Preventing and Managing Pipeline Cracks
an Operator's Perspective

Presented PHMSA Public Meeting

August 5, 2014

AOPL/API
Organization Chart
2/3/2014

AOPL Principal & Alternate Representatives (Pipeline Leadership)

AOPL Board of Directors

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
- AOPL Accounting Committee
- AOPL Tariff Committee

AOPL Legal Committee
AOPL Government Relations Committee

API-AOPL
Pipeline Safety Excellence Initiative

Performance Excellence Team
- Damage Prevention Subteam
- Sharing Practices & Learnings Subteam
- Safety Culture Subteam
- Strategic Planning Subteam

- Data Mining Team
- Control Room Team

Emergency Response Team
R&D/Enhanced Technology Team

API Operations & Technical Group
- API Integrity Work Group
- API Cybernetics Work Group
- API Operator Qualification Work Group

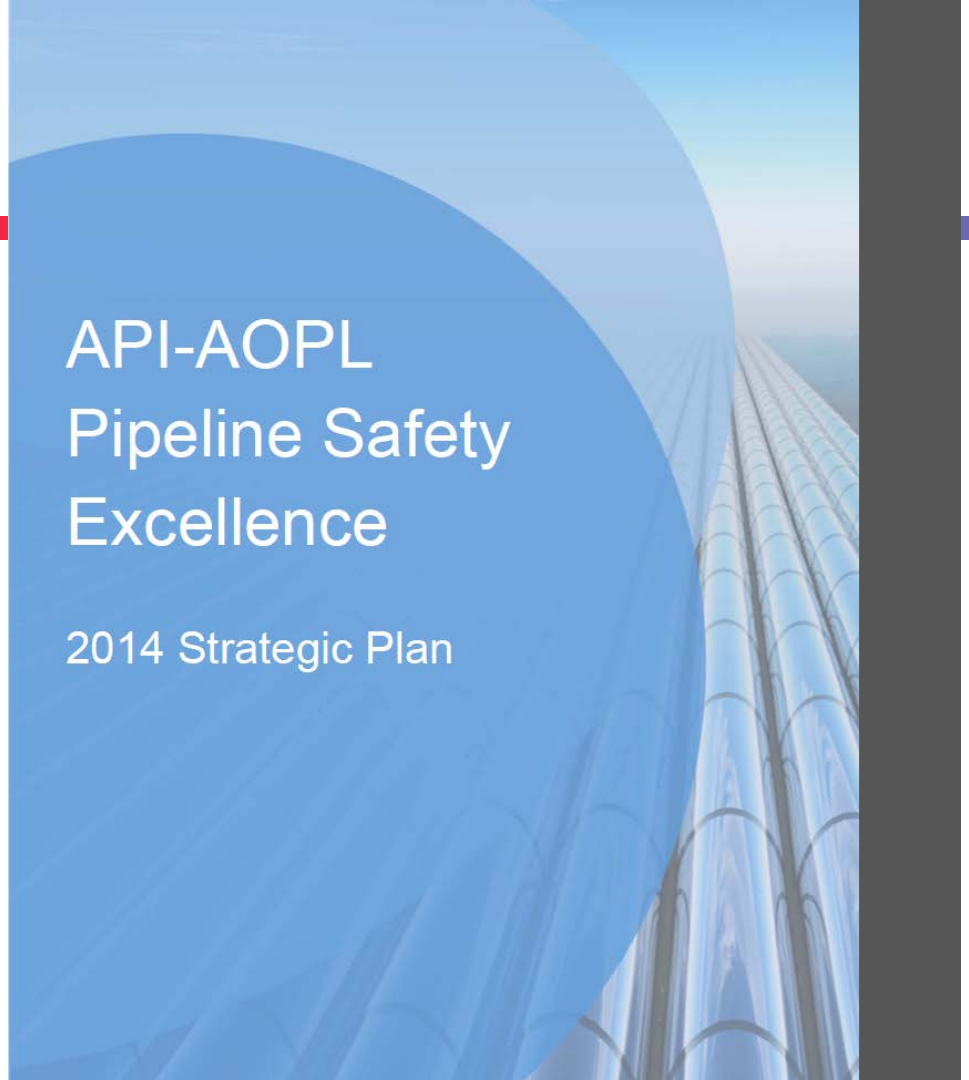
API Public Awareness Group
API Environment, Health & Safety Group

AOPL® Association of Oil Pipe Lines

energy API

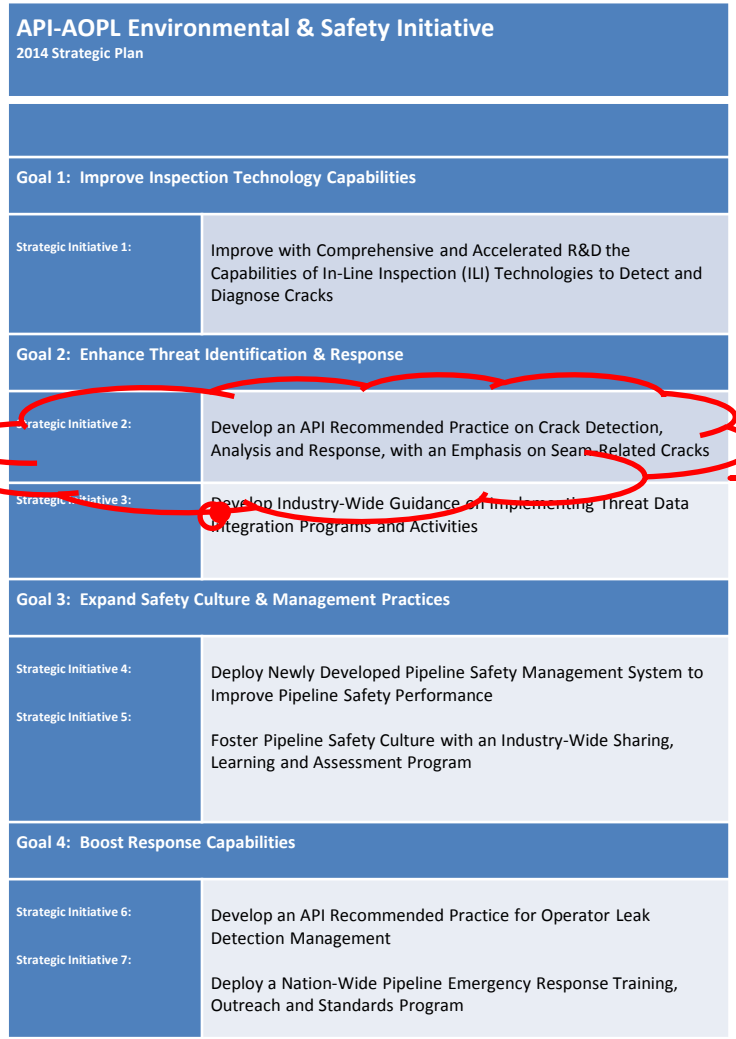
Recognizing the need

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



API-AOPL Pipeline Safety Excellence

2014 Strategic Plan



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

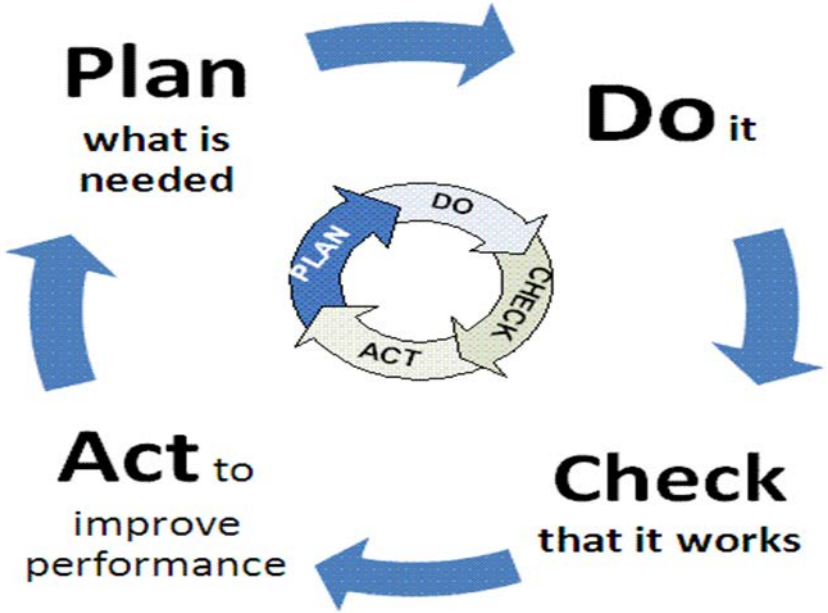
- SCC (Both high Ph and near neutral SCC); Axial and circumferential
- sulfide stress cracking SSC
- hydrogen-induced cracking (HIC)
- stress-oriented hydrogen-induced cracking (SOHIC).

Manufacturing Defects

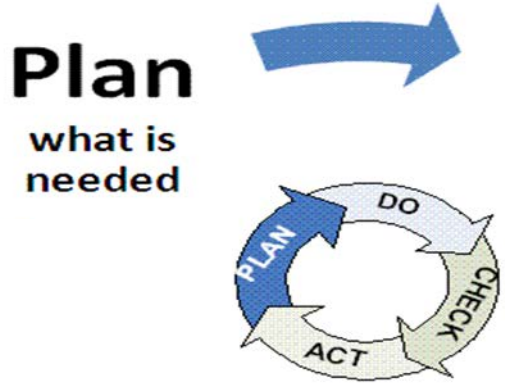
- Various longitudinal seam types
  - ERW
  - flash welded (FW)
  - Submerged arc weld SAW and DSAW

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

Philosophy of the Crack RP



Philosophy of the Crack RP



- 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

Philosophy of the Crack RP

Do it

- 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

Philosophy of the Crack RP

- Collect Performance Measures
- Evaluate Program

Philosophy of the Crack RP

- Audits
- 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!