Managing Pipeline Integrity: “A Systematic Approach”

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INGAA Integrity Workshop
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Managing Pipeline Integrity

- **Integrity** - The state or quality of being entire or complete; wholeness; unbroken state;
  - In Control of the Operation
  - Know What is Going On (Monitoring)
  - Take Action to Prevent Occurrence of Incidents (Mitigation)

- **Management** - The manner of treating, directing, carrying on, or using, for a purpose; guidance; control;
  - Understand How Incidents Could Happen (Continual Assessment)
  - Guidance on How to Control Risk (Risk Analysis)
  - Plan, Processes, and Procedures
  - Training and Personnel Performance
ASME B31.8

- ANSI Approved Standard
- International Standard
- Design, Construction, and Operation
- Gas Transmission and Distribution Piping Systems
ASME B31.8S

- Integrity Management Supplement
- Development Team began in 1999
  - Industry,
  - Federal and State Regulators
  - Research and Development Organizations
  - Consultants
- Based on Research and Technical Reports
- Guidance for Compliance and Consistency
- Prescriptive and Performance-Based Approach
- Guide for Integrity Management Program
Integrity Management Principles

- Engineered into new Pipeline Systems
- Dynamic and Customized to Meet Operators Needs
- Organization, Processes, and Physical System
- Information Integration
- Risk Assessment
- Continuous Process
- New Technology
- Performance Measurement
- Communication
B31.8S Supporting Research

- Evaluation of P/L Design Factors
- Model for Sizing High Consequence Areas
- Prevention, Detection, and Mitigation
- Direct Assessment and Validation
- Leak vs. Rupture Considerations for Low Stress Pipe
- Implementation Plan for Re-verification for High Consequence Intervals
- Smart Pigging
- Review of Pressure Testing
- Proposed Guidelines for Assessment of Dents and Mechanical Damage
Gas Pipeline Industry Technology Development

Entities Involved in R&D
- GPTC
- GMRC
- DOE/NETL
- GTI
- PRCI
- INGAA
- AGA
- AOPL
- OPS/DOE
- ASME
- API, etc.
- Pipeline Cos.
- Suppliers
- Public
- Academia
- OPS/States
- SDO Efforts – Standards/Practices
- Executive
- INGAA/AGA
- Et. Al.
- Regulations – OPS
- EPA
- MMS
- Pipeline Companies, Material Suppliers, Contractors, Constructors
- Public
- Congress
- Regulators
- Industry
- Academia
- Requirements for New or Improved Technology
- Refine Requirements
- Technology R&D
- Commercialization
- Communication/Education
- Industrial Application
- Characterization of Requirements
- Issues and Concerns
- Refine Requirements
- Technology R&D
- Commercialization
- Communication/Education
- Industrial Application

Requirements for New or Improved Technology

INGAA OS&E Strategic R&D Plan

DOE/NIST
- Long Term > 5 yrs
- Mid Term 3-5 yrs
- Near Term < 3 yrs

GTI/PRCI
GMRC
Companies Suppliers

SDO Efforts – Standards/Practices

Pipeline Companies, Material Suppliers, Contractors, Constructors

Entities Involved in R&D
- GPTC
- GMRC
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B31.8S - Integrity Management Program

- Integrity Management Plan
- Data Integration Process
- Program Evaluation Plan
- Communications Plan
- Management of Change Plan
- Quality Control Plan
ASME B31.8S - Integrity Management Process

- Data Gathering and Review
  - Does not Meet Criteria
    - No Action Required
    - Determine Re-assessment Interval
  - Meets Criteria
    - Risk/Threat Assessment
      - Develop Plan
        - Inspection and integrity assessment/evaluation
          - Mitigate (Repair and/or Prevent)
            - Performance Metrics
          - Other Info. To Other Threats
        - Criteria