Pipeline Safety

Michigan House Energy Committee Briefing
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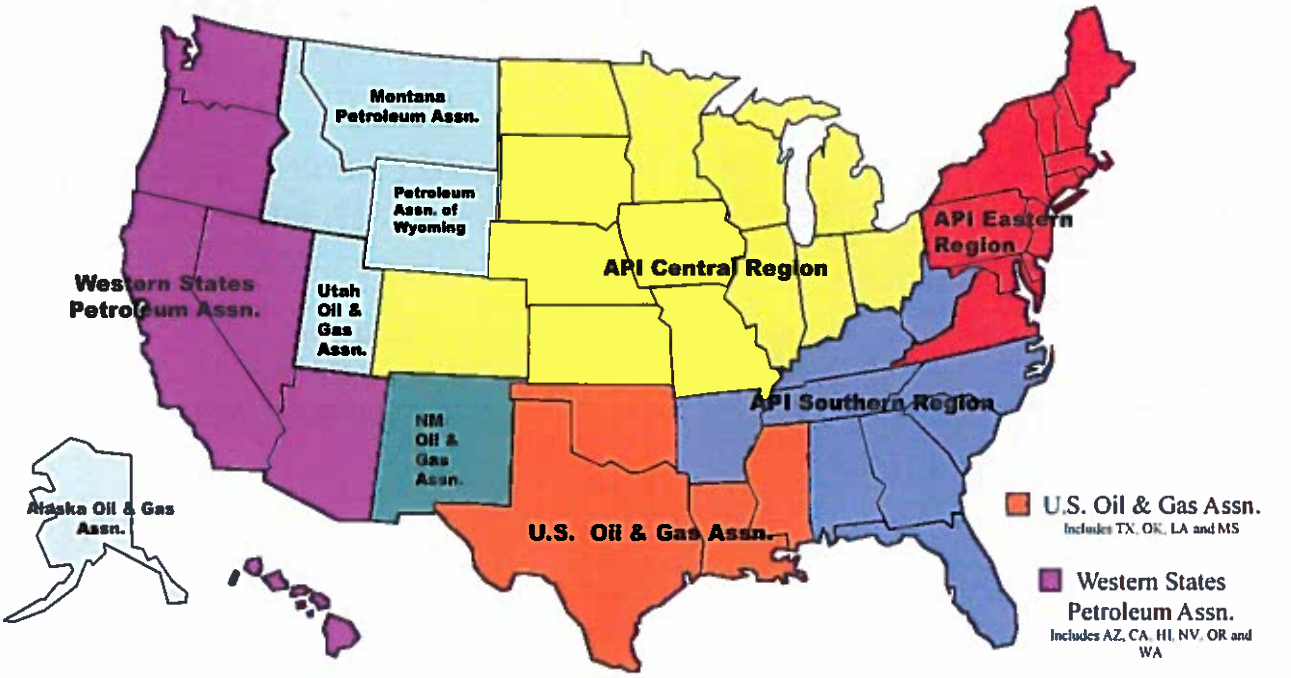
About API

- The only national trade association that represents all aspects of America's oil and natural gas industry.
- Represents members on legislative, regulatory, and other policy issues impacting the industry
- Speaks on behalf of the industry in a variety of forums and public events, including the media
- Provides services to members at both the national and state level, with 275 staff located in Washington, D.C. and in 34 state capitals

API State Petroleum Councils
Allied Oil & Gas Associations



Importance of Energy Infrastructure to US

The United States is leading the world in the production and refining of oil and natural gas and in the reduction of carbon emissions which are at their lowest levels in almost 25 years. In less than a decade, we have transitioned from an era of energy scarcity and dependence to one of energy abundance and security. This energy renaissance has helped U.S. families save on their energy bills, created greater job opportunities for American workers, bolstered U.S. manufacturing, strengthened our economy, and helped to enhance our national security interests abroad.

Importance of Energy Infrastructure to Michigan

- Pipelines also safely and reliably transport petroleum liquids and natural gas to the residents of Michigan for home heating and electricity generation.
- More than three-fourths of Michigan households use natural gas as their primary source for home heating.
- Liquid Petroleum pipelines plan a vital link to energy supplies needed right here in the Midwest.
- Light crude oil, light synthetic crude oil, and natural gas liquids (NGLs), are refined into propane and other refined products which are critical in heating homes and businesses, fueling vehicles, and powering our nation.

Where does the Oversight Begin

- Petition
- National Transportation Safety Board (NTSB) or similar agency recommendation
- Most likely – Congressional mandate
  - U. S. Code › Title 49 › Subtitle VIII › Chapter 601
- At times following a higher profile incident

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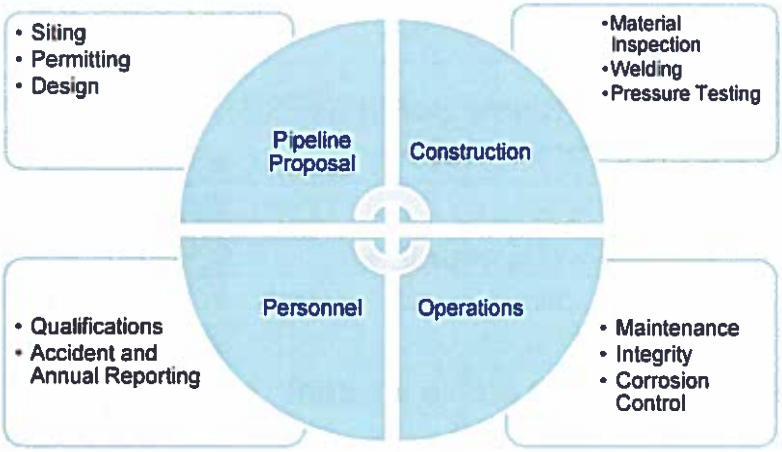
Pipeline Safety Oversight

United States Code	Code of Federal Regulation	Industry Standards
• Authority	• Regulation	• Guidance

- **Authority** - 33 United States Code (U.S.C.) 1321 for water pollution control laws and 49 U.S.C. 60101*et seq* for pipeline safety laws.
- **Regulation** - 49 Code of Federal Regulations (CFR) Parts 190-199, which serves as the primary regulator cite.
- **Standards** - Various pipeline industry standards, such as American Petroleum Institute (API) Recommended Practices (RP), are incorporated by reference in the CFRs and considered regulation. Other industry-generated best practices may not be incorporated, but companies comply with them.

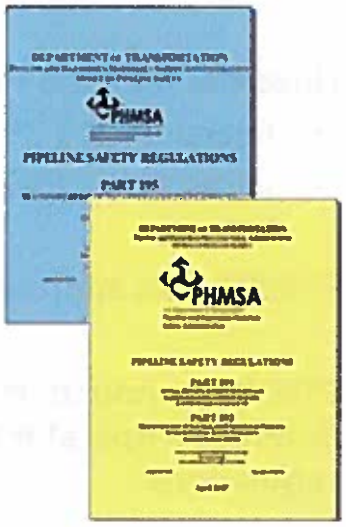
Pipeline Design to Operation



Key Regulatory Provisions

49 CFR Part 192 and 195 Subparts A - H address the following:

- General scope
- Accidents and safety related reporting
- Pipeline design requirements
- Construction
- Pressure testing
- Operation and maintenance
- Qualification of pipeline personnel
- Corrosion control



Most Important Regulatory Provision

Possibly the most important inspections are a part of the operators integrity management plan (IMP). In general, the owner or operator of a hazardous liquid pipeline and liquid carbon dioxide pipeline that could affect ***a high consequence area (HCA)***, including any pipeline located in a HCA area must develop a written IMP that addresses the risk on each segment of pipeline.

A **High Consequence Area** is defined as:

- Commercially navigable waterway,
- High Population Area,
- Other populated area, and
- An unusually sensitive area as defined in 49 CFR 195.649 & CFR 195.450

PHMSA U.S. Liquid Pipeline Oversight

- **PHMSA has safety authority over 2.7 million miles of interstate and intrastate gas and liquid pipelines across the Nation**
- **Hazardous Liquid Pipelines:**
  - Interstate 145,799 miles
  - Intrastate 62,859 miles
- **PHMSA has approximately 148 inspectors**
- **PHMSA conducts inspections and failure investigations to determine operator compliance with the federal pipeline safety regulations**

Michigan Liquid Pipelines

- **Interstate**
  - ✓ 3,103 Miles of Hazardous Liquid Pipelines
  - ✓ 80 Breakout tanks
  - ✓ 1,775 Miles of Interstate HCAs
  - ✓ 12 Operators
- **Intrastate**
  - ✓ 422 Miles of Hazardous Liquid Pipelines
  - ✓ 13 Breakout tanks
  - ✓ 159 Miles of Intrastate HCAs
  - ✓ 6 Operators

Standards Program Mission

Provide a forum for development of consensus-based industry standards, and technical cooperation to improve the industry's safety performance and competitiveness.

API Standards Program

- **National Technology Transfer and Advancement Act (NTTAA) of 1995**
- **API is accredited as a standards developer by ANSI (American National Standards Institute).**
- **An ANSI-Accredited Standards Developer must demonstrate a "consistent record of successful voluntary standards development".**
  - **Transparent process**
  - **Openness, balance, consensus, due process**

  i.e. consistent with ANSI's essential requirements:

  www.ansi.org/essentialrequirements
- **Regular API standards program audits conducted by ANSI.**

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Standardization Policy

- API's standardization policy is that API standards shall be founded on *performance based requirements* to the maximum extent feasible
- Prescriptive requirements are used to improve safety through equipment interchangeability
- Standards can contain and often do contain a *balance of both performance based and prescriptive* requirements

Standardization Policy

- Characteristics of performance based requirements:
  - ✓ Encourages innovation – new technology, processes and materials
  - ✓ Creates a "ceiling" versus a "floor"
  - ✓ Provides for scalability to industry and risk
  - ✓ Supports "Management of Change" approach for continuous improvement

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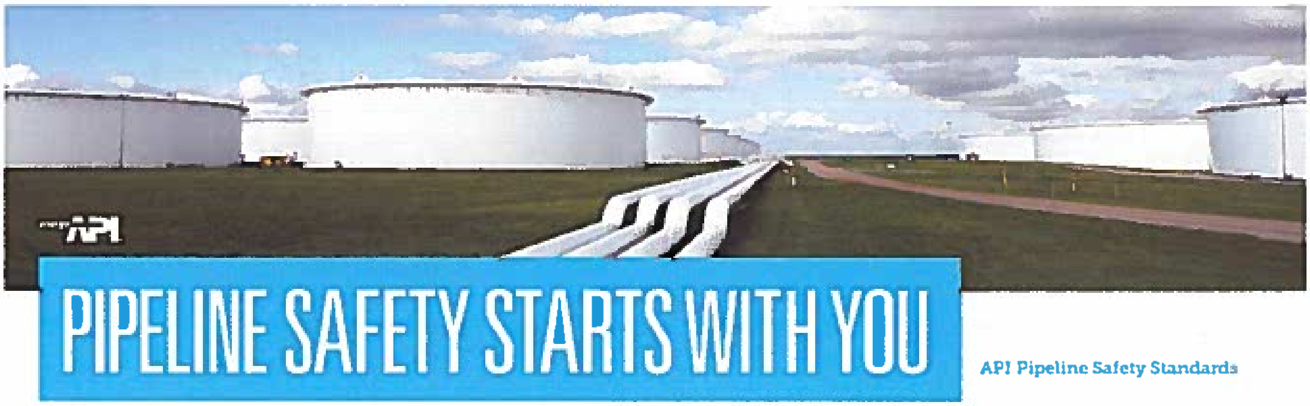
Standards Development Process

- API is accredited by the American National Standards Institute (ANSI)
  - ✓ Openness, Balance, Consensus, Due Process
  - ✓ Standards undergo regular review
- Regular program audits (conducted by ANSI)
- Transparent process (anyone can comment on any document – www.api.org/standards)
  - ✓ All comments must be considered

Importance of API Standards

- ~670 technical standards covering all aspects of the oil and natural gas industry
- Over 100 in the pipeline industry
- Foundation of Self Supporting Programs
- Basis for Worldwide Operations
- Core of Institute's Technical Authority

API Standards



API Pipeline Safety Standards

INTEGRITY

- RP 1160 Managing System Integrity for Hazardous Liquid Pipelines
- Std 1163 In-line Inspection Systems Qualification Standard
- RP 1176 Assessment and Management of Cracking in Pipelines
- RP 1133 Managing Hydrotechnical Hazards for Pipelines Located Onshore or within Coastal Zone Areas
- TR 1179 Guidelines for Use of Hydrostatic Testing as an Integrity Management Tool *
- Bull 1178 Data Management and Integration *

CONSTRUCTION, INSPECTION, AND REPAIR

- RP 1111 Design, Construction, Operation, and Maintenance of Offshore Hydrocarbon Pipelines and Risers
- RP 1172 Construction Parallel to Existing Underground Transmission Pipelines
- RP 1169 Basic Inspection Requirements - New Pipeline Construction
- RP 2200 Repairing Hazardous Liquids Pipelines
- RP 1177 Quality Management Systems for New Pipeline Construction*

UNDERGROUND STORAGE

- RP 1170 Design and Operation of Solution-mined Salt Caverns Used for Natural Gas Storage
- RP 1171 Functional Integrity of Natural Gas Storage in Depleted Hydrocarbon Reservoirs and Aquifer Reservoirs
- RP 1114 Design of Solution-mined Underground Storage Facilities
- RP 1115 Operation of Solution-mined Underground Storage Facilities

PUBLIC SAFETY AND DAMAGE PREVENTION

- RP 1162 Public Awareness Programs for Pipeline Operators
- TR 1166 Excavation Monitoring and Observation for Damage Prevention
- RP 1109 Marking Liquid Petroleum Pipeline Facilities
- RP 1102 Steel Pipelines Crossing Railroads and Highways

MANAGEMENT SYSTEMS

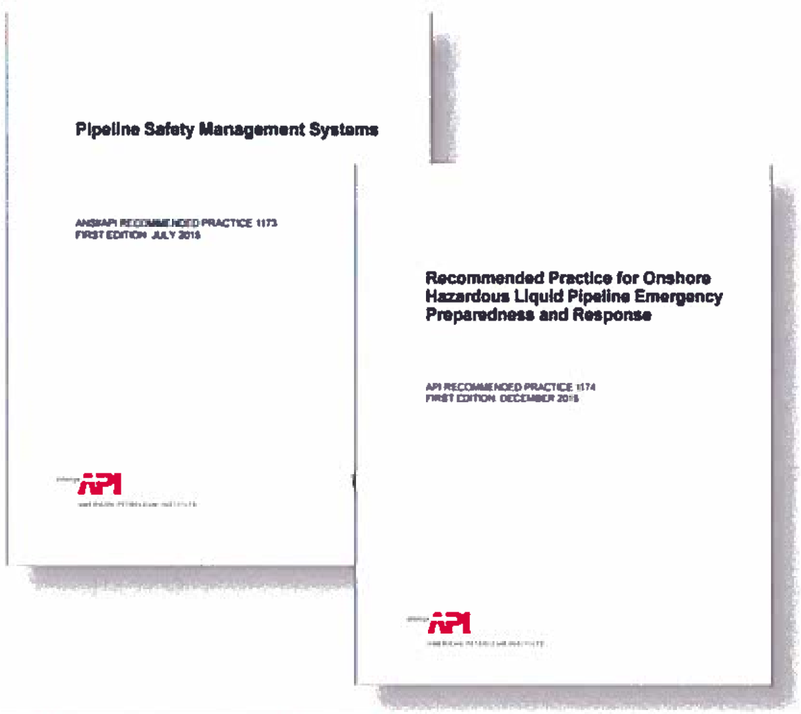
- RP 1173 Pipeline Safety Management Systems
- RP 1160 Managing System Integrity for Hazardous Liquid Pipelines
- RP 1175 Pipeline Leak Detection - Program Management
- RP 1177 Quality Management Systems for New Steel Pipeline Construction *
- RP 1174 Onshore Hazardous Liquid Pipeline Emergency Preparedness and Response

CYBERNETICS AND CONTROL ROOM

- RP 1113 Developing a Pipeline Supervisory Control Center
- RP 1130 Computational Pipeline Monitoring for Liquids Pipelines
- TR 1149 Pipeline Variable Uncertainties and Their Effects on Leak Detectability
- RP 1161 Pipeline Operator Qualification
- Std 1164 Pipeline SCADA Security
- RP 1165 Pipeline SCADA Displays
- RP 1167 Pipeline SCADA Alarm Management
- RP 1168 Pipeline Control Room Management
- RP 1175 Pipeline Leak Detection - Program Management

* – Publishing Soon

Examples of API Standards



2017-2019 Strategic Plan

Three-year time horizon

– 2017-2019

New Paradigm Shift

Performance Measures

– 29 measures tied to goals and objectives

Shared Principles

Strategic Plan continues industry's commitment to long-term safety based on following shared principles:

ZERO INCIDENTS

ORGANIZATION-WIDE COMMITMENT

A CULTURE OF SAFETY

CONTINUOUS IMPROVEMENT

LEARN FROM EXPERIENCE

SYSTEMS FOR SUCCESS

EMPLOY TECHNOLOGY

COMMUNICATE WITH STAKEHOLDERS

Strategic Plan Goals & Objectives

GOAL 1: Promote Organization Excellence

- Objective 1.1 - Expand Safety Management Systems
- Objective 1.2 - Promote Best Safety Practices Sharing
- Objective 1.3 - Improve Pipeline Integrity Through Technical Data & Analysis

GOAL 2: Improve Safety Through Technology & Innovation

- Objective 2.1 - Improve Pipeline Integrity Inspection Technology
- Objective 2.2 - Enhance Incident Identification & Response

GOAL 3: Enhance Emergency Response Preparedness

- Objective 3.1 - Boost Operator & First Responder Planning, Preparedness & Response Capabilities

GOAL 4: Increase Stakeholder Awareness & Involvement

- Objective 4.1 - Improve stakeholder communication on energy infrastructure and pipeline safety
- Objective 4.2 - Promote innovative approaches to enhancing damage prevention

Questions?

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