Proper combustion air per code/or appropriately addressed	C	Satisfactory
Appropriate condition and function of venting/or appropriately addressed	C	Satisfactory
Acceptable fan motor/blower/filter condition/or appropriately addressed	D	Satisfactory
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory

Total # of Items Inspected:	33
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Total # of Corrections:	1
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% Satisfactory:	97.6%
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QA Inspection Report

Inspection ID # 13220

Inspection Date: 07/27/15
Start Time: 10:15 AM
End Time: 10:45 AM

Inspected By: [REDACTED]
Inspection Type: Post
Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED] NWN Customer Field Service 2

Work Order #: 010646629	Leakage #:	Type of Work: 4800 - CFS-Odor unknown inside
Address: 6405 SW PARKHILL WAY 97239		
City: PORTLAND	State: OR	
Plat ID: 1-036-029	Resource Center: SOUTH CENTER	

Overall Comments:

Item	Class	Rating	Correction	Comment
Documentation				
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		
F-6016 left when appropriate/completed accurately	C	Satisfactory		
Proper brochures/stickers/tags or signs left (as required)	D	Satisfactory		Caution stickers and service solutions card.
House Piping				
Existing houseline observed to meet NWN standards/or appropriately addressed	B	Satisfactory		
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		Leak repaired on line valve.
Water/Pool Heating				
Burner functioning properly/or appropriately addressed	C	Satisfactory		
Pilot/ignition functioning properly/or appropriately addressed	C	Satisfactory		
Proper condition of temperature/pressure drain pipe/or appropriately addressed	C	Satisfactory		
No spillage detected/or appropriately addressed	A	Satisfactory		
Proper combustion air per code/or appropriately addressed	C	Satisfactory		Addressed lack of combustion air.
Appropriate condition and function of venting/or appropriately addressed	C	Satisfactory		
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Heating				
Appropriate condition and function of venting/or appropriately addressed	C	Satisfactory		

Leakage Tier 2 no major leakage
found or appropriately addressed

B Satisfactory

Leakage Tier 1 no minor leakage
found or appropriately addressed

B Satisfactory

Total # of Items Inspected:	17
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Total # of Corrections:	0
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% Satisfactory:	100.0%
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H

QA Inspection Report

Inspection ID # 11905

Inspection Date: 02/28/15
Start Time: 12:30 PM
End Time: 1:30 PM

Inspected By: [REDACTED]
Inspection Type: On Site
Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED] NWN Customer Field Service 2

Work Order #: 010400871	Leakage #:	Type of Work: 4900 - CFS-Odor unknown outside
Address: 5527 RIVER ST 97068		
City: WEST LINN	State: OR	
Plat ID: 1-052-036	Resource Center: SOUTH CENTER	

Overall Comments: Very thorough investigation.

Item	Class	Rating	Correction	Comment
Worksite Setup / Appearance & Presentation				
Personal Protective Equipment	B	Satisfactory		
Picture ID card	D	Satisfactory		
First Aid / Burn kit on site	D	Satisfactory		
Fire extinguisher available (as required)	B	Satisfactory		
Certification Check				
Individuals are qualified to perform tasks observed	B	Satisfactory		
Current manuals and qualification cards produced	B	Satisfactory		
Instrument and Tooling Check				
All gauge calibration updates current	B	Satisfactory		
Gauges properly stored	B	Satisfactory		
CGI calibration updates current	A	Satisfactory		
Proper CGI start up procedure	B	Satisfactory		
Locator operable	D	Satisfactory		
Meter Sets/Pressure				
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Investigating Outside Odor Calls				
Conducts a thorough initial assessment	B	Satisfactory		
Takes appropriate action to identify odor source	B	Satisfactory		
Takes readings at appropriate locations	A	Satisfactory		

Total # of Items Inspected: 16

Total # of Corrections: 0

% Satisfactory:	100.0%
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******Information contained in this report is proprietary and confidential and for NW Natural use only.***

QA Inspection Report

Inspection ID # 12930

I

Inspection Date: 06/24/15

Start Time: 8:15 AM

End Time: 9:15 AM

Inspected By: [REDACTED]

Inspection Type: On Site

Inspection Reason: Regular Inspection

Individual(s) Inspected: Lead [REDACTED]

NWN

Customer Field Service 2

Work Order #: 010590808	Leakage #:	Type of Work: 4900 - CFS-Odor unknown outside
Address: 1530 BARNES AVE SE		
City: SALEM	State: OR	
Plat ID: 2-119-005	Resource Center: SALEM	

Overall Comments:

Item	Class	Rating	Correction	Comment
Worksite Setup / Appearance & Presentation				
Personal Protective Equipment	B	Satisfactory		
Picture ID card	D	Satisfactory		
First Aid / Burn kit on site	D	Satisfactory		
Fire extinguisher available (as required)	B	Satisfactory		
Certification Check				
Individuals are qualified to perform tasks observed	B	Satisfactory		
Current manuals and qualification cards produced	B	Satisfactory		OQ cards and FOM are up to date
Instrument and Tooling Check				
All gauge calibration updates current	B	Satisfactory		
Gauges properly stored	B	Satisfactory		
CGI calibration updates current	A	Satisfactory		
Proper CGI start up procedure	B	Satisfactory		
Locator operable	D	Satisfactory		
Meter Sets/Pressure				
Proper handling/storage of meters observed	C	Satisfactory		
Leakage Tier 2 no major leakage found or appropriately addressed	B	Satisfactory		Repaired leak below riser, greased and replaced O-ring.
Leakage Tier 1 no minor leakage found or appropriately addressed	B	Satisfactory		
Documentation				
Field reports accurately completed (PCAD, Advantica)	C	Satisfactory		
Additional forms/reports completed accurately, as required	D	Satisfactory		Yellow card left on front door.
Investigating Outside Odor Calls				
Conducts a thorough initial assessment	B	Satisfactory		

Takes appropriate action to identify odor source	B	Satisfactory
Takes readings at appropriate locations	A	Satisfactory

Total # of Items Inspected:	19
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Total # of Corrections:	0
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% Satisfactory:	100.0%
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QA Inspection Report

Inspection ID # 19258

Inspection Date: 08/01/17
 Start Time: 9:30 AM
 End Time: 10:30 AM


Inspected By: [REDACTED]
 Inspection Type: On Site
 Inspection Reason: Regular Inspection

Individual(s) Inspected:	Lead	136979	NWN	Event Number
		[REDACTED]	NWN	Customer Field Service 2
		[REDACTED]	NWN	Construction 3
		[REDACTED]	NWN	Construction 2
		[REDACTED]	NWN	Field Operations Supervisor

Work Order #: 011906050	Leakage #:	Type of Work: 9900 - CFS-Emergency Damage
Address: 9917 SE 18TH CIR 98664		
City: VANCOUVER	State: WA	
Plat ID: 1-018-039	Resource Center: VANCOUVER	

Overall Comments: [REDACTED] was on-site at 9:20am. I arrived at 9:24am. [REDACTED] and [REDACTED] arrived on-scene at 9:34am. [REDACTED] arrived at 10:03am. Gas was controlled at 10:10am.

Item	Class	Rating	Correction	Comment
Worksite Setup / Appearance & Presentation				
Personal Protective Equipment	B	Satisfactory		
Fire extinguisher available (as required)	B	Satisfactory		
Emergency Response				
Parked vehicles in safe location(s)	B	Satisfactory		
Conducts a thorough initial assessment	A	Satisfactory		
Started leakage instrument before entering scene	B	Satisfactory		
Took readings at appropriate locations	A	Satisfactory		
Took initial readings at and inside structures	A	Satisfactory		
Communicated and coordinated fire department assistance	A	Satisfactory		Fire department was already on-scene.
Set and maintained required perimeter based on readings	A	Satisfactory		
Set and maintained Hot Zone	A	Satisfactory		
Continued to monitor gas readings	A	Satisfactory		
Communicated with customers/other parties	C	Satisfactory		
Provide event status updates to RMC as needed	B	Satisfactory		
Communicated with NWN resources as they arrive	A	Satisfactory		
Continued communications with onsite resources (internal and external)	B	Satisfactory		

Hot Zone Huddle conducted	A	Unsatisfactory	On-Site	Hot zone huddle only included NW natural personal, fire department was not included. We discussed on-site.
Control plan established	A	Satisfactory		
Incident Commander identified	B	Satisfactory		

Documentation

Appropriate PCAD status D Satisfactory

Stopping Flow/Bypassing/Purging

Proper stopping gas flow procedures observed B Satisfactory

Appropriate static control or grounding methods used A Satisfactory

Total # of Items Inspected:	21
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Total # of Corrections:	1
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% Satisfactory:	93.5%
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Reportable Incident Review Form

 Incident Date: 12/8/15 Incident Commander: [REDACTED]

 Incident Location: 16007 SE 35th Street, Vancouver

Incident Summary

On 12/8/15 at approximately 10:40am NWN received notice from Linescape (contractor) had damaged 1/2" poly service while installing new water service by directional drill at 16007 SE 35th Street, Vancouver in Clark County. First responder, [REDACTED] arrived at 11:09am. Fire Department was onsite upon arrival and evacuated one person from the home (16007 SE 35th Street) and established a perimeter. First responder found 1% in the crawl space access area. Second responder arrived onsite at 12:00pm. Gas was controlled at 12:52pm. Repairs were completed at 2:30pm and customer relit at 2:58pm.

Code Compliance [REDACTED] telephonically reported the incident to the WUTC [REDACTED] at 1:35pm due to evacuation of one home and gas blowing for over two hours.

12/8/15

11:09 AM

12/8/15

12:52 PM

Timeline				
	Date	Time	Time	Source
NWN Notified:	12/8/15	10:40	<input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	Incident Report
First Responder Arrived On Site:	12/8/15	11:09	<input checked="" type="checkbox"/> AM <input type="checkbox"/> PM	Incident Report
Perimeter Established:	12/8/15	N/A	<input type="checkbox"/> AM <input type="checkbox"/> PM	Prior to arrival
RMC Notified of Reportable Criteria	12/8/15	12:28	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	Incident Report
Gas Controlled or Shut Off:	12/8/15	12:52	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	Incident Report
Repair(s) Completed:	12/8/15	2:30	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	Incident Report
Service Restored (Customer(s) Relit):	12/8/15	2:58	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	Incident Report

Recommendations/Follow Up Action

- [REDACTED] WAS OQ Disqualified due to RE-ENTERING STRUCTURE WITH 1% GAS. [REDACTED] WAS LATER REQUALIFIED.

- USE THIS INCIDENT AS PART OF SENARIO BASED TRAINING - [REDACTED] (TO BE REVIEWED BY EMERGENCY RESPONSE STEERING TEAM).

Reviewed By	Print Name	Signature	Date
	Bill Bateman	<i>Bill Bateman</i>	1/6/16
	Cari Colton	<i>Cari Colton</i>	1-6-16
	Jon Huddleston	<i>Jon Huddleston</i>	1/6/16
	Joe Karney	<i>Joe Karney</i>	1-6-16
	Kat Rosenbaum	<i>Kat Rosenbaum</i>	1-6-16
	Lori Russell	<i>Lori Russell</i>	1-6-16
	Kerry Shampine	<i>Kerry Shampine</i>	1-6-2016

Control Room Management - 192.631 (g) (1)

Did control room actions negatively contribute to the event?

Yes (check below and follow up with Control Room Supervisor)
 No

- Controller fatigue
- Field equipment
- The operation of any relief device
- CRM Procedures
- SCADA system configuration
- SCADA system performance

Reportable Incident Review Form

 Incident Date: 8/3/2017 Incident Commander: [REDACTED]

 Incident Location: 17009 SE 38th Cir Vancouver

Incident Summary
<p>At 9:40 am on August 3, 2017 NW Natural was notified that a 2" poly main at 17009 SE 38th Cir. Vancouver (Clark County) had been damaged by Sarkinen Plumbing contractor with a directional bore. The damage resulted in the release of natural gas. Locates were present and accurate. The operating pressure was 45 psig with a MAOP of 50 psig.</p> <p>NW Natural field personnel arrived on site at 10:09 am and gas was controlled at 12:23pm. Repairs were completed at 4:00pm that day. NW Natural's cost to repair the damage was \$3,657.89.</p> <p>Code Compliance [REDACTED] telephonically reported the incident to the WUTC [REDACTED] at 12:50pm on August 3, 2017 due to the uncontrolled release of gas for over two hours.</p>

Timeline					
	Date	Time	Time		Source
NWN Notified:	8/3/17	9:40	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> PM	CIS Log
First Responder Arrived On Site:	8/3/17	10:09	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> PM	CIS Log
Perimeter Established:	8/3/17	10:20	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> PM	Incident Report Form
RMC Notified of Reportable Criteria	8/3/17	10:30	<input checked="" type="checkbox"/> AM	<input type="checkbox"/> PM	Incident Report Form
Gas Controlled or Shut Off:	8/3/17	12:23	<input type="checkbox"/> AM	<input checked="" type="checkbox"/> PM	Damage Repair Form
Repair(s) Completed:	8/3/17	4:00	<input type="checkbox"/> AM	<input checked="" type="checkbox"/> PM	Damage Repair Form
Service Restored (Customer(s) Relit):	8/3/17	6:23	<input type="checkbox"/> AM	<input checked="" type="checkbox"/> PM	CIS Log

Recommendations/Follow Up Action

- No action.

Reviewed By

Print Name	Signature	Date
Bill Bateman	<i>Bill Bateman</i>	10-4-17
Cari Colton	<i>Cari Colton</i>	10.4.17
J.R. Gonzalez	<i>J.R. Gonzalez</i>	10/04/2017
Jon Huddleston		
Joe Karney		
Mark Lilly	<i>Mark Lilly</i>	10/4/17
Kat Rosenbaum	<i>Kat Rosenbaum</i>	10/4/17
Kerry Shampine	<i>Kerry A. Shampine</i>	10.4.2017

Control Room Management - 192.631 (g) (1)

Did control room actions negatively contribute to the event?

- Yes (check below and follow up with Control Room Supervisor)
 No
- Controller fatigue
 - Field equipment
 - The operation of any relief device
 - CRM Procedures
 - SCADA system configuration
 - SCADA system performance



Title: Investigation of Accidents, Incidents, and Material Failures

Revision: 11 (supersedes Rev. 10,
11/30/2011)

Approved: November 8, 2012
Signatures on file

Reviewed: M.K. Emery, 12/13/16

Reviewed: J.S. Karney, 4/4/17

1. SCOPE

This standard practice describes procedures for analyzing , gas-related accidents, incidents, and material failures of company facilities and/or equipment, and also sets forth the organization and function of operations committees for investigating these occurrences.

2. POLICY

The major failure of materials or operating equipment, or a gas-related accident associated with the company transmission and distribution system, may be reviewed by the Accident Technical Investigating Committee to determine causes of the event requiring the emergency action and to minimize the possibility of recurrence.

Other significant emergency action taken by the company may be followed by a general review of events, materials, and actions. The review may be conducted by the Incident Review Council.

All documents related to material failures, including those not reviewed by the Accident Technical Investigating Committee or the Incident Review Council, will be reviewed and records retained

3. PROCEDURE

3.1 Accident Technical Investigating Committee (ATIC)

3.1.1 The Director of Utility Operations chairs the ATIC, and includes representatives from Utility Operations, Risk and Land, Utility Field Services, Engineering and other associated departments and/or workgroups as necessary. Convene the committee as necessary for technical investigation into the cause or causes of significant gas-related incidents or material failures as determined by the Director of Utility Field Operations.

1. The committee investigation must not interfere with any legal action between the company and outside parties. All field personnel should cooperate with the committee by removing the failed component and replacing it rather than attempting on-site repair, to the maximum extent practicable.
2. As needed for specific investigations of major failures, the ATIC should:
 - Gather the known facts of a specific incident by interviewing the individuals involved, by examination of materials or site, or by other means.
 - Order laboratory analyses, as necessary.
 - Review the results of laboratory analyses (if performed).
 - Determine the cause or causes of failure and make written recommendations



for actions and/or procedures to minimize or prevent recurrence.

- Assure the implementation of the recommended procedures.
3. In the event of an explosion, fire, death, or injury, do not remove any suspected gas facility until the Commission or the lead investigative authority has authorized the release of the gas facility. Once the situation is made safe, keep the facility intact until directed by the lead investigative authority.

3.2 Incident Review Council (IRC)

3.2.1 IRC includes representatives from Code Compliance, Utility Operations, Utility Field Services, Utility Technical Services, Risk and Land, Resource Management, and other associated departments and/or workgroups as necessary.

3.2.2 Convene the IRC periodically to review and evaluate company emergency response activities regarding reportable gas-related incidents and other operational activities as necessary.

3.2.3 Conduct an evaluation of company emergency response activities related to incidents that meet regulatory reporting guidelines or other operational activities as deemed appropriate. Complete the evaluations and document the findings.

4. RELATED COMPANY INFORMATION

SPW 615 – Basic Emergency Plan

5. REFERENCE CODES AND STANDARDS

49 CFR 192.615 – Emergency plans

49 CFR 192.617 – Investigation of failures

WAC 480-93-180 – Plans and procedures

WAC 480-93-185 – Gas leak investigation

Report of Damage

Event Number 0141569

[Jobs Report](#)

[Crew Hours Report](#)

Form Status: Damage Prevention Research Complete

First Responder - Field Report

NWN-20171009-00440

A3W

Click on this link to access the order report <http://reports.gasc>

Damage Location

Damage Address: 7006 NE 13th Ave 98665
 City: VANCOUVER State: WA
 Plot ID: 1-009-031 Work Request No: 012028255
 Damage Date: 10/9/2017 Origin: CIS

Damaging Agency

Damaging Agency: EARTHWORKS EXCAVATING SERVICES
 Agency Address: PO BOX 821624
 Agency City: VANCOUVER Equipment Operator Name: ANDREW AASEN
 Agency Zip: 98682 Prime Contractor: EXPRESS HOMES
 Agency Type: CONTRACTOR

Damage Information

Work Type: SEWER_SERVICE Work Type (other):
 Equipment Type: BACKHOE_TRACKHOE Equipment Type (other):
 Pre Located: NO_LOCATEREQUEST Pre Located (other):
 Gas Escaping: NO Gas Control Shut Off:
 2 Inch Or Larger Pipe:
 Explanation of Dmg: HIT 2" POLY MAIN(DMGD PIPE) WHILE DIGGING FOR SEWER SVC TIE IN. NO GAS ESCPG.HIT W EXCVTR BUCKET. NO LOCTS

Damage Repair - Field Report

NWN-20171009-00861

REG 029530

Click on this link to access the order report <http://reports.gasc>

Damage Information

Damage Date: 10/9/2017 Work Request No: 03520460
 Damage Depth: 29 Repair Completed: 134535
 Found Gas Controlled: Gas Controlled Shut Off:
 Damage Type: POLY_SCRATCHED Num. of Customers Affected: 0
 Location: INSIDE_PL Material: POLYETHYLENE
 Damaged Facility: MAIN Damaged Facility (other):
 Pre-Located: NO_LOCATEREQUEST Pre-Located (other):
 Explanation of Repairs and Materials Used: REPLACED 2' 2" P TESTED ON SITE AT 105# FOR 40 MIN. (PASSED) SOAP TESTED FINAL CONNECTIONS AT LINE PRESSURE (PASSED) LIKED 2' 2" P 2-2" INNOG7 COUPLINGS

Miscellaneous Expenses

Paving: Cut Size:
 Sand: Gravel:
 Dump: Concrete:

Additional Personnel

Welder: Hours 0
 Field Data: Hours 0
 Leakage Inspector: Hours 0
 Service Tech: Hours 0

Equipment

Type	Hours	Type	Hours	Type	Hours
CREW-TRUCK	4		0		0
	0		0		0

Supervisor Approval

Approved: 10/9/2017 2:11:47 PM
 Approver: Anderson, Robert
 Comments:

Damage Prevention

Corrected Address: 1310 Ne 70th st LOT 28

Not an excavation damage

Party: Third

Reason for Damage

- Failed to Request Locate
- Failed to Expose
- Failed to Maintain Locate
- Careless Operation
- Extended Job Without Notice
- Ditch, Settle, or Cave-In
- Failed to Protect Facility
- Building Wrecking
- Vehicle or Equipment Hit Riser or Meter Set
- Contract Locate Error
- Other

Locate Information

Locate Number

Locater Name

- Company Error
- Onsite

Upload Supporting Photos



Brief Photo Description

Upload Supporting Photos



Brief Photo Description

Upload Supporting Photos



Brief Photo Description

Upload Supporting Photos



Brief Photo Description

[Click Here to Insert Additional Photos](#)

Root Cause Comments *Failed to Request Locate*

Earthworks Excavation digging for sewer install hit and damaged 2"(P) main. No locates.

AS

Research Completed On 10/10/2017 1:10:30 PM

Researchers Skinner, Aric

PCAD Crew Hours Summary

Crew Code	Crew Name	Time Type	Hours
A3W	Avery Wakefield	REG	1.50
CEW	Charles White	REG	4.00
MAO	Mark O'Shea	REG	4.00
R2T	Robert Teague	REG	4.00
REG	Russell Grable	REG	4.00
		REG Total	17.50
		Total	17.50