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PUGET SOUND ENERGY

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2006 NOV 15 AM 8:32

November 10, 2006

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AL
Rec Ctr

Carole Washburn
Washington Utilities and Transportation Commission
PO Box 47250
Olympia, WA 98504-7250

Attention: Al Jones

RE: Docket PG-060146 Kittitas Phase II – Revised Pressure Test Procedure

Dear Mr. Jones:

On November 8, 2006, PSE submitted a test procedure for the Cle Elum pressure regulating station. This procedure was subsequently revised per our discussions with you on November 9, 2006. Attached is a copy of the revised test procedure.

Please feel free to contact me at 425-462-3957 if you have any questions.

Sincerely,

Jim Hogan
Manager, Standards and Compliance

cc: Kimberly Harris
Karl Karzmar
Sue McLain
Booga Gilbertson
Duane Henderson

RMS
PA

Puget Sound Energy
Cle Elum Station Air/Inert Gas Pressure Test Procedure
Revision 7
November 10, 2006

Job No. 109017845
Test Section: Cle Elum Station
Report Test Form 1928

Scope:

The following procedure will be utilized for a nitrogen pressure test of the Cle Elum Station to qualify it for a MAOP of 1,000 PSIG. Proposed initial MOP will be 500 psig. Reference Schematic A for a depiction of the piping to be subject to this test.

Notifications:

The following notifications are required prior to beginning testing procedure:

1. PSE Contractor shall notify the proper Kittitas local authorities.

   Kittitas County Public Works (509) 962-7523

   PSE contractor to notify homeowners who may be impacted (restricted access) during the testing

2. PSE Construction Coordinator, Don Bain, shall contact Gas Control (425-882-4622).

Regulatory & Operating Requirements:

Test procedures will meet or exceed the requirements of 49 CFR192.505 which specifies the test requirements for pipelines to operate at a hoop stress of 30 percent or more of SMYS.

Per 49 CFR 192.503 (c) the maximum hoop stress limitation for a Class 2 location, which the Cle Elum Station is classified (refer to UEI class location letter dated 11/6/06), utilizing air or an inert gas is 75% of SMYS.

The Cle Elum Station limiting component for the pressure test is 12.750" O.D. x 0.312" wt X-52 API 5L ERW pipe. Strength calculations for this component of the Cle Elum station piping results in a 100% of SMYS value of 2,545 PSIG and 1,272 PSIG at 50% of SMYS.

The MAOP for Cle Elum station has been set at 1000 PSIG resulting in a minimum pressure test pressure of 1500 PSIG with a maximum pressure test

pressure of 1650 PSIG. The maximum test pressure of 1650 PSIG test pressure will result in a maximum test on the "weakest" station component to 64.8% of SMYS.

Since the maximum hoop stress limitation of 50% of SMYS is being exceeded during the pressure test, ALL buildings intended for human occupancy MUST be evacuated within 300' of the proposed test fabrication area as directed in 49CFR192.505 (a). Survey identified no structures meeting this criteria. (refer to UEI class location letter dated 11/6/06),

Test Procedure – Record Verification and initial preparation activities

1. Spool across regulators (or remove diaphrams).
2. Remove relief valve and blind the open end. Restore when test is complete.
3. Identify all relevant drawings (PSE-4414D-4011 Cle Elum Station P&ID and 4102 Plot Plan and 4302, 4302A, 4302B Piping Sections) and current as-installed drawings. UEI engineer to review these drawings and reconfirm acceptable for pressure test.
4. Identify and ensure all blind flanges are installed and all access ports are sealed with fittings rated for 2,000 psig minimum.
5. COMPANY designee (Don Bain, (253) 405-4869) shall confirm that all (temporary and permanent) butt welds 2" and greater have been radiographicaly inspected and no weld defects exist prior to test.
6. COMPANY designee (Don Bain, (253) 405-4869) shall confirm that all (temporary and permanent) welds not radiographically inspected (including but not limited to threadolets, instrument gas piping socket welds, weldolets, etc.) have been inspected by a qualified individual utilizing dye penetrate prior to test.
7. Confirm that all valves are 50% open for the pressure test and blind flanges and/or solid steel plugs installed.
8. Remove and replace with solid steel plugs all body relief valves on ball valves for pressure test (body relief valves are typically set to relieve at 1440 PSIG even though the ANSI 600 Valves have been tested to a minimum pressure of 2160 PSIG).
9. Prepare barricades or temporary fencing at safe distances north and south along the private easement east of the test

site. Barricades and fencing to be located at as great a distance as reasonably practical from the testing area, but in no case less than 150 feet (except as necessary to leave a minimum of 20' from the paved portion of State Route 970). Traffic will be prevented from entering the private access easement from either direction during the test and lasting until pressure is blown down. At each possible opening to the easement, either a sign will be posted or a company representative will be stationed. Signs will indicate a pressure test is underway and provide a phone number of someone who can provide additional information. Company representatives will, as much as reasonably practical, be protected by a vehicle or other rudimentary shield.

10. Connections shall be provided for the test medium. Valves and fittings used for connections shall have pressure ratings that exceed the maximum test pressure.

11. A test area shall be established a minimum of 75' from the piping to be tested, and at as far a distance as practical (leave a minimum of 20') from the paved portion of State Route 970.

12. A truck or a large piece of construction equipment shall be located as a rudimentary shield for those involved in the testing operations.

Pressure Test Procedure

1. Schedule nitrogen test for a time frame when minimum changes in ambient conditions are forecasted. Nitrogen truck to include a 100' hose to be used for filling piping to be tested.

2. Install temperature chart recorder (0 – 150 deg. F) calibrated within last 6 months (proof of calibration required for project closure files and prior to installation for Pressure test) for ambient temperature monitoring and recording.

3. Install a minimum of two (2) temperature chart recorders (0 – 150 deg F scale) calibrated within last 6 months (proof of calibration required for project closure files and prior to installation for Pressure test). Install thermocouple / temperature sensing element on fabrication piping by utilizing duct tape (lay temperature on top of pipe, parallel with pipe, and secure element. Wrap pipe section a minimum of 18" upstream and downstream with insulation material and water proof same. Install one (1) temperature element with chart recorder close to nitrogen injection point and one (1) temperature element with chart recorder at the furthest point from the air/nitrogen injection point. Allow temperature recorders to stabilize a minimum of two (2) hours prior to start of pressure test.

4. Rig-up pressure test recorder (calibrated from 0 – 2000 PSIG) and ambient temperature chart recorder a minimum of 100 feet from station piping schedule for testing. Pressure recorder and dead weights shall have calibration documentation indicating a calibration test within the last 6 months.

5. Conduct tailgate safety meeting to discuss the hazards of air/inert gas test. The pipe / fabrication schedule for testing should be "roped-off" with yellow safety ribbon at a minimum radius of 100 feet (this will be known as the test zone) prior to start of pressure test. From a safety standpoint, only designated workers should be allowed to enter the test zone for leak testing.

6. Rig-up nitrogen bottle rack or truck and pressure-up the fabrication piping between 80 and 100 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

7. Rig-up nitrogen bottle rack or truck. Increase test pressure to 250 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

8. Open valves on nitrogen bottles / truck and proceed to increase the test pressure to 500 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

9. Open valves on nitrogen bottles / truck and proceed to increase the test pressure to 750 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

10. Open valves on nitrogen bottles / truck and proceed to increase

the test pressure to 1000 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

11. Open valves on nitrogen bottles / truck and proceed to increase the test pressure to 1250 PSIG and hold for 10 minutes. Decrease pressure to 1000 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

12. Open valves on nitrogen bottles / truck and proceed to increase to the test pressure of 1650 PSIG and hold for 10 minutes. Decrease pressure to 1250 PSIG and hold. Listen for any leaks prior to proceeding into the test zone. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Once initial leak test is complete, all designated workers are to vacate the test zone.

13. Open valves on nitrogen bottles / truck and proceed to increase to the final test pressure of 1650 PSIG and hold.

14. Monitor pressure for 30 minutes and bleed / add nitrogen as required to maintain a minimum test pressure of 1500 PSIG and a maximum test pressure of 1650 PSIG.

15. Fully close valve at piping end of hose and blow down hose at truck end. Start pressure test. Record chart pressure, dead weight pressure and ambient temperature every 15 minutes in the test log.

16. Nitrogen truck to rig-down and leave after one hour provided approval is given by contractor and PSE's test engineer.

17. After eight hours, test records will be reviewed by PSE's test engineer (Jim Walker 425.766.3810 or Joe Ewing 206.255.8165) to confirm the test is satisfactory. Once determined satisfactory, the piping is to be vented down to 1250 PSIG. Designated workers will visually inspect all above grade welds and "Snoop Test" (snoop is a mixture of water and soap that when applied to a fitting / flange that is leaking will create soap bubbles). Snoop test all weldolets, threadolets, flanges, and other fittings. Upon satisfactory completion of final

leak test, piping is to be vented to atmospheric pressure.

18. Once the station fabrication piping has been bled to zero psig, fully operate each ball valve to ensure no trapped pressure exists in the body cavity. Remove steel plugs and re-install body relief valves. Restore relief valves and regulators.

19. Contractor to use dry air (confirmed to have a dewpoint of -40F or lower) or nitrogen to pressurize back to a minimum of 20 psig.

RECORDS

- The completed pressure test forms for each facility tested serve as permanent historical records; therefore, it is mandatory that all required forms be filled out neatly, completely and accurately. Forms shall be completed in the field by the test engineer or technician at the time the test is performed. Copies of all test, regulator and valve records, as-built schematics with markups to indicate piping subject to the test are to be sent to PSE Senior Engineer (Jim Walker, EST04W) to update Engineering records and included in job folder.

- Company pressure test forms should be used to the extent practical. The test contractor's forms may be used if approved by Company's representative and they are equivalent to the Company's forms and are completed in accordance with instructions for the equivalent Company form.

- All required test forms and pressure and temperature charts shall be submitted with the as-built data.

Prepared by:

Maurice Barnes, Jr. PE
Project Director, V.P.
Universal Ensco, Inc.
Date: 11/10/06

Reviewed by:

Jim Walker, PE
Senior Engineer
Gas System Engineering
Date: 11/10/06

Approved by:

Joe Ewing, PE
Consulting Engineer
Gas System Engineering
Date: 11-10-06