

Eighth Annual QUIKLOOK Users Group Meeting Spring Outage Experience Comanche Peak

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TELEDYNE TEST SERVICES
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Comanche Peak Overview

- Crane site from the very beginning (1980's)
- Currently used Crane VIPER 5.X test equipment
- 75% of MOV population had custom calibrated strain gages applied during the early 1990's
- 5% of MOV population had calibrated SB compensator packs, SmartStems or QSS
- 20% of MOV population were tested using spring pack only criteria. CP has decided to use QSS or SmartStem in the future for this valve group in order to obtain thrust and torque
- MOV setup criteria was derived from custom software developed in the 1990's using Lotus
- MIDAS and CPTTEST were being implemented to replace the previous Lotus based software

Summary of Topics

- Pre-Outage Preparation - Training
- Pre-Outage Preparation – Configuration Files
- QL3 Software 2014 – Menu Driven Startup by Valve
- Pre-Outage Preparation – MOV Test Procedure
- Pre-Outage preparation – MOV Setup Criteria
- Pre-Outage Preparation – System Calibration
- Field Testing – Advantages (Time Savings)
- Post-Test Support

Pre-Outage Preparation – MOV Training

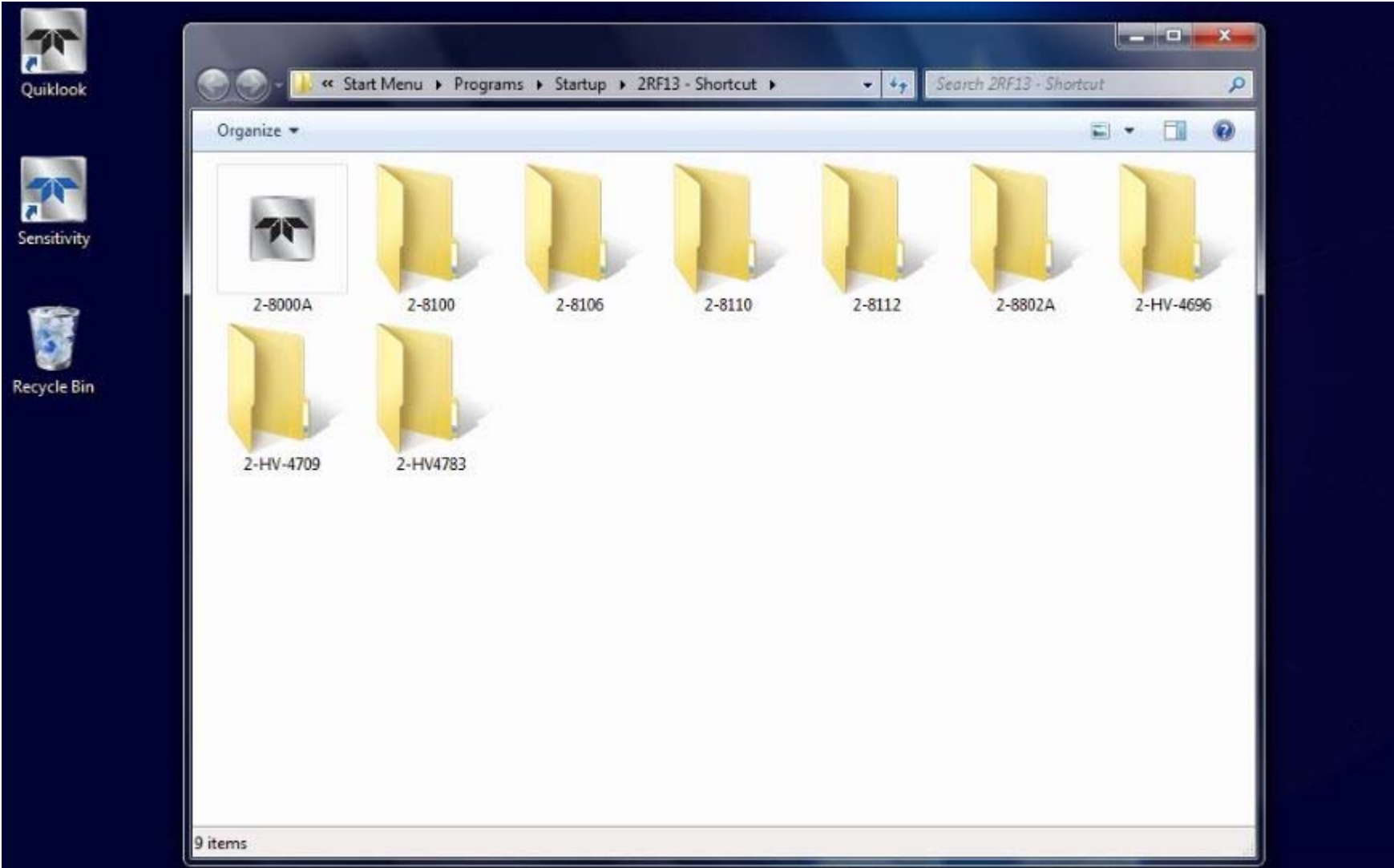
- ½ Day Evaluation of testers
- ½ Day Introduction to testing at Comanche Peak. Review of test procedure.
- Introduction of key features in QUIKLOOK
 - Configuration – brief
 - Testing – hands on working with equipment and main form in QUIKLOOK
 - Replay
 - Marker names and placement. Key marker shortcuts <ctrl>C, <ctrl>O, <ctrl>U, <ctrl>M, <ctrl>E, <ctrl>I, <ctrl>B



Pre-Outage Preparation – Configuration Files

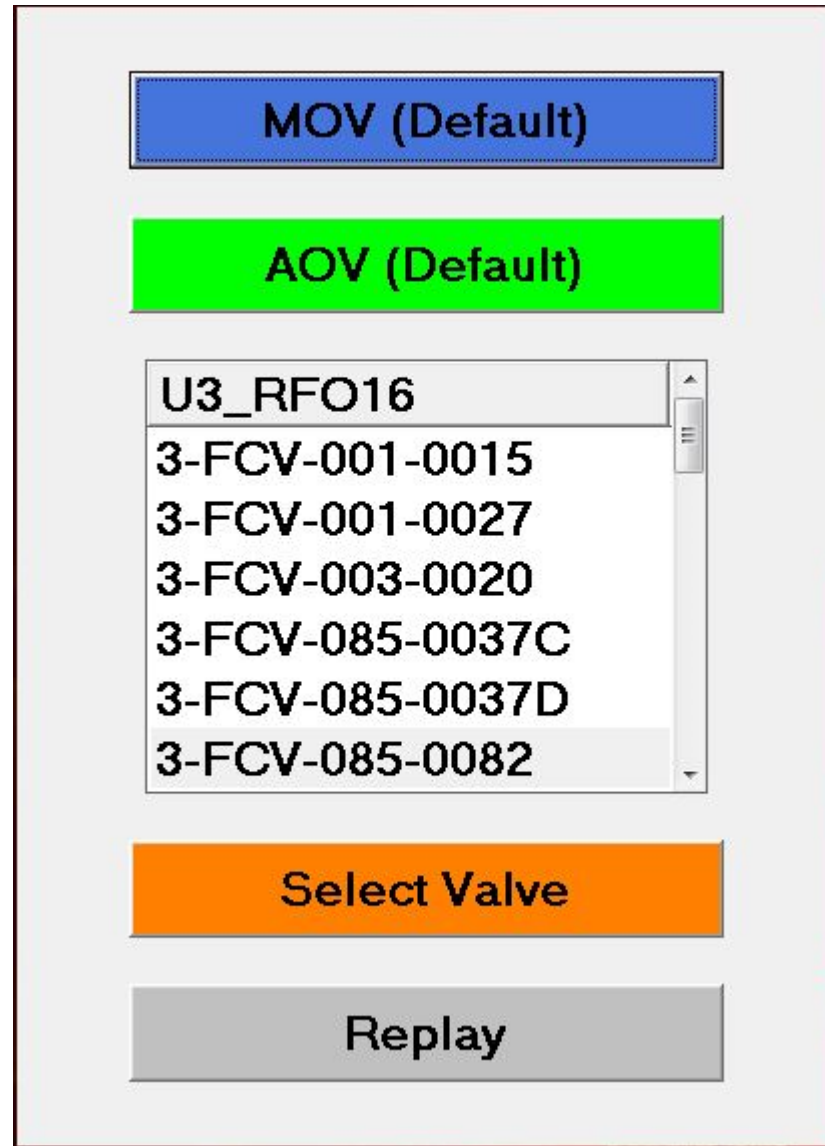
- Pre-Configured CTG files using a QL3 system for all outage valves. Created folders for each valve. Human performance issue identified when converting thrust/torque sensitivities from Crane VIPER or 3500 format to QL format. Same issue identified for sensitivities and offset of calibrated SB compensator packs.
- Pre-Loaded entire folder structure containing CTG files onto each QL3 system using USB stick
- Modified the startup process for each QL3 system so that Windows Explorer would launch to the main outage folder listing all of the valves to be tested in sub folders. This was done to eliminate potential confusion with the location of valve folders and test data.

Pre-Outage Preparation – Configuration Files



QL3 Software 2014 – Menu Driven Startup by Valve

- Due to the success of the Windows Explorer startup process at CP, TTS implemented a similar process redirector as an integral part of QL3



Pre-Outage Preparation – MOV Test Procedure

- Simplification of Comanche Peak test procedures
 - 79 pages for original rising stem procedure
 - 65 pages for original quarter turn procedure
 - 41 pages for revised combined procedure
- Original procedures contained many pages of formulas and calculations and were partially integrated with external Lotus files
- New procedure was more generic, contained no formulas and calculations but was fully integrated with MIDAS for specific valve related setup information.

Pre-Outage Preparation – MOV Setup Criteria

- Lotus spreadsheets (RIPS, QTIPS) replaced by MIDATEST (CPTTEST)
- Conversion of previous test of record from Crane VIPER format to QL format.
- Replication of design data in MIDAS when compared to existing CP methodologies. MIDAS output replicated exact process used by CP so no calculation changes were required unless design data was changed.
- Population of CPTTEST with previous test of record data, spring pack calibration data and current design data.
- Population of CPTTEST with limit switch criteria and special instructions.
- Population of CPTTEST with equipment errors used with previous test equipment in order to match current margins. Human performance issues identified when replicating equipment errors used with previous equipment.



Pre-Outage Preparation – System Calibration

- Offsite calibration versus Onsite calibration
- CP had the necessary voltage standards and purchased the QL3 calibration kit containing hardware and software.
- TTS spent ½ day with calibration lab people to review the manual and automatic calibration process for QL3. TTS tested the automatic calibration process using the Fluke meters available in the calibration lab (discussion).
- TTS assisted CP to prepare a new calibration procedure for QL3 using CP terminology and formatting. CP requested an Excel export of the raw calibration data so they could use their own statistical process and report format to present the results. TTS revised the software for the fall outage.
- TTS supervised the initial QL3 system calibrations.



Field Testing – Advantages (Time Savings)

- Less equipment to carry into the field (cables)
- Batteries, power not readily available or loss of outlet power during test (real life experience)
- Switches represented using individual current probes (coils) instead of combined into one trace using alligator clips (Crane methodology)
 - Eliminates problems with interpretation of combined switch trace (real life experience)
- QL3 sensor recognition (TEDS) was significantly easier than manually configuring the sensor database using the QL handbook.
- QL3 new main form
 - Combines channel configuration and monitoring into one form

Post-Test Support

- Windows Explorer manipulation of QL data files versus Import/Export process in Crane VIPER.
 - QL data files are stored as single files (.CDB) and can be located, copied, and moved using Windows Explorer
 - QL data files contain complete identification inside the data file so the files can be mixed with other valve data files without contamination
 - QL data files contain a log table of all activity performed to the test after being acquired and saved. The log table contains the date, time, user name, and summary of the changes made.
- Easy recovery of test mistakes. Channel names, units, sensitivities, and offsets can be recovered after the test has been saved.
- TTS created custom reports for CP inside QL3 that organized the marker data in a format similar to the pre-test data sheets generated by MIDATEST. This was used by testers for easy comparison of marker data.

Any Questions?

THANK YOU



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