

Preventing and Managing Pipeline Cracks an Operator's Perspective

Presented PHMSA Public Meeting August 5, 2014



AOPL Principal & Alternate Representatives (Pipeline Leadership) AOPL Board of Directors	AOPL/API Organization Chart 2/3/2014 AOPL Board / API Pipeline Subcommittee Officers API-AOPL Pipeline Safety Excellence (PSE) Steering Committee	API Pipeline Subcommittee Members (Pipeline Leadership) API Pipeline Subcommittee Officers
AOPL FERC Relations Committee L AOPL Accounting Committee L AOPL Tariff Committee AOPL Legal Committee AOPL Government Relations Committee	API-AOPL Pipeline Safety Excellence Initiative Performance Excellence Team L Damage Prevention Subteam L Sharing Practices & Learnings Subteam L Safety Culture Subteam L Strategic Planning Subteam L Data Mining Team Control Room Team	API Operations & Technical Group API Integrity Work Group API Cybernetics Work Group API Operator Qualification Work Group API Public Awareness Group API Environment, Health & Safety Group
<u>AOPL</u> °	Emergency Response Team R&D/Enhanced Technology Team	energy PL

Association of Oil Pipe Lines



- Increase in crack failures
- Survey of current practices
- Recent large incidents





API-AOPL Pipeline Safety Excellence

2014 Strategic Plan





API-AOPL Environmental & Safety Initiative 2014 Strategic Plan

Goal 1: Improve Inspection Technology Capabilities

Improve with Comprehensive and Accelerated R&D the Capabilities of In-Line Inspection (ILI) Technologies to Detect and Diagnose Cracks

Goal 2: Enhance Threat Identification & Response

Develop an API Recommended Practice on Crack Detection, Analysis and Response, with an Emphasis on Seam Related Cracks

Pevelop Industry-Wide Guidance on Implementing Threat Data Ontegration Programs and Activities

Goal 3: Expand Safety Culture & Management Practices

Strategic Initiative 4:

Strategic Initiative 1:

tegic Initiative 2:

Strategic Initiative 5:

Foster Pipeline Safety Culture with an Industry-Wide Sharing, Learning and Assessment Program

Improve Pipeline Safety Performance

Detection Management

Deploy Newly Developed Pipeline Safety Management System to

Goal 4: Boost Response Capabilities

Strategic Initiative 6:

Strategic Initiative 7:

Deploy a Nation-Wide Pipeline Emergency Response Training, Outreach and Standards Program

Develop an API Recommended Practice for Operator Leak

Develop an API Recommended Practice on Crack Detection, Analysis and Response....





Team Considerations

- Goal; Have an approved RP by end of 2014
- Membership; Integrity experts in Hazardous Liquid and Gas pipeline industry
- Technical consultants; Kiefner and Assoc.
- Incorporate work from CEPA, R&D work by Industry and Regulators, existing standards and documents





Team Considerations

- Communications; Continual vetting of results to stakeholders
- Members have been very open and transparent about their experiences
- Collection of industry best practices.





Team Considerations

- Broken down into manageable sections, each with its own work groups
 - Threats Group A
 - Crack Remediation and Response Team B
 - Assessment/Response Team C
 - Repair methods Team D
 - Industry consistent terms and definitions Team E





Philosophy of the Crack Management RP

- Scope is to develop a pipeline crack management program for Hazardous Liquids and Gas steel pipelines
- Flexible
- Requires an in-depth knowledge of each systems characteristics
- Requires the integration of data
- Augments operators existing IMP
- Address all types of crack failure mechanisms;





Scope Details

Environmental cracking

- SCC (Both high Ph and near neutral SCC); Axial and circumferential
- sulfide stress cracking SSC
- hydrogen-induced cracking (HIC)
- stress-oriented hydrogen-induced cracking (SOHIC).

Manufacturing Defects

- Various longitudinal seam types
 - ERW
 - flash welded (FW)
 - Submerged arc weld SAW and DSAW

Mechanical Damage Construction defects Fatigue cracks Cracks in repairs, buckles, hard spots









Philosophy of the Crack RP

Plan

energ

what is needed



- Data collection
 - Attributes of pipe
 - Operating history
 - Past inspections/hydrotests
 - Leak history
 - Corrosion/CP data
 - Repair history
- Identify what tools you will use to assess integrity due to cracks





DOit

DO

Implement assessment plan

- Analyze results
- Determine failure mechanism and time dependency
- Evaluate results
 - Classify ILI features by priority
 - Determine response based on priority
- Complete repairs









- Collect Performance Measures
- Evaluate Program









energ



- Any issues must be integrate into the process
- Require update and re-analysis of IM plan across all systems
- Revise assessment tools and schedules





Thank you!

