Indiana Utility Regulatory Commission

API RP-1173 Pipeline Safety Management Systems

Background
NTSB Recommendation

- In July 2012, the NTSB issued Safety Recommendation P-12-017 to the American Petroleum Institute as a result of a 2010 incident where a 30-inch pipeline owned and operated by Enbridge Incorporated ruptured in a wetland in Marshal, MI releasing an estimated 843,444 gallons of crude oil into the Talmadge Creek and the Kalamazoo River.

- This Safety Recommendation lead to industry commissioning a multi-stakeholder work team which developed the pipeline safety management system standard – API RP 1173.

SMS Development Team

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SMS Overview

- Released in July 2015 in response to major industry incidents API RP 1173 is the American National Standard for Pipeline Safety Management Systems
- Developed to provide an integrated framework of safety related practices for hazardous liquid and gas pipeline operators to effectively manage the many linked activities and complex processes involved with pipelines
- API RP 1173 provides pipeline operators with a set of safety management system tools that when applied provide a framework to:
  - Reveal and manage risk,
  - Promote a learning environment, and
  - Continuously improve pipeline safety and integrity.

Why PSMS?

- *"Safe and effective pipeline operation requires awareness and management of many linked activities, yielding complex processes."*

- *"Major accidents with high consequences rarely occur but when they do, the accident occurs because of an alignment of weaknesses or failures across multiple activities."*

Safety Management System Elements

1. Leadership and Management Commitment
2. Stakeholder Engagement
3. Risk Management
4. Operational Controls
5. Incident Investigation, Evaluation, and Lessons Learned
6. Safety Assurance
7. Management Review and Continuous Improvement
8. Emergency Preparedness and Response
9. Competence, Awareness, and Training
10. Documentation and Record Keeping

1. Leadership and Management Commitment

- **Top Management-** Establishes measureable goals and objectives; accountable for continuous improvement; regularly reviews safety performance and communications about safety; nurtures safety culture

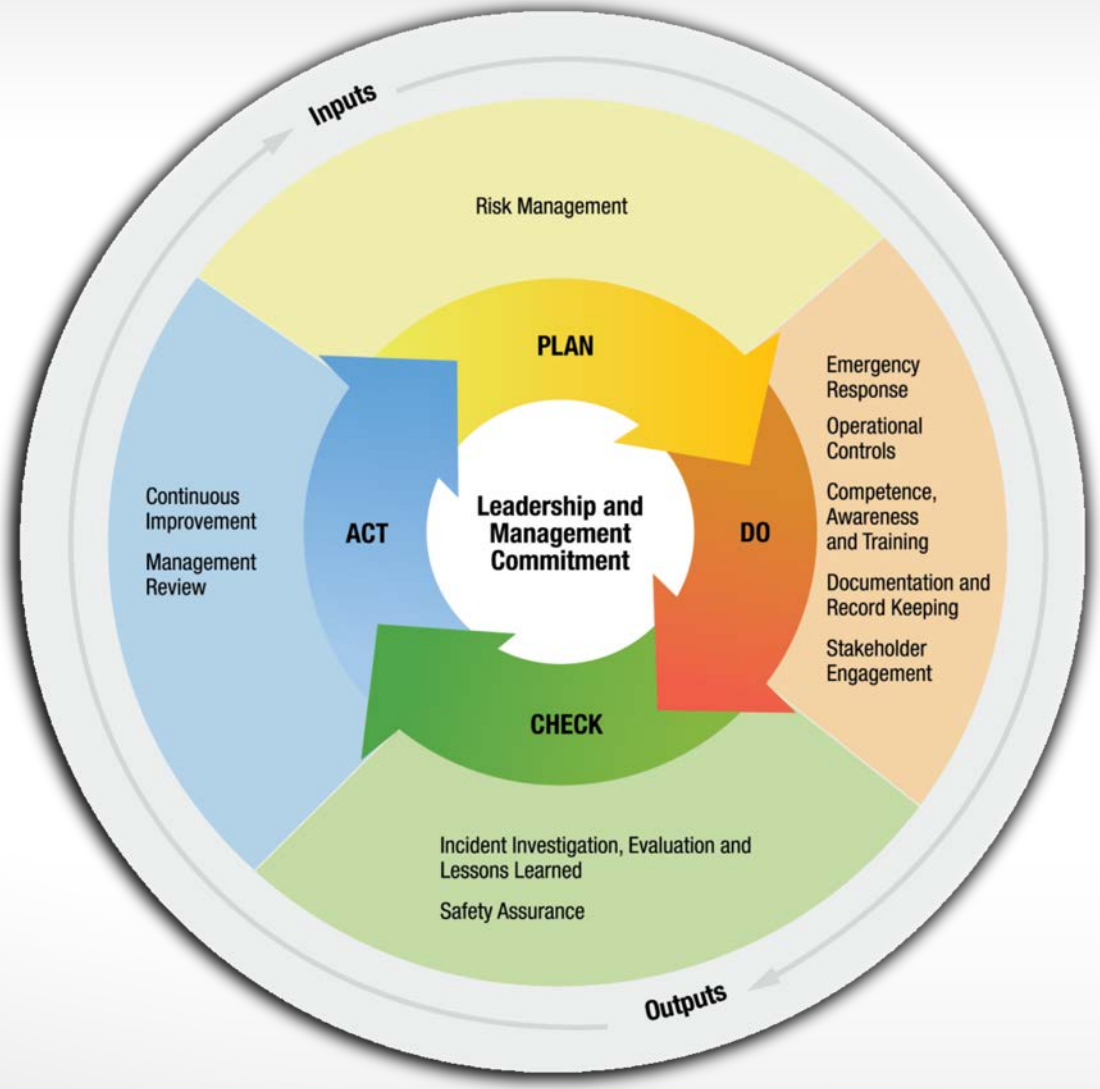
- **Management-** Ensures effective processes, procedures and training to meet objectives; assesses, evaluates and adjusts as needed to meet objectives; fosters continuous improvement

- **Employees-** Follow management's processes and procedures to meet objectives; identify improvements; reveal risks
  - **Stop work for safety of employees and public**
  - **Bring rigor of employee safety to pipeline asset protection**

Plan, Do, Check, Act

The Core of RP 1173

Continuous Improvement is the Goal!



2. Stakeholder Engagement

- ***Internal focus*** on ensuring full employee engagement, involvement and learning

- ***External focus*** on moving from awareness to dialogue to help control risk and share performance

3. Risk Management

- Builds upon the fundamentals of risk management in integrity management – ***"Know your system and recognize potential threats"***
- Emphasizes data gathering, gap analysis and correction
- Risk Identification - ***"What Can Go Wrong?"***
- Risk Mitigation – ***"What are you doing about it?"***
- Periodic Analyses of risks – at least once annually
- Reports to Top Management should include risk analysis, preventive and mitigation methods and intended effectiveness

4. Operational Controls

- **Operating Procedures:**
  - Operations
  - Maintenance
  - Emergency response
  - Start-up/shut-down
  - Safe work practices
  - Control of materials

4. Operational Controls (cont.)

- System Integrity:
  - Design
  - Fabrication and Manufacture
  - Construction
  - Testing
  - Inspection

4. Operational Controls (Cont.)

- Management of Change:
  - Technology
  - Equipment
  - Procedures
  - Organization
- Use of Contractors:
  - Communications
  - Training and orientation
  - Responsibility, authority and accountability
  - Evaluation
  - Risk

5. Incident Investigation, Evaluation and Lessons Learned

- The pipeline operator shall maintain a procedure for investigating incidents and near misses that led, **or could have led**, to a loss of life or serious injury

- Incorporate findings from Root Cause Analysis into risk prevention and mitigation plans

Incident Investigation, Evaluation and Lessons Learned (Cont.)

- Identify the cause, contributing factors and lessons learned from incidents, accidents and near misses
- Evaluate the emergency response
- Develop recommendations for improvement
- Update risk assessment plan
- Communicate the investigation findings
- Internally and Externally
- Track corrective and preventative actions
- Learn from past events

6. Safety Assurance

The pipeline operator shall demonstrate the proper application of its PSMS and progress toward effective risk management and improved pipeline safety performance through:

- **Audits**
- **Evaluations**
- **Employee Reporting and Feedback**
- **Analysis of Data**
- **Performance Evaluations**
- **Evaluations of Maturity of PSMS program**
- **Evaluations of Safety Culture**

Safety Culture

- The collective set of attitudes, values, norms, beliefs and practices operator's employees and contractor personnel share with respect to risk and safety.
- *It is the GLUE that brings all of the elements together.*

Characteristics of an Organization with a Positive Safety Culture

- Embraces Safety as a core value
- Assures everyone understands the organization's safety goals
- Fosters systematic consideration of risk, including what can go wrong
- Inspires, enables, and nurtures change when necessary
- Allocates adequate resources to assure individuals can successfully accomplish their PSMS responsibilities
- Encourages Employee engagement and ownership

Characteristics of an Organization with a Positive Safety Culture (cont.)

- Fosters mutual trust at all levels , with open and honest communications
- Promotes a questioning and learning environment
- Reinforces positive behaviors and why they are important
- Encourages two-way conversations about learnings and commits to apply them throughout the organization; and
- Encourages non-punitive reporting and assures timely response to reported issues.

7. Management Review and Continuous Improvement

- Management review ensures the connection with top management "Tone at the Top"
- Adopting Continuous Improvement process is *Critical*
- Should be completed at least annually by Top Management
- Yields measure of effectiveness and opportunities for continuous improvement
- The RP explicitly addresses the need to evaluate technology improvements

8. Emergency Preparedness & Response

- Internal and external notification requirements
- Identification of response resources and interfaces
- Recognition and use of Unified Command/Incident Command Structure
- Safety, health, and environmental protection processes
- Communication plans
- Training and drills, including involvement of external agencies and organizations
- Lessons learned and improvement process
- Periodic review and updates

9. Competence, Awareness and Training

- Assure competence at <u>every level</u> for all personnel
  - Employees
  - Contractors
  - Sub contractors
  - Management
- Communicate responsibilities and authority for each member
- Create confidence and *<u>proactive</u>* culture

10. Documentation and Record Keeping

- **Data**
  - Data and communication drive the PSMS
  - High quality and current Data is the basis for decision making and should be readily available across the entire organization
- **Documentation**
  - Provides the dual purpose of setting expectations and recording results
  - Includes; Policy, Objectives, Methods, etc.

Summary
What PSMS Is

- Transformative – Game Changer
- A holistic approach to pipeline safety
- Framework of 10 elements based on positive safety culture and executive involvement
- System for continuous assessment and improvement (Plan, Do, Check, Act cycle)
- Structure to optimize use of resources to manage pipeline safety
- Scalable

Summary
What PSMS Isn't

- A regulatory requirement – is NOT incorporated by reference into pipeline safety regulations
- One size fits all approach to safety practices
- One-and-done or check-the-box type of activity
- Method to place blame after an incident
- Yet another safety program or competition with awards for "good behavior"
- Quick fix approach to pipeline safety

Safety Management Systems Wrap Up

- SMS requires:
  - Intentional and systematic actions
  - Diligence and oversight
  - Involvement at all levels - communications
  - “Go and Check” attitude
- The Rewards of a properly implemented SMS are:
  - Enhanced pipeline safety
  - Increased process efficiencies
  - Increased system reliability
  - Reduced Costs

Questions?

Indiana Utility Regulatory Commission

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