POST INSPECTION MEMORANDUM

Inspector: Kuang Chu & Al Jones/WUTC
Reviewed: David Lykken/WUTC
Peer Review: Tom Finch/PHMSA 7-24-09
Follow-Up Enforcement: ~~No Violation~~
~~PCP* PCO* NOA WL~~ LOC
Director Approval* CL 11/5/09

Date: 7/9/2009

Operator Inspected: **OPID:** 31522 **Region:** Western
Kelso-Beaver Pipeline Company
c/o Cascade Natural Gas Company
222 Fairview Ave N
Seattle, WA 98109

Unit Address:
Cascade Natural Gas
1332 Vandercook Way
Longview, WA 98362

Unit Inspected: **Unit ID:** 9775
Unit Type: Interstate Gas
Inspection Type: I-01 Follow up to Standard Inspection
Record Location:
Cascade Natural Gas
1332 Vandercook Way
Longview, WA 98362

Inspection Dates: June 30, 2009
AFOD: 2
SMART Activity Number: 123888

Operator Contact: Keith Meissner, Manager, Safety & Compliance
Phone: (206) 381-6734 **Fax:** (206) 624-7215 **Emergency:** (800) 433-0252

Unit Description: The Kelso-Beaver (K-B) Pipeline is located in Cowlitz County, Washington. K-B Pipeline takes delivery of natural gas from the Williams Northwest Pipeline meter station located east of Kelso, Washington and extends west approximately 18 miles to Columbia County, Oregon. The pipeline crosses under the Columbia River north of the City of Longview, Washington. The pipeline is a 20-inch diameter, API 5L grade X52 material, with a nominal wall thickness of 0.281, 0.344, and 0.375-inches. The pipeline is jointly owned by Portland General Electric (PGE), U.S. Gypsum Company, and Northwest Natural Gas (NWN). The K-B Pipeline

has two customers located in Oregon at the PGE's Beaver generating station and U.S. Gypsum near Rainier, Oregon.

Facilities Inspected: This field inspection was to inspect the installation of finger drains (French drains) at the Flow Slide Area. This project is phase II of the overall project by PGE to stabilize the hillside (approximately 60-degrees slope) and protect the existing pipeline. During Phase I project, a geotextile fabric, drainage collection pipe, and 3" to 8" size rocks were installed in the area where the Flow Slide occurred. The purpose of Phase I project was to provide stability to the adjacent soil by placing approximately 9 foot thick rock mass at the head of the scarf and decreasing the depth of the rock mass to the toe of the hillside. Phase I was completed in early April of 2009. The Phase II project includes excavating 5 narrow and deep parallel trenches next to the Phase I project and fill the trenches with polystyrene aggregate. The separation between two adjacent trenches is approximately 10 feet. Two 4" diameter perforated corrugated plastic pipes surrounded by 4 inches of polystyrene aggregate are placed at the bottom of each of the 5 trenches and backfilled with polystyrene aggregate. Each of the ten 4" perforated plastic drain pipe is connected to a 6" plastic conveyance pipe at the down slope end of the 4" perforated pipe. The conveyance pipe is discharged at the base of the hillside. See attached photos and design details.

Persons Interviewed:
Tom Wilson District Manager (509) 952-5682

Probable Violations/Concerns: No probable violations identified. The Civil Engineer of PGE told us at the site that similar design has been implemented successfully elsewhere and this design was reviewed by their geotechnical consultant, Cornforth Consultants. When we asked about the scarf located up slope of the pipeline, the Civil Engineer explained to us that he only had to stabilize the ground down slope of the pipeline as the scarf located up slope of the pipeline was present during pipeline construction and it had not moved since the pipeline was constructed. We are not sure if the Phase I & II projects will significantly stabilize the slide area and protect the pipeline. PGE will continue to monitor the ground movement in the future by surveying elevation points along the ROW.

Follow up on the history of prior offenses that are still open:

Prior Offenses (for the past 5 years)		
CPF #	**What type of open enforcement action(s)?**	**Status of the regulations(s) violated (Reoccurrence Offenses, Implement a NOA Revision, Completion of PCO or CO, and etc...)**

Recommendations:
We believe the 20" pipe is under high stress at its current configuration. As indicated in our earlier inspection report, we recommended that the pipeline should be shut down, depressurized,

and the section around the Flow Slide Area be exposed to relieve pipe stress. PGE should consult with their geotechnical consultant to install French drains up-slope of the pipeline to minimize water up gradient from flowing into the area around the pipeline. If the section of the pipeline is to be buried again, we recommended the installation of strain gages and piezometers to monitor pipe stress and ground water level. Alternatively, the pipe section may be above ground with pile supports in lieu of strain gages.

Comments:
None

Attachments:
Two photos of the finger drains installation and the third sketch showing the overall site details.

View: looking down slope (approximately 60-dgrees). The contractor's crew was installing black geotextile fabric in open finger drain, EZ flow pipe, and backfill with expanded polystyrene aggregate, cover with geotextile fabric and native soil.

View: Looking down slope. The contractor's crew was working on the geotextile fabric before the trench is covered with approximately 1 foot of soil backfill material.

View: Looking down slope (approximately 60-dgrees).

Version Date: 5/5/08

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