



CPUO Meeting Materials

Weekly Non-Destructive Examination Program Updates

December 6, 2013

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1



- PG&E/SE Alignment
 - L-114
 - Extent of Conditions for TCI Inspections
 - NDE Program Enhancements
 - NDE Program Validation Protocols/Extent of Conditions (LLNL)
 - Follow-Up from previous meetings

- Completed Activities To Date

- Next Steps
 - Schedule
 - Immediate Needs



- L-114 Final Report complete (See “Noncompliant Weld Inspection Techniques, L-114 Non Destructive Examination Final Report, December 5, 2013”)
- L-114 Findings:
 - Pipeline currently in service
 - PG&E found NO Weld Integrity issues present on L-114
 - PG&E found on-site vendor performing noncompliant Non-Destructive Examinations

¹Activity progress/completion is discussed in the Completed Activities To Date section

²Dates are contingent on weather, permit, and/or construction schedules



- PG&E activities to validate welds inspected by TCI (Listed by Weld Validation number, e.g. WV-XXX per PG&E Dig Management PMO Tracking Sheet):
 - WV-132-13 (completed 11/15/2013)
 - 5 welds located due south of Milpitas Terminal on L-132 cross-tie
 - All 5 welds “finger-printed” passed inspection per API 1104
 - WV-06A (L-108/L-401) (12/9/2013)²
 - 12 welds to be evaluated at dig site
 - WV-03A/B (L-108/DFM-0613-06) (12/11/2013)²
 - 1 Welds to be evaluated at Site 2. Welds to be evaluated in 2014 (Site B)
 - WV-05D/E (L-108) (12/18/2013)²
 - 4 Welds to be removed as part of pipe replacement project
 - Welds will be sent to AT&S radiographic testing
- Leak Survey details
 - Leak Survey began on 600 miles of identified Gas Transmission pipeline (12/2/2013)
 - Detail Map— See large format map submitted on 12/6/2013

¹Activity progress/completion is discussed in the Completed Activities To Date section

²Dates are contingent on weather, permit, and/or construction schedules



NDE Program Enhancements

- Increased job observation frequency from quarterly to weekly (Q1 2013)
- Expanded job observations outside of new construction (Q1 2013)
 - Station Projects
 - Integrity Management Inspection Projects
- Issuance of Gas Welding Control Manual (TD-4160M) (Q2 2013)
 - Sets minimum Requirements for qualifications, procedures, and materials for NDE
- Development of Gas NDE Control Manual (TD-4190M) (Started Q2 2013)
 - Establishes procedures for all NDE inspections
- Comprehensive review of all NDE Contractor procedures and qualifications (Q2 2013)
- Engagement of 3^d Party experts for the review and execution of new contracts with NDE service providers (Q2 2013)
- Integrity Management NDE vendor's procedures were reviewed and personnel proficiency tested for the performance of inspections (Q3 2013)
- Facility and NDE program audits were conducted for existing and prospective NDE service providers (Q3 2013)
- Online OQ Training modules (Veriforce) developed for contractor NDE personnel (Q3 2013)



NDE Program Validation Protocols

- Engaged 3rd Party experts (LLNL) to develop scope and provide historical understanding (11/21/2013)
- Working to establish contracts with Lawrence Livermore National Labs
 - Working to meet contract requirements, and fee structure requirements
- LLNL will work to provide the following:
 - Validation of statistical approach to TCI Extent of Conditions/Remediation
 - PG&E will work to incorporate LLNL improvements if any
 - Development of Extent of Condition for Post-'61 Transmission Pipe
 - Development of Validation Protocol for Post-'61 Transmission Pipe
 - Inspection methods
 - Girth weld integrity
- Leak Analysis Results
 - Total of 2182 Leaks on the Gas Transmission System (data covers 1939-2013)
 - Total of 47 Girth Weld Leaks on the Gas Transmission System (data covers 1939-2013)
 - Only 7 Girth Weld Leaks on the 600 miles question. This indicates the welds are generally of higher quality than those that pre-date 1961 installations
 - 2% of GT Leaks are on the Girth Weld (data covers 1939-2013)

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7



Completed Activities to Date

- See 11/22/13 presentation for items prior to 11/22/13
- Validation of 5 welds on L-132 (11/15/2013)
 - All 5 Welds passed radiographic inspection per API 1104
- Engaged Lawrence Livermore National Labs (LLNL)
 - Developed Scope of Work
 - Initiated contract/agreement
- Excavated 12 welds at Vernalis Station in preparation for Radiographic Testing
- Excavated 3 welds at 8 Mile Rd Pressure Limiting Station (PLS) in preparation for Radiographic Testing
- Completed L-114 Final Report
- Created Map of pipeline segments to be Leak Surveyed as a result of L-114 Findings
 - Pipeline segments
 - Hydrotested sections
 - ILI Sections
- Began monthly Leak Survey of 600 miles of pipeline

¹This population contained some 2010 and 2011 welds

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8



Follow-Up Questions from 11/22/13

- SED: How many contractors does PG&E have doing Radiographic Testing?
 - PG&E: PG&E Gas Operations currently has three vendors performing Radiography (WIX, JANX and Edge/ATS). We have also used two additional vendors (Team Industrial and Mistras) on the Whisky Slough project.
- SED: Has PG&E been looking at the ability to have all X-Ray images made electronic?
 - PG&E: Yes. PG&E is evaluating various technologies to allow for the digital imaging and storage of RT examinations.
- SED: As contractors are doing Radiography, how does the film get handed off?
 - PG&E: Film is handed off daily, along with reader sheets to the lead inspector or General Construction Foreman. Film/Reader Sheets are kept on-site until the end of the project.
- SED: How is film stored at the end of each job?
 - PG&E: Film is turned over to our record processing area in Walnut Creek (370 N. Wiget Lane). There it is checked, re-packaged and labeled. It is then shipped to a permanent storage facility located in Brisbane, CA (Bayshore Facility), where it is kept for the life of the asset.
- SED: When you need to look for X-Ray Films, where do you go to get the film?
 - PG&E: Any film needed to be retrieved is requested from the Bayshore Facility as detailed above.



Follow-Up Questions from 11/22/13 (con't)

- SED: What are the film requirements for PG&E/Contractors?
- PG&E: Please see below excerpt from the ~~attached~~ PG&E Technical Specification regarding the use of class I film only.
 - “5.2.8 For film radiography, radiographs shall be using ASTM Standard E 1815 Class I film of high contrast and relatively fine grain structure that will ~~represent~~ ~~be~~ required. Example film may be such as AGFA ~~D~~4 or D5 film. (Or equivalent)
 - 5.2.10 Class II film equivalent to AGFA ~~D~~7 shall not be used except upon specific approval by PG&E NDT Level III and only where very long exposure times would be necessary (e.g., for extreme large diameter (>48” dia using DWS ~~in~~ method) and extremely heavy wall sections).”



- High Level activities within the next 6 Weeks
 - See 11/22/13 presentation for prior items:
 - Issue L-114 Final Report [12/6/13] Submitted (12/6/2013)
 - Finalize LLNL contract (12/13/2013)
 - Inspection of first 20 TCI Welds [12/31/13] (5 completed as of 11/15/2013)
 - Inspection of all 43 TCI Welds [3/31/14]
 - LLNL to validate TCI Dig plan and issue recommendations if necessary (43 digs) (1/15/2013)