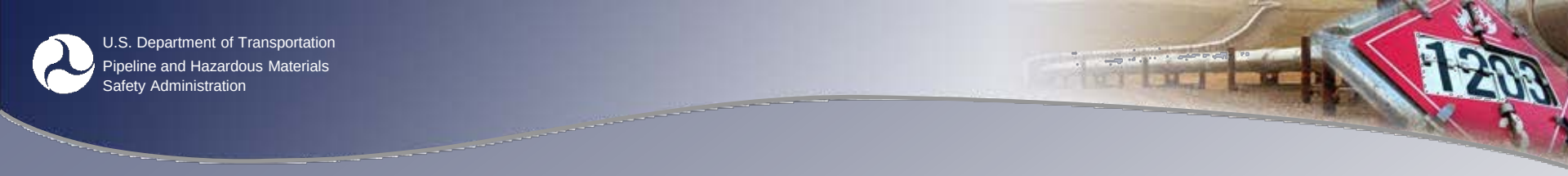


PHMSA Update
Safety Management Systems

LGA Pipeline Safety Seminar
New Orleans, LA

Wednesday July 23, 2014
1:00 – 2:00 PM
Chris McLaren

811 Know what's below. Call before you dig.

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

Today's Agenda

- Importance of Management Systems
- Safety Culture
- Safety management Systems (API RP 1173)

Underlying Principles

- The Pipeline Operator Alone is Responsible for Safe Operations:
  - It is the responsibility of pipeline operators to understand and manage the risks associated with their pipelines.
- The Regulator Can Influence Operator Performance by establishing minimum safety standards
- Regulators strive to impact operator performance beyond mere compliance with the regulations
- More must be done by both the Operator and Regulator to ensure public safety
- Safety culture is a critical foundation for continually improving industry's performance. All involved must understand and support the IM programs to realize the improved safety and reliability that proactive management systems result in.

Environmental Factors

- Non conventional oil and gas – changing transmission patterns
- Under-informed populace highly dependent on a fossil fuel fed, overly lean, energy supply chain
- Growing public intolerance to risk – yet highly rate sensitive
- Single issue debates – one at a time, rarely in perspective
- Polarized political atmosphere – advantage over good public policy
- Vastly increased media attention
- Social media (sans editorial control)
- Energy pipelines have graduated to the national stage, for all the wrong reasons

Observation:

Major Accidents Always Result in Demands for Broader and More Prescriptive Regulations

For the Past Two Decades, PHMSA has Promoted Regulations Based on Pipeline -Specific Risk Management Programs Instead of "One-Size Fits All" Totally Prescriptive Regulations

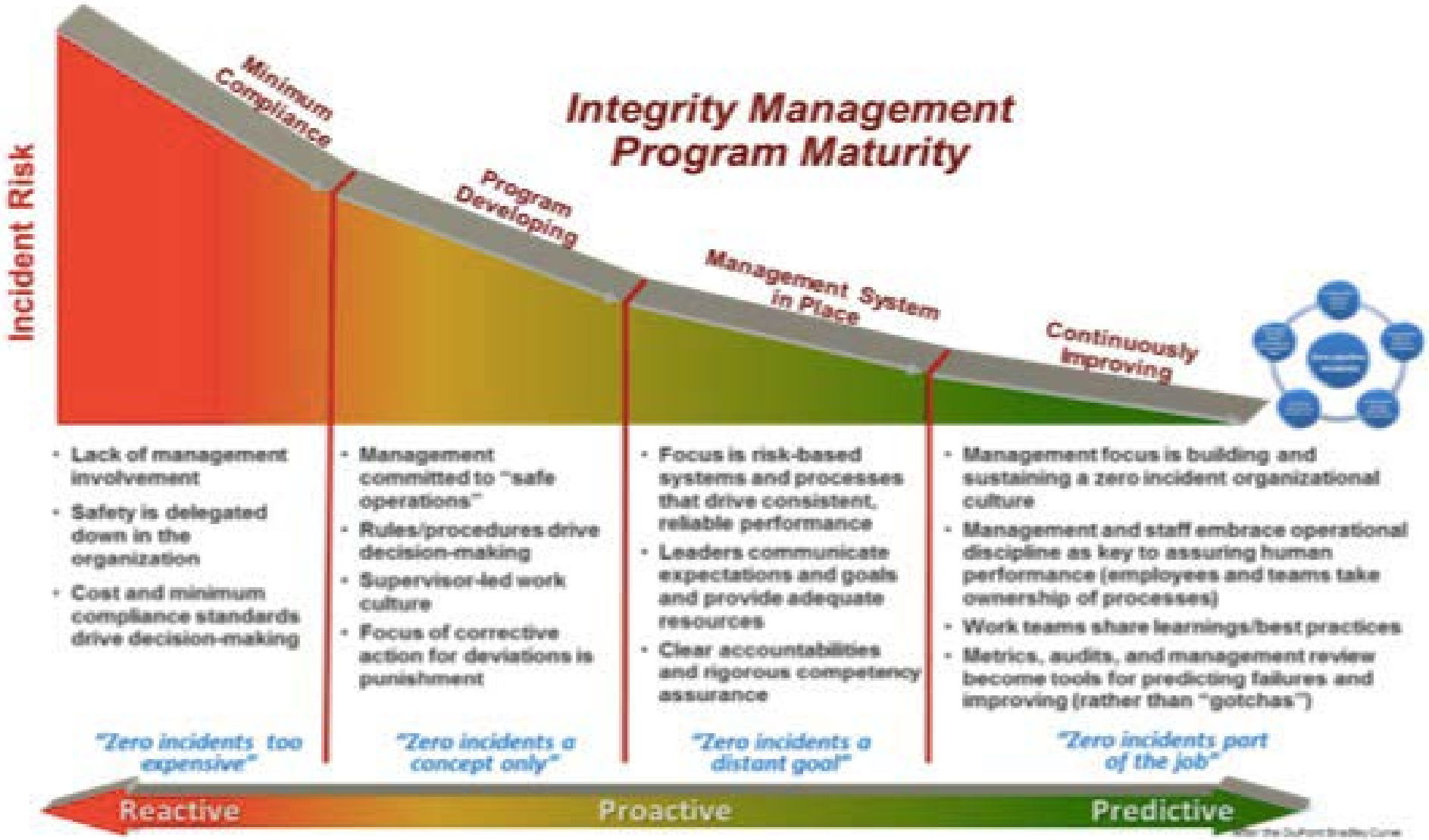
Recent Events Illustrate Weaknesses in Managing Risk

- Effective risk analysis might have prevented or mitigated recent high consequence accidents
- Weaknesses identified include ***inadequate***:
  - Knowledge of pipeline risk characteristics including recordkeeping
  - Processes to analyze interactive threats
  - Evaluation of ways to reduce or mitigate consequences
  - Process to select P&M measures
    - Lack of objective, systematic approach
- Much work remains to improve tools and techniques

Moving from Compliance to Choice

- Our world has changed - forever
  - Growing public intolerance to risk – yet highly rate sensitive
  - Vastly increased media attention
  - Social media (without editorial control)
  - Energy pipelines have graduated to the national stage, many times for the wrong reasons
- Our world must move from a “checkbox” mentality to understanding the health of our pipeline systems by analyzing and understanding data and information and promptly acting to reduce risks

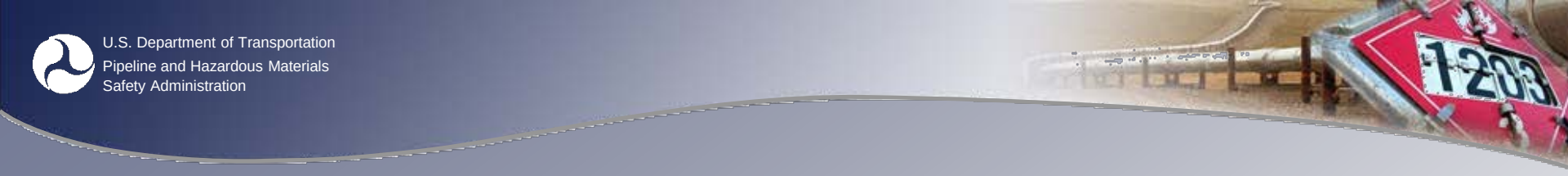
Assessing Maturity



Inspections Identify Weaknesses in Risk Analysis

The current challenge is for industry to implement

- More rigorous quantitative risk analyses including uncertainties and gaps in data
- A more investigative approach to risk analysis
  - Use analysis to find problems, not just display what you already know
- Robust approach for P&M measures
  - Technically sound risk-based criteria
  - Including pipe replacement



Gas Transmission ANPRM

M. Quality Management Systems (QMS)

- Quality management includes the activities and processes that an organization uses to achieve quality including formulating policy, setting objectives, planning, quality control, quality assurance, [performance-based assessments], performance monitoring, and quality improvement.
- Should PHMSA establish requirements for QMS?
- Do gas transmission pipeline operators require their construction contractors to maintain and use formal QMS?

SMS in other Industries

- Both the FAA and NTSB have presented on the Aviation's SMS Process and its applicability and transfer to Pipelines
- NTSB Recommendations from Enbridge Marshall, MI (2012) accident included a finding of probable cause: The rupture and prolonged release were made possible by pervasive organizational failures:
  - Deficient integrity management procedures
  - Inadequate training of control center personnel
  - Insufficient public awareness and education

NTSB Recommendations

- Finding No. 28. Pipeline safety would be enhanced if pipeline companies implemented safety management systems
- Recommendation to API: Facilitate the development of a safety management system standard specific to the pipeline industry that is similar in scope to your Recommended Practice 750, Management of Process Hazards.

Safety Management Systems

- SMS has entered the discussion with the development of API RP 1173
- Public Meeting was held July 2, 2014 to preview the content of the current draft of API's RP 1173 and communicate the Path Forward
- This was the 2nd Public Meeting on SMS. 1st Public Meeting on SMS held discussed many of the underlying concepts of SMS
- https://primis.phmsa.dot.gov/meetings

NTSB Recommendations

- Collaboration: A Major Paradigm Shift
- Old: Regulator identifies a problem and proposes solutions
  - Industry skeptical of regulator's understanding of the problem
  - Industry resists regulator's solutions and/or implements them begrudgingly

NTSB Recommendations

- New: Collaborative “System Think”
  - Industry involved in identifying problem
  - Industry “buy-in” re interventions because everyone had input, everyone’s interests considered
  - Prompt and willing implementation
  - Interventions evaluated . . . and tweaked as needed
  - Solutions probably more effective and efficient
  - Unintended consequences much less likely

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. The following are critical elements of a strong safety culture:

  1. Leadership is Clearly Committed to Safety;
  2. There is Open and Effective Communication Across the Organization;
  3. Employees Feel Personally Responsible for Safety;
  4. The Organization Practices Continuous Learning;
  5. There is a Safety Conscious Work Environment;
  6. Reporting Systems are Clearly Defined and Non-Punitive;
  7. Decisions Demonstrate that Safety is Prioritized Over Competing Demands;
  8. Mutual Trust is Fostered between Employees and the Organization;
  9. The Organization is Fair and Consistent in Responding to Safety Concerns; and
  10. Training and Resources are Available to Support Safety.

Safety Culture Indicators

Indicators of a positive safety culture within an organization include that the organization:

1. Embraces safety (personnel, public, and asset) as a core value,
2. Ensures everyone understands the organization's safety culture goals,
3. Inspires, enables, and nurtures culture change when necessary,
4. Allocates adequate resources to ensure individuals can successfully accomplish their safety management system responsibilities,

Indicators (continued)

5. Encourages employee engagement and ownership,
6. Fosters mutual trust at all levels, with open and honest communication,
7. Promotes a questioning and learning environment,
8. Reinforces positive behaviors and why they are important,
9. Encourages non-punitive reporting and ensures timely response to reported issues.

API RP 1173 –Pipeline Safety Management System Requirements

- The goal of this document is to provide pipeline operators with a framework to review an existing PSMS or develop and implement a new PSMS.
- The document is designed to provide a framework that is allows for flexibility to meet an operators unique operating environment and scalable from small to large systems

Safety Management Systems

- API RP 1173 embodies the Best of a Dozen Other Approaches from Other High Hazard Industries
- Based on “Plan – Do - Check – Act” Continuous Improvement Model, but Organized Along More Traditional Lines
- Adds Dimensions Missing from Integrity Management – Safety Culture Elements and Emphasis on the Largely Missing, but Vital Check-Act Elements
- Workgroup and PHMSA Intend to continue to communicate SMS Through Webinars and Workshops

Safety Management Systems

- Managing the safety of a complex process requires a system of efforts to address multiple, dynamic, activities and circumstances.
- Other elements of a safety management system address the need to continuously operate safely and improve safety performance. These indirect broader efforts include:

a) demonstrating management commitment,

b) structuring pipeline safety risk-management decisions,

c) increasing confidence in risk prevention and mitigation,

d) providing a platform for sharing knowledge and lessons learned, and

e) promoting a safety-oriented culture.

Principles on which to base an SMS

a) Commitment, leadership, and oversight from top management are vital to the overall success of a PSMS.

b) A safety-oriented culture is essential to enable the effective implementation and continuous improvement of safety management system processes and procedures.

c) Risk management is an integral part of the design, construction, maintenance, and operation of a pipeline.

Principles on which to base an SMS

d) Pipelines are designed, constructed, operated, and maintained in a manner that complies with Federal, state, and local regulations, and conform to applicable industry codes and consensus standards with the goal of reducing risk, preventing releases, and minimizing the occurrence of abnormal operations.

e) Defined operational controls are essential to the safe operation and maintenance of pipelines.

f) Incident response improves the likelihood of protection of life and property and minimizes adverse environmental consequences.

Principles on which to base an SMS

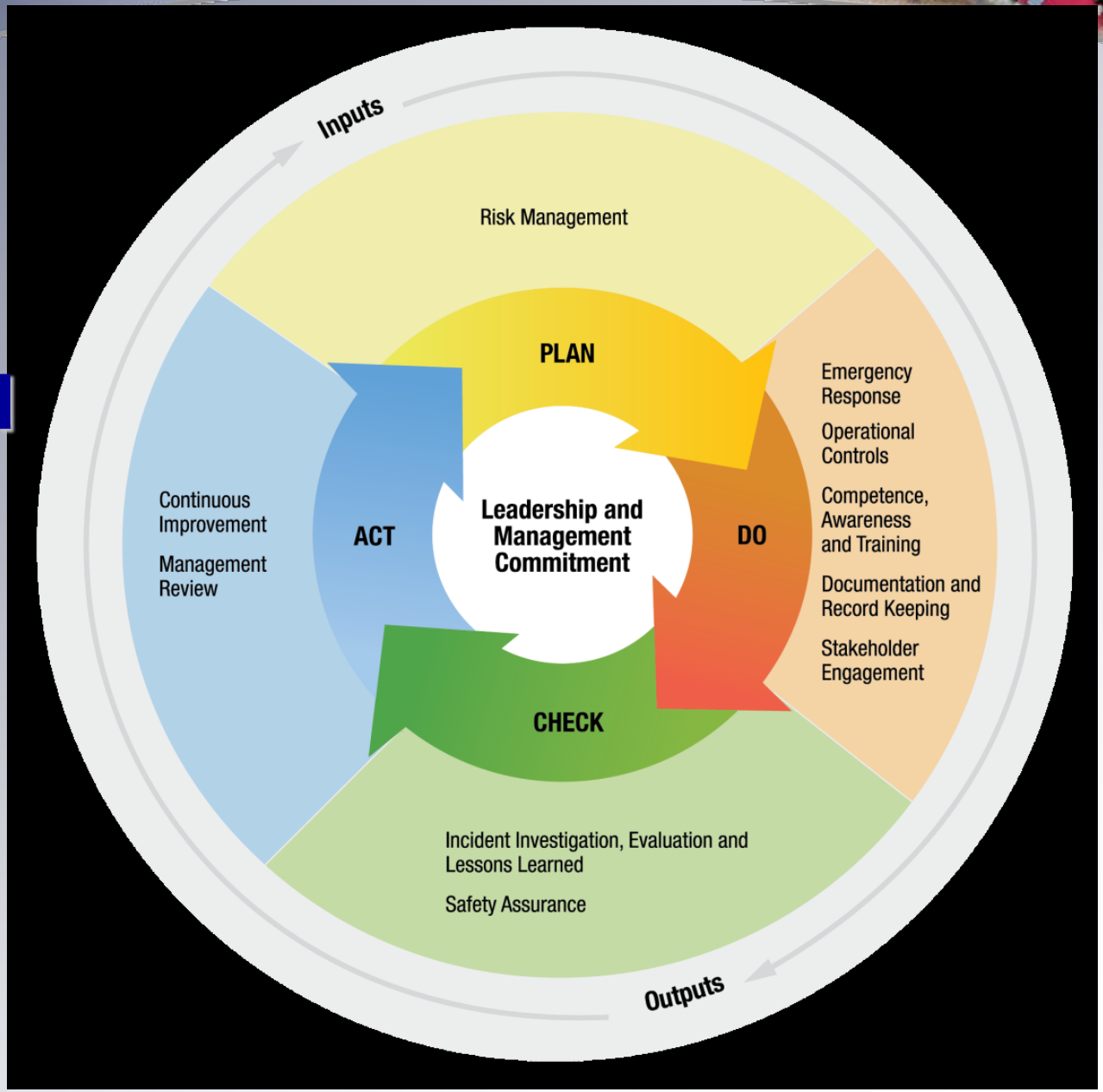
d) The creation of a learning environment for continuous improvement is achieved by investigating incidents thoroughly, fostering non-punitive reporting systems, and communicating lessons learned.

e) Periodic assessment of risk management effectiveness and pipeline safety performance improvement, and audits is essential to ensure effective PSMS performance.

f) Pipeline operating personnel throughout the organization must effectively communicate and collaborate with one another and with service providers to share information that supports decision making and completing planned tasks (processes and procedures) is essential.

Plan, Do, Check, Act The core of the standard

Continuous Improvement is the Goal of the standard



The components of the PDCA cycle

Plan: This step entails establishing the objectives and processes necessary to deliver results in accordance with the organization's policies and the expected goals. By establishing output expectations, the completeness and accuracy of the process is also a part of the targeted improvement.

- Policies
- Strategies
- Objectives
- Plans

The components of the PDCA cycle

Do: This step is the execution of the plan designed in the previous Plan step.

- Roles and Responsibilities
- Processes
- Training
- Information Management
- Risk Management
- Management of Change

The components of the PDCA cycle

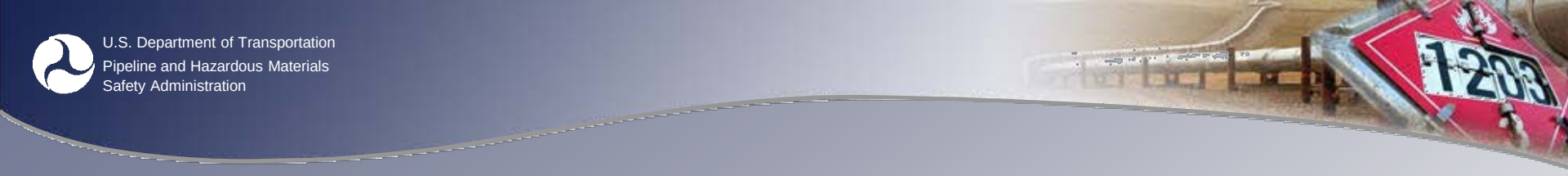
Check: This step entails the review of the results compared with established objectives. Comparing those results to the expected goals to ascertain any differences; looking for deviation in implementation from the plan.

- Performance Measures
- Investigations
- Audits – Independence is the Key
- Records and Reporting

The components of the PDCA cycle

Act: The pipeline operator takes actions to continually improve process performance, including corrective actions on significant differences between actual and planned results, analyzes the differences to determine their root causes, and determines where to apply changes that will include improvement of the process or product.

- Formal Management Review
- Corrective Actions
- Revisions to QMS Processes and Controls
- Revisions / Updates to Risk Models
- Input to New Planning Cycle



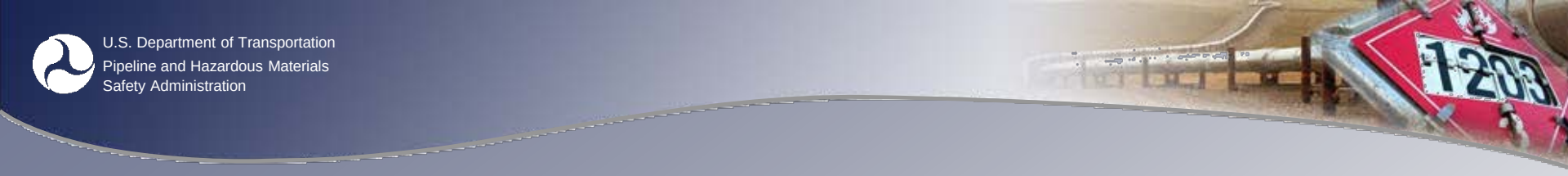
Why is Leadership the Heart of PDCA? Leadership is everywhere

- Top Management- accountable for continuous improvement, routine review of safety performance and communications about safety
- Management- ensures process, procedures and training to meet objectives; assess, evaluate and adjust as needed to meet objectives; foster continuous improvement
- Employees– identify improvements, reveal risks
  - Consider employee, public and pipeline safety when stopping work for safety concern
  - Bring rigor of employee safety to asset protection

Conclusions

- SMS require More
  - Intentional and systematic actions
  - Diligence and oversight
  - Involvement at all levels - communications
  - “Go and Check” attitude
- The rewards of SMS are
  - Increased pipeline safety – risk reduction
  - Creation/Enhanced safety oriented culture
  - Broader organizational involvement

Questions?



Thank you for your Participation

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