

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In re Commission Investigation of the Gas
Pipeline System of Avista Utilities

DOCKET PG-100049

STIPULATED AGREEMENT TO
CLOSE DOCKET

I. NATURE OF AGREEMENT

1 This Stipulated Agreement to Close Docket (Agreement) is entered into between
Avista Utilities (“Avista” or “Company”) and Staff of the Washington Utilities and
Transportation Commission (“Commission Staff”) (collectively, “the Parties”) for the
purpose of resolving issues resulting from a natural gas inspection of the Company’s
Spokane and Ritzville districts. This Agreement consists of this “Stipulated Agreement to
Close Dockets” and Appendices A, B, and C, which are attached.

2 This Agreement is subject to review and disposition by the Washington Utilities and
Transportation Commission (“Commission”), and it is not effective until approved by the
Commission.

3 The Parties understand that the process for approval is at the discretion of the
Commission. However, the Parties believe the Commission may close this docket under the
conditions stated herein by means of taking action on the agenda at an open public meeting,
if the Commission desires to do so. The Parties recommend that procedure to the
Commission.

II. BACKGROUND

4 Avista owns and operates a natural gas distribution system in Washington State. In
this docket, Commission Staff conducted a Standard Natural Gas Pipeline Inspection of
Avista's pipeline facilities in its Spokane and Ritzville districts. The inspection included a
review of the Avista's records, policies and procedures, and pipeline facilities. The
inspection took place from September 13 through October 22, 2010.

5 On November 17, 2010, Commission Staff issued to Avista an inspection report that
noted probable violations of Commission rules and statutes related to Avista's pipeline
facilities and records, and areas of concern. *See* Appendix A. Among these probable
violations, Commission Staff noted several sections of isolated steel service lines with no or
inadequate cathodic protection (CP) levels.

6 Avista responded to the inspection in good faith by investigating, remediating, re-
stating the Company's policies and procedures, and identifying corrective actions taken by
Avista in an attempt to ensure compliance with the regulations. *See* Appendix B.

7 As part of a prior Commission-approved settlement agreement between Avista and
Commission Staff in Dockets UG-020218 and UG-020575, effective March 2003, Avista
created and implemented a program to find any and all isolated steel with no or inadequate
cathodic protection levels. Due to cathodic protection system limitations during the
compliance period of the settlement agreement, Avista was unable to conduct an "on/off"
pipe to soil potential survey, which was the preferred method of finding isolated steel that is
not electrically continuous with the larger cathodic protection system. Rather, Avista relied
upon reviews of paper and mapping records to find isolated steel segments. This was the
best method available to Avista at the time.

8

Since the settlement agreement referred to above, Avista has improved its cathodic protection system to the point where “on/off” pipe to soil potential surveys can be conducted to find any remaining isolated segments of unprotected steel pipelines. *See* Appendix C. With input from Commission Staff, Avista has developed a program to accomplish this, and the Parties are confident that, due to system improvements and the utilization of “on/off” pipe to soil potential surveys, Avista will be able to find and remediate any segments of isolated steel found on its system.

III. AGREEMENT

9

The Parties have agreed upon a means by which this docket can be closed without further action by the Commission beyond its approval of the Parties’ Agreement. The Parties agree and stipulate as follows:

10

1. Avista concurs that there were violations of Commission rules and statutes regarding the condition of Avista’s natural gas pipeline facilities and its records.

11

2. Avista agrees to survey its entire Washington State pipeline system to find isolated steel and, except for Paragraph 12 below or unless otherwise specifically stated, complete all remedial action set forth in this Agreement within five years of the effective date of this Agreement.

12

3. Avista has been voluntarily replacing known, cathodically protected, and isolated steel risers for several years. Avista will continue its replacement of these risers and will complete this effort within ten years of the effective date of this Agreement (at a rate of 10 percent per year). This replacement timeframe will also include any cathodically protected, isolated steel risers found within the next five years per this Agreement. .

13 4. Within the time allowed by WAC 480-93-110(2) from discovery of an unprotected, isolated service or riser through Avista's Isolated Steel Identification/Replacement Program, Avista will either (a) replace it, or (b) provide cathodic protection, and then replace it within one year of discovery.

14 6. Any sections of isolated steel main found by Avista through Avista's Isolated Steel Identification/Replacement Program to not have cathodic protection will be replaced within the time allowed per WAC 480-93-110(2) or, cathodically protected within the time allowed per WAC 480-93-110(2), leak surveyed one time within 30 days of discovery and checked for past corrosion leaks over the previous 5 years. If past corrosion leaks are found (within the previous 5 years), the segment will either (a) be replaced within one year of discovery, or (b) be evaluated as to the need for replacement. The evaluation of these segments will include a review of any exposed pipe condition reports, potholing the pipe with direct examination of pipe and coating, evaluation of soil type and proximity to structures intended for human occupancy and the potential of gas to migrate in the event of a leak. The evaluation shall also include a coating conductance survey. If no past corrosion leaks are found, the segment will be evaluated as to the need for replacement through Avista's Distribution Integrity Management Program (DIMP)¹.

15 7. For the evaluation of unprotected, isolated segments that have had a past corrosion leak(s) and are not immediately replaced as set out in Paragraph 14 above, Avista will create and implement an evaluation method for ranking pipeline risk factors to be used in determining if any previously unprotected main sections are safe to remain operational if cathodically protected.

¹ DIMP is defined in the Federal Code of Hazardous Materials and Pipeline Safety Regulations, Title 49 CFR Part 192, Subpart P

16 8. Avista will develop a quality assurance/quality control (QA/QC) process to ensure that work is being performed effectively. At a minimum, the QA/QC process shall require that each riser be visited and status confirmed. The results of the QA/QC process shall be summarized in the quarterly progress reports described in Paragraph 18 below.

17 9. Avista agrees to provide detailed quarterly progress reports to the Commission that include the following information: (a) area surveyed with maps; (b) non-protected facilities found, broken down by type (for example, riser, service, short or long section of main); and (c) the number and type protected and/or replaced. Reports will show quarterly progress in addition to total program progress. Reports will be submitted by January 15th, April 15th, July 15th, and October 15th of each calendar year following the effective date of this Agreement until the program is completed.

18 10. Avista will track all costs associated with the remediation actions set forth in this Agreement in a separate account.

19 11. The Parties recognize that the full scope of Avista's isolated steel replacement project may be better known after Avista completes the survey of its system set out in Paragraph 11 above. Should Avista determine that circumstances exist that will prevent it from completing remedial action within the five years set out in Paragraph 11 or the ten years set out in Paragraph 12, it shall be Avista's responsibility to notify Commission Staff in writing at least 30 days in advance of the deadline and request an extension by means of an amendment to the Agreement. Any amendments to the Agreement must be filed with the Commission, and will not be effective until approved by the Commission.

20 12. Avista and Commission Staff agree that this docket may be closed upon Commission approval of this Agreement.

IV. GENERAL PROVISIONS

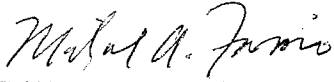
21 Nothing in this Agreement affects the ability of the Commission Staff to seek a complaint for penalties or other appropriate relief, if gas pipeline safety rule violations are found in subsequent inspections by Commission Staff of the Company's gas distribution system, policies and procedures. Nothing in this Agreement prevents or places any conditions upon the Company from contesting any such Commission enforcement action, if any is initiated.

22 This is the entire agreement of the Parties. It may not be cited as precedent in any proceeding other than a proceeding to enforce the terms of this Agreement.

23 This Agreement is considered executed when all Parties sign the Agreement. A designated and authorized representative may sign the Agreement on a party's behalf. The Parties may execute this Agreement in counterparts. If the Agreement is executed in counterparts, all counterparts shall constitute one agreement. An Agreement signed in counterpart and sent by facsimile is as effective as an original document. A faxed signature page containing the signature of a party is acceptable as an original signature page signed by that party. Each Party shall indicate the date of its signature on the Agreement. The date of execution of the Agreement will be the latest date indicated on the signatures.

24 Upon execution, Commission Staff will make reasonable efforts to have the matter placed on the next available Commission open meeting agenda. If this matter is not handled at a Commission open public meeting, the Parties agree to support the Agreement during the course of whatever procedures the Commission determines are appropriate.

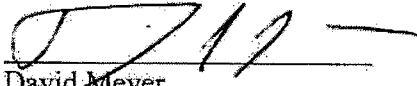
For Commission Staff:



Michael A. Fassio
Assistant Attorney General
Counsel for Commission Staff

Date signed: 11/2/2011

For Avista Utilities:



David Meyer
Vice President & General Counsel for
Regulatory and Government Affairs
Avista Utilities

Date signed: 10/19/11



STATE OF WASHINGTON

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

1300 S. Evergreen Park Dr. S.W., P.O. Box 47250 • Olympia, Washington 98504-7250
 (360) 664-1160 • TTY (360) 586-8203

Ref. No. Docket PG-100049

CERTIFIED MAIL

November 17, 2010

Don Kopczynski
 Vice President – Operations
 Avista Utilities Corporation
 East 1411 Mission, MSC 20
 PO Box 3727
 Spokane, Washington 99220-3727

Dear Mr. Kopczynski:

RE: 2010 Natural Gas Standard Inspection – Spokane/Ritzville, Washington

We conducted a natural gas inspection of Avista Utilities Corporation (Avista) Spokane/Ritzville District between September 13 and October 22, 2010. The inspection included a records review and inspection of pipeline facilities.

Our inspection indicates a series of two probable violations as noted in the enclosed report. We also noted five areas of concern which unless corrected, could potentially lead to future violations of state and/or federal pipeline safety rules.

Your response is needed

Please review the attached report and respond in writing by December 20, 2010. The response should include how and when you plan to bring the probable violations into full compliance.

What happens after you respond to this letter?

The attached report presents staff's decision on probable violations and does not constitute a finding of violation by the commission at this time.

After you respond in writing to this letter, there are several possible actions the commission, in its discretion, may take with respect to this matter. For example, the commission may:

- Issue an administrative penalty under RCW 81.88.040, or
- Institute a complaint, seeking monetary penalties, changes in the company's practices, or other relief authorized by law, or
- Consider the matter resolved without further commission action.

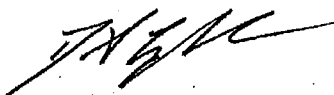


Avista Utilities Corp. – Spokane/Ritzville
Docket PG-100049
November 17, 2010
Page 2

Staff has not yet decided whether to recommend to the commission pursuit of a complaint or penalty in this matter. Should the commission decide to pursue a complaint or penalty, your company will have an opportunity to present its position directly to the commission.

If you have any questions, or if we may be of further assistance, please contact Scott Rukke at (360) 664-1241. Please refer to Docket PG-100049 in any future correspondence regarding this inspection.

Sincerely,



David D. Lykken
Pipeline Safety Director

Enclosure

cc. Mike Faulkenberry, Avista

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION
2010 Natural Gas Pipeline Safety Inspection
Avista Utilities Corporation – Spokane/Ritzville District
Docket PG-100049

The following violation(s) and areas of concern of Title 49, CFR Part 192, WAC 480-90 and 480-93 and were noted as a result of the 2010 pipeline safety inspection of the Avista Utilities Corporation, Spokane/Ritzville distribution system. The inspection included a review of records, inventory, and field operations and maintenance of the natural gas facilities.

PROBABLE VIOLATIONS

1. **49 CFR §192.455 External corrosion control: Buried or submerged pipelines installed after July 31, 1971.**

- (a) *Except as provided in paragraphs (b), (c), and (f) of this section, each buried or submerged pipeline installed after July 31, 1971, must be protected against external corrosion, including the following:*
- (1) *It must have an external protective coating meeting the requirements of §192.461.*
 - (2) *It must have a cathodic protection system designed to protect the pipeline in accordance with this subpart, installed and placed in operation within 1 year after completion of construction.*

NOTE: Paragraphs (b), (c) and (f) are not applicable.

Finding(s):

Avista has an undetermined number of isolated steel service risers and potential isolated services that have no or inadequate cathodic protection applied. The isolated steel risers were primarily installed on polyethylene services prior to the availability of anodeless risers and the isolated services are potentially isolated from the cathodic protection system by insulator style valves or fittings.

The following services, found during this inspection, were identified to be isolated steel risers with no cathodic protection applied.

- a. Meter 57980: N. 12310 Division St, suite 104, Spokane.
Found to be an unprotected isolated steel riser by Avista personnel.
- b. Meter 51936: N. 8601 Division St., Spokane.
Found to be an unprotected isolated steel riser by Avista Personnel.
- c. Meter 79655: N. 8615 Division St., Spokane.
Found to be an unprotected isolated steel riser by Avista Personnel.
- d. Meter 79558: N. 8625 Division St., Spokane.
Found to be an unprotected isolated steel riser by Avista Personnel.
- e. Meter 114200: N. 7326 Division St., Spokane.
Found to be an unprotected isolated steel riser by Avista Personnel.

2. **49 CFR §192.507 Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 psig.**

Except for service lines and plastic pipelines, each segment of a pipeline that is to be operated at a hoop stress less than 30 percent of SMYS and at or above 100 psi (689 kPa) gage must be tested in accordance with the following:

- (a) *The pipeline operator must use a test procedure that will ensure discovery of all potentially hazardous leaks in the segment being tested.*
- (b) *If, during the test, the segment is to be stressed to 20 percent or more of SMYS and natural gas, inert gas, or air is the test medium-*
 - (1) *A leak test must be made at a pressure between 100 psi (689 kPa) gage and the pressure required to produce a hoop stress of 20 percent of SMYS;*
or
 - (2) *The line must be walked to check for leaks while the hoop stress is held at approximately 20 percent of SMYS.*
- (c) *The pressure must be maintained at or above the test pressure for at least 1 hour.*

Finding(s):

Avista installed a new 12-inch high pressure supply line between N. Indian Trail Rd and N. Nine Mile Rd. This pipeline is designed to operate above 100 psig and at less than 30% SMYS. During the pressure test, the pipeline was stressed above 20% SMYS and an inert gas was used as the test medium.

Test records indicate that Avista did not conduct a leak test between 100 psig and 20% SMYS or walk the line to check for leaks while the hoop stress was held at 20% SMYS as required by 192.455(b) and Avista procedure 3.18.

When using air or inert gases as the test medium, it is important to ensure no leaks are present prior to fully stressing the pipeline. This is a safety precaution designed to protect the public and employees from a catastrophic failure under full test pressure.

AREAS OF CONCERN

The following areas of concern were noted and discussed with Avista personnel during this inspection. Although they may not constitute probable violations at this time, Avista should review these notes and make corrections to policies or procedures. Failure to do so could result in future probable violations.

1. **WAC 480-93-170 Tests and reports for pipelines.**

- (7) *Each gas pipeline company must keep records of all pressure tests performed for the life of the pipeline and must document the following information:*
 - (f) *Line pipe size and length;*

Finding(s):

A review of leak records indicates that Avista is documenting the length of pipe used for the repair rather than the length of the pipeline that was leak tested. WAC 480-93-170(7)(f) requires that all pressure tests record the length of pipe that was tested.

2. **WAC 480-93-188 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):

A review of leak survey records indicated 3 areas located in business districts that had newly installed or rerouted pipelines. Although the pipelines were on the leak survey maps, they were not leak surveyed.

- a. Installed 6/24/09, 1st and Robie, map 1a244-5. The business district was surveyed on 6-7-10, but this pipeline was not included in the survey.
- b. Installed 8/11/09, Boone, map 1A170-A. The business district was surveyed 6-1-10, but this pipeline was not included in the survey.
- c. Installed 7/28/2009, Freya, Broadway and Springfield, map 1A170-D. The business district was surveyed 6/2/2010, but this pipeline was not included in the survey.

At the time of this inspection when these segments were brought to the attention of Avista personnel, they were immediately leak surveyed. They did not exceed the maximum 15 month time limit.

Avista should take steps to ensure that newly installed segments of pipeline are surveyed during the normal survey frequencies. Failure to do this could result in segments of pipeline going past the survey frequency time limits.

3. **WAC 480-93-180 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.*

Finding(s):

Avista procedure 4.15, page 2 of 2, paragraph 2-b cites 192.619(a)(1)(ii). The correct citation should be 192.619(a)(2)(ii).

4. **WAC 480-90-328 Meter Identification.**

Gas utilities must identify each meter by a unique series of serial numbers, letters, or combination of both, placed in a conspicuous position on the meter, along with the utility's name or initials. Utilities must update the name or initials on its meters within three years of a name change.

Finding(s):

The following meters were found with the name of Washington Water Power instead of Avista:

- a. Meter 182940, Off N. Division, WWP tag.
- b. Meter 77877, Off N. Division, WWP tag (same bldg).
- c. Meter 5654742, 3900 E. Sprague Ave, Premera Blue Cross, WWP tag.
- d. Meter 89833 K-Mart, 4110 E. Sprague Ave, WWP tag.

5. **WAC 480-93-178 Protection of plastic pipe.**

- (2) *The gas pipeline company must follow the manufacturer's recommendation for maximum cumulative ultraviolet light exposure limit for plastic pipe. If there is no such recommendation, the gas pipeline company must not expose plastic pipe to ultraviolet light for more than two years. Each gas pipeline company must include the applicable ultraviolet exposure time limit in its procedures manual.*

Finding(s):

Avista procedure 3.13 dictates a maximum ultraviolet light exposure limit of 36 months. A quantity of PE pipe in the Ritzville storage yard is at or near this limit and should be destroyed as required by your procedure.

Woodard, Marina (UTC)

From: Busko, Kristen [Kristen.Busko@avistacorp.com]
Sent: Monday, December 20, 2010 12:52 PM
To: Woodard, Marina (UTC)
Cc: Cox, Bryan; Faulkenberry, Mike; Chandler, Randy; Moreau, Joyce; Douglas, Gary
Subject: Avista response to PG-100049
Attachments: 2010 WUTC AVA Response Spokane Ritzville.pdf,

Hi,

Attached please find Avista's response to the Spokane/Ritzville audit, docket PG-100049.

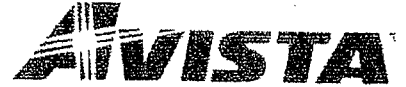
Happy holidays!

<<2010 WUTC AVA Response Spokane Ritzville.pdf>>

Kris Busko, P.E.
Pipeline Safety Engineer
Avista Utilities
1411 E Mission
Spokane, Wa 99220-3727
509-495-8767
kristen.busko@avistacorp.com

RECEIVED via email
DEC 20 2010
WUTC
Pipeline Safety Division





Submitted via e-mail

December 17, 2010

Mr. David Lykken
Pipeline Safety Director
Washington Utilities and Transportation Commission
1300 S Evergreen Park Dr. SW
PO Box 47250
Olympia, WA. 98504-7250

RECEIVED

DEC 20 2010

WUTC
Pipeline Safety Division

Re: Docket PG-100049, 2010 Natural Gas Standard Inspection – Spokane/Ritzville, Washington

Dear Mr. Lykken,

In response to the Washington Utilities and Transportation Commission ("Commission") natural gas inspection of Avista Utilities' ("Avista") facilities in Spokane and Ritzville, Washington, conducted between September 13th and October 22nd, 2010. On November 17, 2010, Commission staff sent Avista an inspection report ("Inspection Report"). The Inspection Report includes 2 probable violations of natural gas safety regulations. Specifically, the Inspection Report indicates that:

1. Avista was in violation of 49 CFR §192.455, External corrosion control: Buried or submerged pipelines installed after July 31, 1971;
2. Avista was in violation of 49 CFR §192.507, Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 psig.

1. Charge: Avista is in violation of 49 CFR §192.455, External corrosion control: Buried or submerged pipelines installed after July 31, 1971;

Avista's acting Chief Gas Engineer and General Foreman of cathodic protection met with the UTC pipeline safety staff on October 28th, 2010, to review Avista's improvements to their cathodic protection program and to discuss Avista's plan going forward to find additional isolated steel pipe segments. At this meeting, Avista discussed implementing a special cathodic protection (CP) program for the purpose of finding, as practicable, all isolated steel in Avista's natural gas piping systems. The method for finding the isolated steel will be by full-interrupted current surveys. This test method will enable Avista personnel the opportunity to record both "on" and "instant off" pipe-to-soil (p/s) voltage potential readings on the pipe in all cathodic protection zones in Avista's gas systems in Washington. Isolated steel pipe segments found will be documented and monitored as permitted by §192.465(a). The program will begin in 2011 and we currently expect to be completed by the end of 2013. After we gain some understanding of the actual work involved with this

project, Avista will reevaluate this completion timeframe in January of 2012 and update UTC pipeline safety staff of the expected completion date.

As it is Avista's intent to continue to remove isolated risers from its system rather than to continuously inspect and maintain them, Capital work for riser replacements and isolated steel pipe remediation will continue for up to 10 years until all risers are removed and all isolated steel is removed, tied in with steel pipe, or permanently bonded into the system.

2. Charge: Avista is in violation of 49 CFR §192.507, Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 psig.

Avista agrees that we have not followed the procedure outlined in our O&M manual, section 3.18, Pressure Testing. In response to this finding, Avista has revised their pressure test documentation to include a check-box for "high pressure leak check performed" to assure that the existing procedure is followed and documented. Additionally, Avista will conduct emphasis training on this practice prior to the 2011 construction season with all personnel who are responsible for testing high pressure pipelines. The training for Washington state personnel will be completed no later than March 31, 2011.

During the inspection, five areas of concern were also noted in the Commission's report. Specifically, the Commission is concerned with:

1. Avista failed to correctly identify the length of pipe used for a repair rather than the length of the pipeline that was leak tested;
2. Avista did not initially perform a leak survey in 2010 for 3 locations with newly installed or rerouted pipelines;
3. Avista incorrectly cited a portion of 49 CFR within their O&M manual;
4. Avista had meters with a WWP tag; and
5. Avista had some polyethylene pipe stored in its Ritzville yard that was nearing the limit for ultraviolet exposure per WAC 480-93-178.

1. Avista failed to correctly identify the length of pipe used for a repair rather than the length of the pipeline that was leak tested.

Avista agrees that instances were found where the length of the entire pipeline section was noted rather than just the length of pipe used for the repair. Avista will perform

emphasis training with personnel responsible for such tests before the 2011 construction season begins.

2. **Avista did not initially perform a leak survey in 2010 for 3 locations with newly installed or rerouted pipelines.**

Fortunately, due to this being found during the audit, Avista was able to perform leak surveys within the 15-month timeframe since the previous survey. Avista is reviewing the process by which mapping updates occur in order to prevent these omissions from happening in the future.

3. **Avista has incorrectly cited a portion of 49 CFR within their O&M manual.**

Avista agrees that we incorrectly cited §192.619(a)(1)(ii) within the 2010 edition of our O&M Manual, section 4.15. Avista has corrected this error for the year 2011, citing §192.619(a)(2)(ii).

4. **Avista had meters with the WWP tag.**


Avista has, since its name change in 1999, revised meter tags through dedicated relabeling efforts and also as planned meter change outs occur. Unfortunately, we have discovered that some tags have disbonded from the meter bodies due to our harsher climate. Avista continues to replace WWP tags wherever found.

5. **Avista had some polyethylene pipe stored in its Ritzville yard that was nearing the limit for ultraviolet exposure per WAC 480-93-178.**

Avista has disposed of the pipe in question and has reviewed the requirement for exposed pipe storage.

Avista appreciates the opportunity to provide this response to the Inspection Report. If you have any questions in regard to Avista's response, please contact Jody Morehouse at (509) 495-2760 or Kris Busko at (509) 495-8767.

Respectfully yours,



Don Kopczynski
Vice President - Operations
Avista Utilities

cc: File
Bryan Cox
Kris Busko
David Meyer

Mike Faulkenberry
Randy Chandler
Linda Gervais

Jody Morehouse
Gary Douglas

Washington State Cathodic Protection Plan & Progress 2003-2011

Avista Utilities hired a Senior Corrosion Technician, Mr. Gary Douglas, on October 27, 2003. Gary brought a better understanding of cathodic protection testing practices as outlined by the International Association of Corrosion Engineers (NACE International). During his first two years of employment with Avista, Mr. Douglas worked under the direction of the former cathodic protection foreman but was able to share his knowledge and make several recommendations to improve the state of Avista's Cathodic Protection Program, including the following:

Initial Program Improvements, 2003-2005, *including disposition of recommendations*

1. Gary recommended that all voltage data gathered must be recorded as it appears on the multi-meter. Data collection previously could be inconsistent and occasionally lacked polarity or showed variation in the number of significant figures noted. Polarity of the reading is important in order to determine if current is flowing on to or off of the pipe, and capturing this information was vital. *This recommendation has since become standard practice.*
2. Rather than a purely paper process, Gary recommended that all data be compiled and put into a consistent format on Excel spreadsheets. *This process was effective and was the status quo until a computerized system was commissioned.*
3. Gary recommended that only trained Cathodic Protection Technicians be allowed to access rectifiers to prevent possible mis-wiring by untrained personnel. *This recommendation has become standard practice.*
4. It was recommended that all isolation unions be cut out or barreled if they were not being used by the cathodic protection group as an isolation point for the new CP zones. *This recommendation has been incorporated into Avista's Gas Standards manual and Avista's CP group is contacted when isolation joints are unearthed to determine whether they need to be retained or cut out or barreled.*
5. Mr. Douglas recommended that, at a minimum, each Cathodic Protection Technician attend NACE's level 1 CP tester program. Additionally, Mr. Douglas provided weekly training for a period of one year to Avista personnel in the theory of cathodic protection. *Today Avista has two Level 1 CP testers, and four Level 2 technicians. Mr. Douglas himself has earned his Level 4 cathodic protection specialist certification.*
6. Finally, Gary recommended that test stations should be installed on all casings. Two wires were to be installed on the casing and two wires to be installed on the pipe. *Since this recommendation Avista has identified all such casings. Currently only one site lacking test leads remains in Washington. This site is challenging in that it is under Interstate Highway 90.*

In March of 2005 Mr. Douglas was appointed the title of Cathodic Protection Foreman. After this promotion and at the direction of the Chief Gas Engineer Mike Faulkenberry, Gary developed the following Plan to create continuous improvement within Avista's steel pipeline system.

Cathodic Protection Plan proposed in 2005, with results-to-plan YTD 2011

1. Identify possible isolation location, such as isolation flange kits, isolated valves, tracer wire that may be put into a test station, and possible locations for "ZUNTS" to be installed. A zunt is designed to isolate two sections of steel pipe. Both old isolation and new isolation are being used until testing can determine effectiveness of isolation.
 - o Isolation points installed in Spokane area to date 184, with 96 still required.
 - o Isolation points installed in outer Washington area to date 44. No additional required.
2. Where practical, separate all high pressure (HP) steel pipes from all intermediate (IP) piping. This allows CP techs the ability to trouble shoot the IP side of the piping more easily, and assures that the HP piping is not influenced by shorts found on the IP side of the piping. There are several small communities within Avista's service territory where multiple CP systems remain impractical and separation of systems is not employed.
 - o Separated 6 HP lines from IP piping in Spokane. 1 to be completed.
 - o Separated all HP from IP piping in Outer Washington. 16 remain tied in because they are small communities where multiple CP systems are impractical.
3. Identify and install test leads on all casings (part of original recommendations, carried forward to 2005 Plan).
 - o Identified and installed test leads on 352 casings in Washington to date, 1 to complete.
4. Continue training CP technicians and monitor work. Mr. Douglas began the practice of going into the field with each technician for training regarding CP testing methods. Methods taught and explored include fixed cell moveable structure testing, continuity testing, current requirement testing, current span testing, soil resistivity testing, casing battery testing, and proper pipe locating techniques to locate shorts and opens. This effort greatly increases the cathodic protection group's ability to troubleshoot and identify systemic problems and shorts.
 - o Mr. Douglas has been into the field with each CP technician for such training as needed.
5. Automate data collection. In preparation for the commissioning of the GoBook field computers in 2008, Gary compiled all initial data entry as well as assisted in creating the design of the data collection fields.
 - o Mr. Douglas has been into the field with each CP technician for data collection training as well as attending utility commission audits to support the computerized data as it is presented to state inspectors.

6. Re-define and confirm all cathodic protection zones. Install isolation in the IP piping systems and install new ground beds.
 - CP zones have been re-defined and input into the GoBook program. Spokane formerly had 24 systems, and now has 35. Outer Washington formerly had 25 systems, and now has 41.
7. Replace all outdated and non-standard rectifiers to Universal 80 volt 12 amps or 40 volt 5 amps rectifiers. This allows Avista the ability to troubleshoot and replace parts in all rectifiers faster and more easily.
 - Most rectifiers have been replaced with standard Universal 80 units. Only 3 remaining units are left to be replaced in the Spokane area.
8. Complete "NATIVE" surveys on all newly established cathodic protection zones. The native survey will determine if there is a bi-metallic connection between magnesium anodes and steel pipe. This will also give Avista a better understanding of the soil conditions and the amount of polarization present in any given area.
 - Native surveys completed in Spokane: 0 of 35 possible.
 - Native surveys completed in outer Washington: 35 out of 41 possible.
9. Address bi-metallic zones. Gary established the policy that any bi-metallic zones identified must have cathodic protection coupon test stations installed. Any galvanic systems without the ability to remove the anodes will also need to have coupon test stations.
 - Avista has identified galvanic systems. Coupon test stations have not been installed as the potentials of the piping have been higher than -1.00 volts.
10. Begin Annual "Instant Off" surveys. Avista strives to be able to perform both "ON" and "INSTANT OFF" potential surveys, which will require additional isolation points within the system as well as the installation of current interrupters.
 - "ON and INSTANT OFF" Annual surveys completed in Spokane: 0 of a possible 35. (multiple CP isolation zones will be interrupted together to perform Isolated Steel Inspection/Replacement surveys. Additional work still outstanding to enable individual CP zone isolation.)
 - "ON and INSTANT OFF" Annual surveys completed in outer Washington: 41 of a possible 41.
11. Enhance survey tools. To update Avista's equipment, Mr. Douglas recommended Avista purchase Radio Detection GPS current interrupters, Tinker and Razor isolation testers for above ground flange kits, pipe locators, and current mapping equipment.
 - Equipment has been purchased and maintained.

12. Replace isolated steel where possible. During the past 2 years (2009 and 2010) Mr. Douglas recommended that isolated steel also be removed from the system, using the isolated steel list generated in 2002 for existing sites and with a policy that any sites found but not included on the 2002 list be immediately replaced upon discovery.

- The total list of isolated risers discovered in Washington in 2002 that were still in existence in 2005 was 1,625. To date Avista has replaced 474 of that 1,625 count. Additionally, 72 isolated steel mains over 100' in length were discovered and are being monitored.

Additionally, the following system improvements were made since 2005:

- New ground beds and deep-well installs in Spokane: 23
- New ground beds and deep-well installs in outer Washington: 33
- Drawings standards were developed and an as-built filing system is being maintained
- Effective communication with the major transmission pipelines to resolve issues has been established