



Related Research Update



Workshop on Guidelines for Integrity Assessment of Cased Pipe

Max Kieba, PHMSA (on behalf of Bob Smith)

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Recap: 2008 Casings Workshop

- **There are numerous past & present relevant research projects addressing:**
 - Tech/tools, Standards & General Knowledge
- **Workshop recognized role research is playing in finding solutions**
- **Also recognized need for some additional investigations**



However: R&D Relevance Varies

- **Because CASQAT has defined some specific guidelines within:**
 - Applying ECDA to Cased Pipe
 - Establishing ECDA Casing Regions
 - Using Above Ground Surveys and Indirect Assessment Tools to Casings and Carrier pipe
 - Casing Quality and Monitoring



Other R&D Solutions?

- **Part 192 allows for a variety of approaches and solutions**
 - Various technology
 - Risk assessment methods
- **Confidence in individual approaches & the requirements for “Other Tech Notifications” require good data**



PHMSA/Industry Efforts

1. ECDA of Cased Pipes
2. Potential Measurements in Paved Areas
3. Severity Ranking of ECDA Indirect Inspection Indications

Projects are 99% complete. Project Goals Achieved:

- Identifying assessment technologies for shorted, electrolytically-coupled and isolated conditions
- Better define severity-ranking classification criteria
- Develop procedures for recording pipe-to-soil potential and DCVG measurements on pipelines under paving.



GTI - GW as Hydro Equivalent

- **Objective**

- Collect and analyze data to demonstrate that guided wave is equivalent to a hydrotest
- Calculate failure pressure for rupture using ASME B31G
- Provide information that can be used to eliminate the need for prior notification for GW use



GTI - GW as Hydro Equivalent

- **Results**

- Analysis confirmed that GW missed no defects that would fail a hydrotest or any defects that were found during a direct examination

- **Status**

- NACE's TG-410 Task Group is drafting standards language using results from the project's final report

Funding from OTD, contact
alicia.farag@gastechnology.org



GTI- Evaluation of Dielectric Wax-Filled Casings

- **Objective**
 - To develop in-situ monitoring techniques to validate that the threat of external corrosion has been removed in a wax-filled casing.
 - The first phase of this project will develop and test monitoring techniques for gathering corrosion information and evaluating the quality and long-term performance of the wax fill.



GTI- Evaluation of Dielectric Wax-Filled Casings

> Status

- A full-scale wax-filled cased pipe test section was constructed and instrumented.
- The pipe is being monitored using several techniques including:
 - TDR cables inside the casing
 - Corrosion probes
 - Electromagnetic Wave measurements by Profile Technologies.



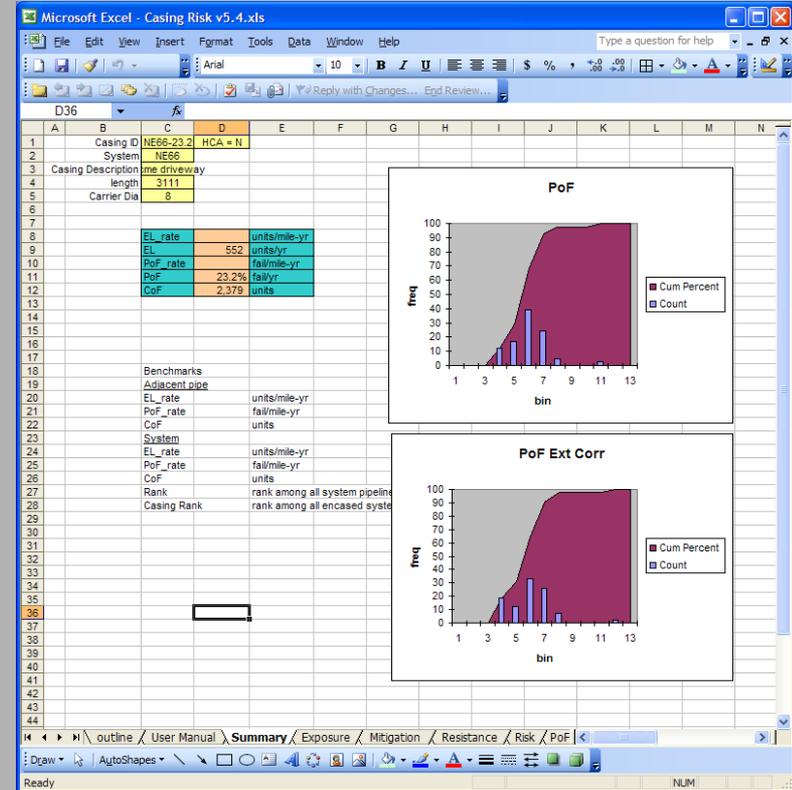
Funding from OTD, contact
khalid.farrag@gastechnology.org

NYSEARCH – Cased Pipe Integrity Assurance Model

Objectives

- Develop an overall risk assessment algorithm to support risk and integrity management of encased pipe
- Provide a formal, technically defensible consensus-based process for assessing risk on cased pipe

Contact info: ddzurko@northeastgas.org
& rich.arata@newcenturysoftware.com

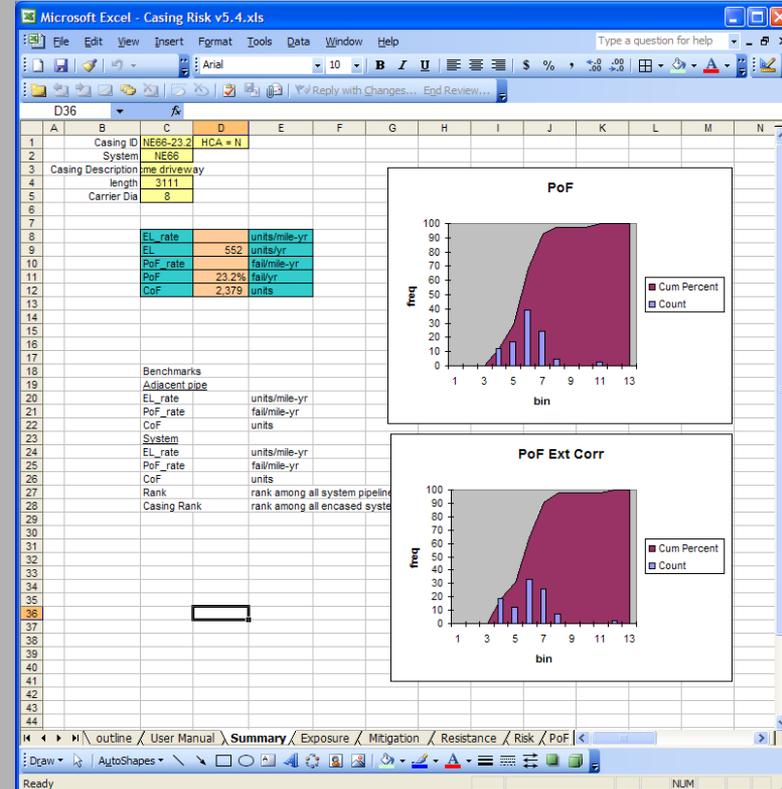


NYSEARCH – Cased Pipe Integrity Assurance Model

• Status

- WKM/Muhlbauer & CCT/DNV completed model in 2009
- Licensed to New Century Software; graphical/user friendly version available for sale
- NYSEARCH funders working with WKM on independent validation of model

Contact info: ddzurko@northeastgas.org & rich.arata@newcenturysoftware.com



NYSEARCH



NYSEARCH – Annular Space Direct Inspection Camera/Robot

- **Objective**

- To develop a platform for direct inspection of the carrier pipe in the annular space that can provide information
 - Integrity of Coating and carrier pipe metal condition
 - Physical placement & condition of insulators
 - Presence of Electrical contacts
 - Environmental Conditions
 - Risk Assessment

Contact info: ddzurko@northeastgas.org



NYSEARCH – Annular Space Direct Inspection Camera/Robot

- **Status**

- Phase I product (camera-only) has been extensively field tested; ULC Robotics commercializing; others may be licensed
- Phase II NDE & moisture sensors proven in lab; field testing being initiated in 5/10
- Future: potential vent entry

Contact info: ddzurko@northeastgas.org





Direct Examination Techniques for Shorted and Non-shorter Cased Crossings

Project objectives/scope: Understand and evaluate techniques that can detect the presence and type of shorts; focus on ECDA/aboveground techniques, without the need of test facilities. Apply a Corrosion Threat Assessment and Prioritization based on results (PCM & A-Frame)

Project Contacts: Mark Piazza, PRCI –
mpiazza@prci.org; 678 339 3645

Direct Examination Techniques for Shorted and Non-shorter Cased Crossings

Current Status:

- Two recent sources of additional data identified and data being compiled
- Draft Final Report being prepared by SwRI; focusing on validation of techniques using actual field data
- White Paper approved by PHMSA under BAA #7 – *Development of a Model to Accurately Predict the Conditions of Pipe within Casings Based on Conditions at the Casing Ends*, builds on current work.

Direct Examination Techniques for Shorted and Non-shortened Cased Crossings

Key Issues:

- Develop a comprehensive ranking methodology and procedure for prioritizing casings for ECDA
- Develop an accurate correlation that allows for predicting the conditions in the middle section of the casings based on those at the ends of the casings

Project Contacts: Mark Piazza, PRCI –
mpiazza@prci.org; 678 339 3645



New PHMSA Research Solicited!

Strengthening Consensus Standards – Improving Cased Crossing Assessment Methods:

Project should determine how data collected from the assessment of pipe from the end sections can be correlated to accurately model the condition of pipe within the middle section of casing. Scope should include references to relevant consensus standards & show how standards could be revised based on anticipated project results.

Topic Identified at 2008 Casing Workshop & 2009 Pipeline R&D Forum, Award(s) expected June/July



Thank You!/Questions?

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