API RP 1173
Pipeline Safety Management Systems
Safety Culture

Safety Culture is defined by DOT as the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands.
PHMSA Safety Initiative Goals

Continue to pursue and foster non-regulatory approaches to effect continuous improvement in safety, such as Safety Management Systems, Safety Culture, and incentivizing regulated entities to move beyond mere compliance with regulations by adopting and institutionalizing voluntary, meaningful, comprehensive programs that will advance safety.
API RP 1173

PHMSA’s response to the NTSB Recommendations from Marshall Michigan oil spill
NATIONAL TRANSPORTATION SAFETY BOARD
34,678 Transportation Fatalities In 2013

Highway: 32,719

- Light trucks and vans (9,155)
- Pedestrians (4,735)
- Motorcycles (4,688)
- Passenger cars (11,977)
- Pedalcycles (743)
- Medium and heavy trucks (691)
- Buses (48)
- Other (702)

*Grade Crossing: 231

Rail: 891

- Trespassers and nontrespassers (520)
- Light, heavy, and commuter rail (345)
- Employees and contractors (20)
- Passengers (5)

Aviation: 443

- General aviation (387)
- Airlines (9)
- Air taxi (27)
- Commuter (6)
- Foreign/unregistered (14)

Pipeline: 10

Marine: 615

- Recreational boating (560)
- Cargo transport (13)
- Commercial fishing (24)
- Commercial Passengers (18)

*Note: All data are preliminary estimates. Grade crossing fatalities are not included in the grand total because they were counted in the rail and highway categories, as appropriate. The pie charts are not drawn proportionately to each other. Aviation data are from the NTSB. Marine data are from the Department of Homeland Security. All other data are from the U.S. Department of Transportation.
Overview API RP 1173

- Combination of a dozen other approaches
- Provides a framework to build on
- Allows flexibility for unique operations and environments
Overview API RP 1173

“Plan – Do - Check – Act”
Continuous Improvement Model

Adds Dimensions to Integrity Management
   – Safety Culture Elements
   – Emphasis on the Vital Check-Act Elements
Strong Safety Culture

Commitment to safety
Communication
Personal responsibility
Continuous education
Safety Consciousness

Prioritization of Safety
Mutual Trust
Fairness and Consistency
Safety training availability
PSMS Processes

Essential Pipeline Safety Management System Elements

- Leadership and Management Commitment
- Stakeholder Engagement
- Risk Management
- Operational Controls
- Incident Investigation, Evaluation and Lessons Learned
- Safety Assurance
- Management Review and Continuous Improvement
- Emergency Preparedness and Response
- Competence, Awareness and Training
- Documentation and Record Keeping
NTSB Recommendations for a SMS

- Proactively Address Safety Issues.
- Document Safety Procedures With Adherence to Procedures by Personnel.
- Treat Errors as System Deficiencies - Not to Punish / Intimidate Employees.
- Require Senior Company Management to Commit to Operational Safety.
- Identify Personnel Responsible for Safety Initiatives and Oversight.
- Implement Non-punitive Methods for Employees to Report Safety Hazards.
- Continuously Identify and Address Risks for Safety-critical Aspects of Operations.
- Regularly Evaluating (or Auditing) Operations to Identify and Address Risk.
RP 1173 Management System Elements

• Leadership and Management Commitment.
• Stakeholder Engagement.
• Risk Management.
• Operational Controls.
• Incident Investigation, Evaluation and Lessons Learned.
• Safety Assurance.
• Management Review and Continuous Improvement.
• Emergency Preparedness and Response.
• Competence, Awareness and Training.
• Documentation and Record Keeping.
Management Systems

• What not How.
• Continuous Improvement.
  – Allows for Balancing Resources for Implementation with Time.
Leadership and Management Commitment

• Leader Involvement Is Essential.

• All Levels of Leadership Are Involved:
  – Top Management.
  – Management.
  – Employees.
How Commitment Advances Safety:

• Leadership Has More Visible Role in Demonstrating the Safety Culture.
  – Emphasis on the Check Phase through Safety Assurance.
  – Detail and Deeper Understanding in Measurement/KPIs on Risk Management.
  – Evaluate the PSMS Maturity to Set Specific Goals in Areas of Concern and Checks Actual Progress Against Targets.
  – Incentives for Improving Safety Performance.
  – Assessment of Safety Culture.

• Brings Rigor to Asset Protection / Safety.
  – Preparing All Levels of Employees to Recognize and Respond to Risks.
  – Learns from Past Incidents and Operates With What Could Go Wrong.
Stakeholder Engagement

• Requires a Process and Plan for Communication and Engagement with Internal and External Stakeholders.

• Risk Identification and Management, Safety Performance and Objectives, Importance of Satisfying Requirements of PSMS.

• Establishing Dialog for Information Flow Including Using Public Events, Social Media and Other Methods.

• Sharing Safety Performance Data to Those in Proximity to the Pipeline and Facilities.
How Stakeholder Engagement Advances Safety

• Internal Focus on Employee Engagement, Involvement and Learning.

• External Focus on Moving from Awareness to Dialogue to Help Identify and Control Risk and Share Performance.

• Supports Processes to Identify and Resolve Concerns about Transparency on Safety Matters.
Risk Management

• Builds upon the Risk Management in Integrity Management
• Use a Recognized Consensus Standard such as ISO 31000 – Risk Management or Center for Chemical Process Safety, etc.
• Emphasis on Data and Data Quality.
• Risk Identification – “What Can Go Wrong?”
• Risk Mitigation.
• Periodic Analyses for Update.
• Top Management Review.
How Risk Management Advances Safety

• Thoroughness of the Process.
• Responsiveness to Employee-identified Risk Builds / Improves the Safety Culture.
• Identification of Operational Risks for Mitigation. (Beyond Regulatory Requirements)
• Mitigation of Risk.
Operational Controls

• Operating Procedures
  Review Annually for Improvements.

• Safe Work Practices
  Operation, Maintenance and Emergency Procedures that Impact Pipeline Safety. Includes Stop Work Authority and Approval Process for procedural deviations.

• System Integrity
  – Procedures Covering the Life Cycle of Pipeline.

• Management of Change
  – Technology, Equipment, Procedures, Organizational Changes.

• Use of Contractors.
How Operational Controls Advance Safety

• Greater Certainty That Activities Are Performed as Expected.
• Greater Certainty That There Is an Intentional Commitment to Safety.
• Employee Understanding That Following Procedures Is Important.
• Employees Can Confidently Stop Work and Identify Unsafe Activities.
Incident Investigations, Evaluations and Lessons Learned

• Investigate to Identify the Cause, Contributing Factors and Lessons.
• Develop Recommendations for Improvement.
• Track Corrective and Preventative Actions.
• Used to Update Risk Assessment.
• Communication of the Investigation.
  – Internally (Required)
  – Externally (Recommended)
• Re-evaluate Past Incidents of High Consequence for Systemic Issues and Effectiveness of the Corrective / Preventative Actions.
• Evaluation of External Events for Learning Opportunities.
How II Advances Safety

• Ensures the Right Information Is Gathered from Events.
• Is Used to Improve the Risk Management Process.
• Sharing of Lessons Learned Within the Organization Builds the Safety Culture.
• Uses the Incidents of Others to Prevent Their Occurrence Within the Organization.
Safety Assurance

• Audit Conformity to the PSMS.
• Evaluation of:
  – Risk Management to Assess Effectiveness and Progress.
  – Safety Culture.
  – PSMS Maturity.
• Reporting and Feedback to Employees.
• Establish and Maintain Key Performance Indicators.
  – Leading and Lagging Indicators.
  – Indicators for PSMS Elements.
How Safety Assurance Advances Safety

• Validation that Risk Management Is Systematic and Disciplined.
• Evaluates the Openness of the Organization and Trust of the Employees in the Organization.
• Enhances Safety Culture.
Management Review and Continuous Improvement

• A Review of the PSMS and Safety Performance
• Management Review Inputs:
  – Status of Actions from Last Management Review.
  – Results and Recommendations from Incident Investigations.
  – Results of Audits and Evaluations.
  – Potentially Applicable Regulatory Changes.
  – Stakeholder Input.
  – PSMS Maturity.

• Management Review Outputs
  – Opportunities for Improvement and Action Items.
  – Identification of Resources.

• Evaluation of Technology
• Executed by Management and Reviewed Annually with Top Management.
How Management Review Advances Safety

• Defines Opportunities and Obtains Authorization for Continuous Improvement Activities.
• Sets Safety as a Priority.
• Enhances the Safety Culture.
Emergency Preparedness & Response

• Identification of Potential Types of Emergencies.
• Identification of Response Resources and Interfaces (Communications).
• Use of Unified Command/Incident Command Structure.
• Identification of Safety, Health, and Environmental Protection Processes.
• Communication Plan
• Training and Drills, Including External Agencies and Organizations.
• Critiques of Drills for Lessons Learned and Improvement Opportunities.
• Periodic Review and Update of the Plan.
How ER Advances Safety

• External Stakeholders Involvement and Feedback.
• Being Prepared Leads to Good Safety Culture Characteristics.
• Identifies the Resiliency of the Organization and Gives a Realistic Sense of Vulnerability and Therefore Watchfulness.
Competence, Awareness and Training

• Appropriate level of competence for personnel involved in the PSMS.

• Training Provided:
  – Elements of the PSMS and Impact on Their Job Requirements.
  – New or Changing Risks and Opportunities to Improve Processes and Procedures.
  – Potential Consequences of Failure to Follow Processes or Procedures.
How Competency Advances Safety

- Communication of the State of Pipeline Safety at all Levels.
- Builds Trust and Confidence.
- Defining Competencies.
- Skill Sets Are Refreshed.
- Confidence Is Improved.
Documentation and Records

• Procedure for Identification, Distribution, Control and Approval of Documents.

• Documents:
  – Are Reviewed and Approved Prior to Use.
  – Identify Changes and Revision Status.
  – Are Legible.
  – Are Available / Accessible to Those Performing an Activity.

• Obsolete Documents Are Prevented From Being Used.

• Procedure for Control of Records, Including Identification, Collection, Storage, Retrieval, Retention and Disposal.
How Documentation Advances Safety

• Ensures procedures and programs are up to date.
  – Minimizes confusion
  – Reduces operational errors
  – Ensures all parties have agreed to the best way to do things

• Enables accurate reporting and tracking of data, which is the basis of learning and improvement.
How Do I Get Started?

• Top Management Interest / Commitment
  • This cannot be driven from the bottom up
  • Benefits have to be clear, or commitment will vanish

• Decide how API RP 1173 Integrates with Your Operations
  – Already Using an Industry Recognized Management System?
  – Identify gaps and areas for improvement
  – Develop an implementation plan
How Do I Get Started?

• Decide how API RP 1173 Integrates with Your Operations
  – Already using a management system
    • Product quality management system (ISO 9001 or 9002).
    • Industry process safety management system (American Chemistry Council – Responsible Care®).
    • Regulatory process safety management system (OSHA PSM, EPA RMP).
    • Environmental management system (ISO 14001).
    • Personal safety management system (OHSAS 18001).
    • Asset Management – Management systems (ISO 55001).
How Do I Get Started?

• Decide how API RP 1173 Integrates with Your Operations
  – Already Using an Industry Recognized Management System?
    • If Yes, Then Implementation of API RP 1173 May Be Quick.
    • Implementation Would be Incorporation of the RP Into the existing Management System with Additions Specific to Pipelines.
    • It Is a Recommended Practice.
    • It Is Designed For and By the Pipeline Industry.
    • Has Strong Support From Industry and PHMSA.
How Do I Get Started?

• Decide how API RP 1173 Integrates with Your Operations
  – Compliance Issues
    • Implementation May Uncover Noncompliance.
    • Implementation May Provide the Means for Addressing Noncompliance.
    • May Identify Issues Before They Become Noncompliant.
    • Lower penalties???
      – PHMSA has not addressed this question when put to them.
How Do I Get Started?

- Decide how API RP 1173 Integrates with Your Operations
  - External Stakeholder Issues
    - Have Communication Problems with External Stakeholders?
      - Encourages Open Discussion for Building Relationships and Understanding.
    - Can Increase the Stakeholders’ Confidence in Your Safe Operation (Transparency).
  - Hopefully, You Can Hear About a Concern Before You Learn About it in the News Media.
How Do I Get Started?

• Decide how API RP 1173 Integrates with Your Operations
  – Top Management Interest / Commitment
    • If There Is No Interest or Commitment then DO NOT TRY to Implement.
    • Management System Perceptions (which are wrong):
      – Restricts Management’s Freedom or Decisions.
      – Builds Institutional Resistance to Change.
      – Adds to the Budget Without Any Return.
      – Have to Write Everything Down.
How Do I Get Started?

- Develop an S.M.A.R.T. Action Plan
  
  **S - Specific:** Clear goals, not broad generalities.
  
  **M - Measurable:** Progress can be measured.
  
  **A - Assigned:** A person, not a team. They can pick a team.
  
  **R - Realistic:** Resources are available and dedicated to the task.
  
  **T - Trackable:** Deadlines are assigned, and progress is monitored.
How Do I Get Started?

• Train the Organization
  – Specific to the Role.
  – The Results of Gap Analysis.
  – How it Impacts What They Do.
  – Benefits of Implementation.
  – ‘What Good (or Conformance) Looks Like’.
How Do I Get Started?

• Conduct Your First Management Review to:
  – Adopt the Gap Analysis and Action Plan.
  – Prioritize the Actions.
  – Resource the Actions.
  – Set Performance Measures.
What Actions Should I Do First?

• Concentrate on the Continuous Improvement Elements:
  – Leadership and Management Commitment.
  – Stakeholder Engagement.
  – Safety Assurance.
  – Management Review.

• For:
  – Risk Management.
  – Operational Controls.
  – Audit and Evaluations.

• Address any Noncompliance.
How Will I Know That I Am Finished?

• You Will Never Be Finished
  – Continuous Improvement Process.
  – Look for Possible Improvements and Evaluate Their Impact for Improving the Safety Management System.
    • Required by the standard.
    • At this stage of implementation, the evaluation of possible improvements is the primary task.
Thanks!

Questions?!