

# Gas Transmission Integrity Management Inspection Lessons Learned

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# OPS Integrity Management Goals

- Accelerate Assessments of Pipelines in High Consequence Areas (HCAs)
- Increase Public Assurance in Pipeline Safety
- Promote Rigorous, Systematic Management of Pipeline Integrity
- Enhance Governmental Oversight of Pipeline Company Integrity Plans and Programs

# OPS Performance Measures

- Goal - Accelerate Assessments of Pipelines in High Consequence Areas (HCAs)
  - 295,220 total pipeline miles reported
  - 50,122 miles of total pipeline assessed to date
  - 20,116 miles of HCA identified to date
  - 6,686 miles of HCA assessed to date



# OPS Performance Measures

- Rule Has Resulted In:
  - 338 Immediate Repairs (+72)
  - 998 Scheduled Repairs (+94)



# OPS Performance Measures

- 2005 Incidents by Cause in HCAs (10)
  - Third Party Damage – 5 (+3)
  - Incorrect operations – 2 (+1)
  - Weather related and outside force – 1
  - Equipment – 1 (+1)
  - Construction - 1



# OPS Performance Measures

- 2005 Failures by Cause in HCAs (20)
  - External Corrosion – 15
  - Third Party Damage – 4 (+2)
  - Incorrect operations – 1
  - Manufacturing – 0 (+1)



# OPS Performance Measures

- 2005 Leaks by Cause in HCAs (104)
  - Equipment – 63 (+28)
  - External Corrosion – 20 (+19)
  - Weather Related and Outside Forces – 8 (+1)
  - Third Party Damage – 6 (+2)
  - Construction – 5 (+2)
  - Incorrect Operations – 2



# OPS Performance Measures

- January 1<sup>st</sup> – June 30<sup>th</sup> Reporting Period
  - Due by end of August 2006
  - May Report On-line at:  
<http://primis.phmsa.dot.gov/gasimp/>
  - Under Performance Measure Reports
    - Submit Report
- Please Make Sure You Have Made a Gas IM Performance Measure Report if you Operate a Transmission Pipeline Which is Not A Gathering Line!

# OPS Integrity Management Goals

- Goal - Increase Public Assurance in Pipeline Safety
  - GAO Report Congress September 2006
    - Conditions of Pipelines are Improving as Assessments and Repairs Completed
    - Representatives from Industry, Advocacy groups, and State Pipeline Safety Agencies agree IM Improves Public Safety

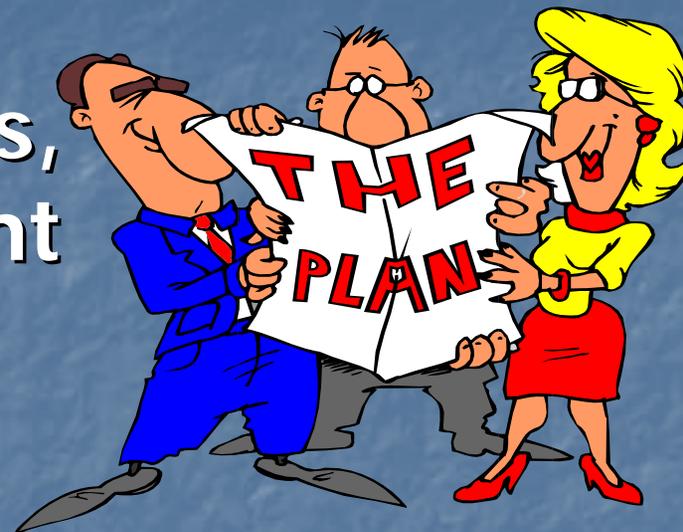


# OPS Performance Measures

- **GAO Report to Congress September 2006 Results:**
  - **Congress Should Consider Going to a Risk Based Assessment Interval (Remove 7-year Mandatory Assessment for Corrosion)**
  - **PHMSA needs to Improve Reporting to Better Track Data Trends**

# OPS Integrity Management Goals

- Goal - Promote Rigorous, Systematic Management of Pipeline Integrity



- Rule requires the Development of an Integrity Management Program consisting of Plans and Processes for the implementation of the required program elements set out in 192.911

# Gas Integrity Management Goals

- Goal - Enhance Governmental Oversight of Pipeline Company Integrity Plans and Programs
  - OPS is accomplishing this task through our inspection oversight program
    - Approximately 26 Inspections Completed to Date/at end of CY2006 will have completed 32
    - Plan to conduct 15-20 Gas IM Inspections in CY 2007

# Gas IM Inspections

- Investigative Approach as Opposed to Results Oriented Approach
- Focuses on Development of Integrity Management Procedures
  - Looking for Consistent and Repeatable Results

# Gas IM Inspections

- Focuses on Implementation of Integrity Management Procedures
- This is Primarily a Process and Records Check Inspection
- No Field Component At This Time; However, Some States May Incorporate One for Intrastate Facilities.

# Gas IM Inspections

- **Inspection Teams will be Multi-Regional**
  - Includes State Participation
- **Pre-Inspection**
  - Scheduled a Few Weeks Prior to Actual Inspection
  - Face to Face or by
  - Conference Call
  - Coordinates Inspection Logistics – Where, Who, When, Etc.



# Gas IM Inspections

- Inspections Estimated to be Two Weeks in Duration



- Inspection Team Will Caucus After Each Protocol Section
  - Provides Inspection Consistency
  - Assures Complete Communication of Issues

# Gas IM Inspections

- Exit Interview Held at Completion of Each Week
- Operator Presentation of Process and Procedures for Completing a Task is Helpful
  - Plan Development, HCA Identification, Direct Assessment, MOC, Threat Analysis, etc.

# Gas IM Inspections

- Inspection Teams will Check Implementation Using Vertical Slice of a Process
  - Randomly select a process or procedure and follow it through to completion
  - Several Examples May Be Randomly Selected

# State/Federal Coordination

- **Inter-state Agents Will Participate in Federal Inspections**
- **If Intra-state Pipelines are Included in an Operators Plan:**
  - **State Pipeline Safety Programs With Safety Authority will be Invited to Participate in the Federal Inspections**
  - **Separate Enforcement Action**

# Inspector Training

- **Minimum Training Set Developed in Conjunction with NAPSR**
  - **ILI, Corrosion, Joining, and Integrity Management (Protocol Training)**
- **CBT Development Completed – Direct Assessment, Risk Models, Management Systems (6 CBTs Total)**

# Actions For Successful Audit

- Have Detailed Procedures for Gas IM Plans and Process Activities Being Conducted
- Have a Framework for Processes and Procedures Under Development – Activities Not Being Conducted

# Actions For Successful Audit

- Implement – Follow Your Plans, Processes, Procedures and Framework
- Be Aware of Compliance Dates and Document (Keep Records) of Implementation Steps
- Provide a Presentation on Development and Implementation of Each Protocol Section

# Actions For Successful Audit

- Provide OPS Access to IM Processes and Procedures Prior to Inspection via CDs or Web Access
- Take a Conservative Approach to Assumptions
- Follow FAQ Guidance

# Actions For Successful Audit

- Recognize the Differences Between the Regulation and the Referenced Industry Standards.
  - B31.8S Standard was First
  - Gas IM Regulation Referenced the Standard
- Need both the be Successful for Compliance.

# Inspection Results

- IM Program based on generic plan provided by outside party –
  - Operator had not customized document to be aligned with their operations.
  - Detail in procedures lacking for some activities currently underway.
  - Operator not aware of some requirements in the generic plan.
  - Good outline, but not a Gas IM Program.

# Inspection Results

- IM Program does not contain detailed process and supporting procedures for activities operator is currently engaged in –
  - Framework is only appropriate for activities an in which an operator is not engaged.
  - Looking for approved processes/procedures for activities underway – Not draft procedures.

# Inspection Results

- **Key Process Elements (FAQ 238):**
  - Who owns/is responsible for the task;
  - What are the goals/objectives of the task;
  - What data/information/resources are required to complete the task;
  - How is the task to be completed;
  - When or how often is the task to be completed;

# Inspection Results

- **Key Process Elements Con't:**
  - How are key elements of the task completion documented;
  - How is task documentation maintained;
  - How are task outputs/results communicated to key personnel;
  - Is there a method for process improvement (reviews/feedback loops)

# Inspection Results

- HCA Identification does not take into account mapping inaccuracies or tolerances
  - Mapping inaccuracies may be as much as plus or minus 500 ft. or as little as a few feet.
  - Looking for operators to take a conservative approach to assure mapping tolerances will not result in HCAs not being identified.

# Inspection Results

- PIR Calculation not completed for pipelines transporting Rich Gas (BTUs greater than 1100) – Not Enforced
  - B31.8S requires separate calculation for Rich Gas
  - Study posted on Public Website with formula for Rich Gas.

# Inspection Results

- Operator did not contact public officials for locating identified sites.
  - Rule requires that public officials be contacted – not optional
  - Must Provide Public Officials with Appropriate Data to Provide Identified Site Information

# Inspection Results

- Operator did not provide justification for not excavating and evaluating immediate repair conditions from ILI Indications within 5-days.
  - Referenced from 192.933 - ASME B31.8S Section 7.2.1 requires the evaluation to be completed in 5-days – additional time may be taken to affect repairs if a pressure reduction is in place.

# Inspection Results

- Operator did not include immediate conditions in Section 7 of B31.8S referenced by 192.933
  - Metal loss on a longitudinal seam (direct current, low frequency weld, or flash weld)

# Inspection Results

- IM Program utilized flowcharts in lieu of detail procedures for providing direction to employees for accomplishing required task.
  - Flowchart blocks do not provide sufficient detail to be considered a complete process.
  - They are helpful to provide a high level view of key process steps to be accomplished.

# Inspection Results

- A Formalized Technical Justification was lacking for the elimination of potential threats:
  - A documented technical justification is necessary for a HCA not to be considered susceptible to a given threat.
  - This should be based on factual data and not on assumptions (We Never Had a Failure Due to This – So We Never Will)
  - If data does not exist to exclude a threat it must be included for assessment

# Inspection Results

- Operator had not developed methodology to receive timely results of possible “immediate conditions” from ILI vendor:
  - Discovery is when adequate information about a condition is obtained to determine that the condition presents a potential threat to the integrity of the pipeline
  - Preliminary reports from ILI Vendors can often provide adequate information without waiting for a Final Report

# Inspection Results

- Utilization of ECDA even when a lack of data to support the pre-assessment step of ECDA process is unavailable.
  - Pre-Assessment Step is to determine whether ECDA is feasible
  - For DA to be successful good data is necessary (If you don't know where your coated pipe ends and your bare pipe begins you need to gather additional data)

# Inspection Results

- **IM Program Goals, Objectives, and Requirements not communicated beyond personnel directly involved in the Program Development (Field Personnel Not Included)**
  - This results in stove piping and hinders program goals
  - Involvement of field personnel in data collection and validation has reaped benefits for companies involving them

# Inspection Results

- **Key decisions not well documented**
  - Changes to BAP, Risk Ranking, Weightings
  - 192.947 (d) Documents to support any decision, analysis and process developed and used to implement and evaluate each element of the baseline assessment plan and integrity management program.

# Inspection Results

- Preventive and Mitigative actions did not include a review of whether or not additional remote control valves would provide an added risk benefit.
- Some Operators Not Taking Preventive or Mitigative Action Until After Assessments are Complete

# Inspection Results

- Criteria of acceptance was not established for quality assurance program
- Failure to integrate ILI results with encroachment data such as foreign line crossings
- Failure to integrate previous ILI runs with Baseline Assessments to look for changes

# Inspection Results

- Failure to include ILI tool tolerance when determining immediate conditions under 192.933. See FAQ 68
- Failure to consider consequences in prioritizing HCAs for assessment.

# Inspection Results

- Failure to provide a notification if using Direct Assessment for Near-Neutral SCCDA or Wet Gas ICDA as there are no code sections or referenced standards covering these threat assessments (New technology)

# ECDA Inspection Issues

## Pre-Assessment

- ✓ Operators many not have sufficient knowledge of the pipe in the ground to determine if ECDA is feasible. Operators are required per NACE RP 0502 §3.2 to specify and document the minimum data requirements. **Protocol D.02.a** and NACE RP 0502 §3.2

# ECDA Inspection Issues

## Pre-Assessment

- ✓ Operators are required to conduct and document that they have performed a feasibility study. **Protocol D.02.b** and NACE RP 0502 §3.3.

# ECDA Inspection Issues

## Pre-Assessment

- ✓ Operators have not been documenting the basis for their indirect tool selection.

**Protocol D.02.c.iii.**

# ECDA Inspection Issues

## Pre-Assessment

- ✓ Operators are required to specify and document more restrictive criteria for each step on the initial ECDA assessment of an ECDA region or segment. **Protocol D.02.e**

# ECDA Inspection Issues

## Indirect Inspection

- ✓ Operators are required to mark the end points of all ECDA regions and document how they plan to do it. **Protocol D.03.a.i** and NACE RP 0502 §4.2.1.

# ECDA Inspection Issues

## Indirect Inspection

- ✓ Operators need to specify and document the spacing between the tools and how they will change them. **Protocol D.03.a.iv.**

# ECDA Inspection Issues

## Indirect Inspection

- ✓ Alignment of indirect inspection indications is important and needs to be documented along with integrating encroachment data and other TPD issues. **Protocol D.03.b.**

# ECDA Inspection Issues

## Indirect Inspection

- ✓ Operators are required to specify and document more restrictive criteria on the initial ECDA assessment of an ECDA region or segment. (See FAQ 242 for Examples) **Protocol D.03.c**

# ECDA Inspection Issues

## Direct Examination

- ✓ Operators need to document and use a methodology to determine the priority of indications that are to be excavated.

**Protocol D.04.a.**

# ECDA Inspection Issues

## Direct Examination

- ✓ Operators are required to excavate one additional indication on the initial ECDA on a region or segment. **Protocol D.04.a** and NACE RP 0502 §5.10.

# ECDA Inspection Issues

## Direct Examination

- ✓ Operators are precluded from reclassifying indications downward on the initial ECDA assessment of an ECDA region or segment.  
**Protocol D.04.f** and NACE RP 0502 §5.9.

# ECDA Inspection Issues

## Direct Examination

- ✓ Operators need to use internal notification procedures for documenting changes to their ECDA Plan. Protocol D.04.g

# ECDA Inspection Issues

## Direct Examination

- ✓ Operators are required to specify and document more restrictive criteria on the initial ECDA assessment of an ECDA region or segment. (See FAQ 242 for Examples) **Protocol D.04.i.**

# ECDA Inspection Issues

## Post Assessment

- ✓ Operators can not exceed the maximum reassessment interval values given in §192.939 no matter what the half life calculation yields. **Protocol D.05.b.**

# ECDA Inspection Issues

## Post Assessment

- ✓ Operators are required to complete at least one excavation (at least 2 on initial ECDA assessments) for process validation.  
**Protocol D.05.c** and NACE RP0502 §6.4.2

# ECDA Inspection Issues

## Post Assessment

- ✓ Operators are required to implement and document feedback at appropriate opportunities in the ECDA process.

**Protocol D.05.d** and NACE RP 0502 §6.5

# Thank You!

## Questions and Answers

Website:

<http://primis.phmsa.dot.gov/gasimp/index.htm>

Questions and Comments Link!