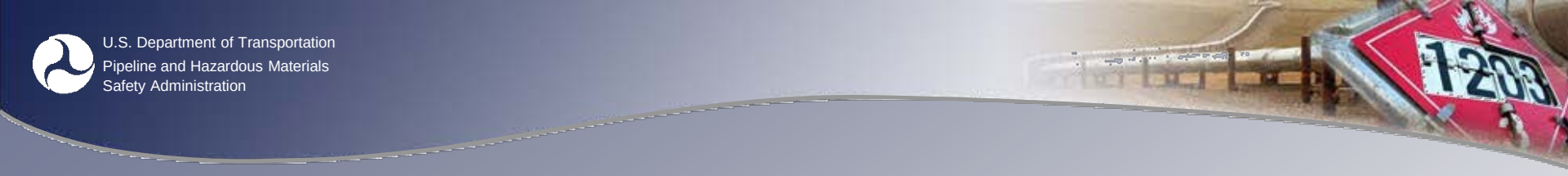


DIMP IMPLEMENTATION
And Other Insights for Operators

Chris Mclaren, DIMP Coordinator
US DOT PHMSA Office of Pipeline Safety

2013 Alabama Pipeline Safety Conference
December 3, 2013 Montgomery, AL
2:30 PM – 4:00 PM

Topics Areas for Discussion

- DIMP Inspection Results and Findings
- DIMP Website and Performance Measures Reporting
- Current Regulatory Topics for Distribution Operators
- PHMSA High Level Topics
- SHRIMP
- Questions and Answers

DIMP Inspections

- Plan development and implementation were required to be complete on August 2, 2011.
- State Programs and PHMSA have been conducting DIMP inspections since the implementation date of the Rule.
- Performance based regulatory programs (Like DIMP) can be a challenge to inspect. Time is required during inspections for drill downs of data sets and gathering a comprehensive understanding of an operator's system.
- Today's presentation will include some of the key findings from the inspections conducted to date and discussion of the expectations of regulators on these findings.

DIMP Rule Provisions – §192.1007

a) Knowledge of gas distribution system

b) Identify threats that could threaten the integrity of pipeline

c) Evaluate and rank risk associated with distribution pipelines

d) Identify and implement measures to address risks

e) Measure performance, monitor results, and evaluate effectiveness of IM program

f) Periodic Evaluation and Improvement of IM Program

g) Report results of required performance measures

§192.1011 - Records maintained to demonstrate compliance

IM Plans and Development Models

- An Operator's Operations, Maintenance, and Inspection procedures may need to be integrated or referenced in the DIMP depending on program's structure.
- Procedures are required in 192.1007, and plans must contain adequate procedural documentation.
- Procedure means a fixed, step-by-step sequence of activities or course of action (with definite start and end points) that must be followed in the same order to correctly perform a task.

Other DIMP Plan Comments

- If risk evaluation concludes new or additional risk reduction measures are not needed to address a particular threat, that may be acceptable and needs to be explained in the Plan.
- The DIMP rules may require something that is already being done in another context – copy it over or link to it.
- The Plan should culminate in a ranked/prioritized list of threats, risk reduction measures, and performance measures as shown in Table 1 in the Inspection Form.
- Treat DIMP as a tool to analyze needs and progress, not as a regulatory exercise. IM Programs have been shown to be cost effective in the long term in ensuring the safe and reliable operation of pipeline systems.

Knowledge of Gas Distribution System

- Where DIMP relies upon subject matter expert (SME) input, the operator must be able to demonstrate why the SME is an expert.
- SME decisions and conclusions must be documented.
- Operators must specify how field information is to be relayed into DIMP. Some Operators have modified field data acquisition forms and internal processes to incorporate new information and correct inaccurate information.
- Plan must reference the missing information list when it resides outside of the DIMP.
- Procedures for identification and collection of additional information must be included or referenced in DIMP to ensure consistent collection and processing.

Knowledge (continued)

- Data quality is a common concern;
  - Outdated, incomplete, obvious errors.
  - Outdated data systems difficult to use or sort.
  - Data cleanup and scrubbing is often required.
- Reasonable balance between SME and hard data is important.
- Integration of data to identify existing and potential threats requires an appropriate level of resource allocation.
- When scrubbed data becomes available threat identification may need to be re-run.

Identify Threats to Integrity

- A DIMP must provide adequate details or specificity to address specific threats and risks in the Operator's unique operating environment.
- Consideration must be given to applicable operating and environmental factors affecting consequence (e.g., paved areas, business districts, hard to evacuate) relating to the Consequence of Failure (COF) when evaluating risk.
- DIMP procedures must provide for the re-evaluation of threats and the identification of new or potential threats.
- Plan must include procedures to evaluate and obtain data from external sources that are reasonably available to identify existing and potential threats.

Threat Identification

- Threat categories
  - Time Dependent
  - Time Independent
- Threat Identification, Data Gathering, Data Integration, and Risk Assessment are inter-related and dependent upon each other
- A failure of one of these processes can result in threats to the integrity of the pipeline not being addressed
- Threats are Potential Pipeline Failure Mechanisms or Pipeline Failure Cause Categories
- Identifying Threats is key to Operator Integrity Decisions regarding measures to implement to reduce risk(s).

Incident Causes or Threats to the Integrity of a Pipeline from B31.8S

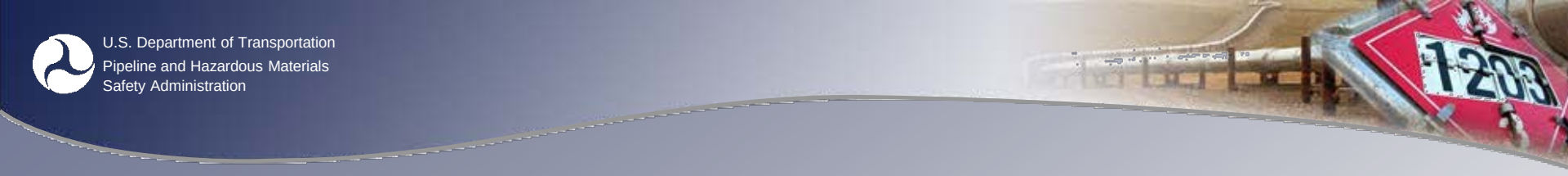
- Third Party Damage
  - Third party inflicted damage (instantaneous/immediate fail)
  - Previously damaged pipe (delayed failure mode)
  - Vandalism
- Corrosion Related
  - External
  - Internal
- Miscellaneous Equipment and Pipe
  - Gasket O-ring failure
  - Stripped threads/broken pipe/coupling fail
- Control/Relief equipment malfunction
  - Seal/pump packing failure
  - Wrinkle bend or buckle
  - Miscellaneous
- Incorrect Operations
  - Incorrect operation company procedure
- Weather Related
  - Cold weather
  - Lightning
  - Heavy rain or floods
  - Unknown
- Manufacturing Related Defects
  - Defect pipe seam
  - Defective pipe
- Welding/Fabrication Related
  - Defective pipe girth weld
  - Defective fabrication weld
- Outside Forces
  - Earth movement
- Environmental Cracking
  - Stress corrosion cracking

Threat Categories from GPTC G-192-8

- External Corrosion
  - Bare Steel Pipe (CP or no CP)
  - cast iron pipe (graphitization)
  - coated and wrapped steel pipe (CP or no CP)
  - Other metallic materials
- Internal corrosion
- Natural Forces
  - Outside force/weather: steel pipe
  - Outside force/weather: plastic pipe
  - Outside force/weather: cast iron pipe
- Excavation Damage
  - Operator (or its contractor)
  - Third-party
- Other Outside Force Damage
  - Vehicular
  - Vandalism
  - Fire/Explosion (primary)
  - Leakage (previous damage)
  - Blasting
  - Mechanical damage: Steel pipe, Plastic pipe, Pipe components

Threat Categories from GPTC G-192-8 (Continued)

- Material or Weld
  - Manufacturing defects
  - Materials/Plastic
  - Weld/Joint
- Equipment Failure
  - System Equipment
- Incorrect operation
  - Inadequate procedures
  - Inadequate safety practices
  - Failure to follow procedures
  - Construction/Workmanship defects
- Other Failure Causes that the Operator has experienced



Threat Identification from DIMP Rule

- §192.1007 What are the required elements of an integrity management plan? A written integrity management plan must contain procedures for developing and implementing the following elements:
- (b) Identify threats. The operator must consider the following categories of threats to each gas distribution pipeline: **Corrosion, natural forces, excavation damage, other outside force damage, material or welds, equipment failure, incorrect operations, and other concerns that could threaten the integrity of its pipeline**. An operator must consider reasonably available information to **identify existing and potential threats**. Sources of data may include, but are not limited to, incident and leak history, corrosion control records, continuing surveillance records, patrolling records, maintenance history, and excavation damage experience.

Threat Identification

An Operator Must :

- Consider and Evaluate Existing and Potential Threats
- Justify Elimination of Threats from Consideration

So, there is more to do than account for just Time Dependent and Time Independent Threats listed in DIMP Rule

- An Operator must look at “near misses”, issues identified in Industry literature, PHMSA Advisory Bulletins, etc. and understand how threats interact with each other
- An Operator should also consider that Interactive Threats (interaction of multiple threats) can be a potential threat.

Potential Threats

- Some Operators are struggling with potential threats:
  - Threats the Operator has not previously experienced, but identified from industry or PHMSA information
  - Threats from aging infrastructure and materials with identified performance issues may need to be considered existing threats depending on the materials in question and the operating environment
  - Threats that endangered facilities but have not resulted in a leak (e.g., exposed pipe, near misses).
  - Non-leak threats (overpressure, exposure)
  - Manufacturing and Construction Threats
  - Maintenance history

Potential Threat Identification

- This is a thoughtful consideration of what else could go on that standard risk assessment models do not account for
- Consider what other threats (and interactive threats) exist in the Operator's unique operating environment
- Consideration of near miss events and abnormal operating condition events (just to name a couple of potential threat identification areas) is needed
- It can be resource intensive depending on the materials and operating environment
- Sufficient time and resources should be committed to the task(s)

Identified Potential Threats

Examples of potential threats often not being considered:

- Over pressurization events
- Regulator malfunction or freeze-up
- Cross-bores into sewer lines
- Materials, Equipment, Practices, etc. with identified performance issues
- Vehicular or Industrial activities
- Incorrect maintenance procedures or faulty components
- Rodents, plastic eating bugs, tree roots
- Other potential threats specific to the operator's unique operating environment

Interactive (Potential) Threats

- Distribution Operators should look to their Leak and Incident history and Operations and Maintenance history to identify interactive threats specific to their system.
- Examples of interacting threats to consider include:
  - Slow crack growth in older plastics where pipeline was pinched during operational event or where over-squeeze occurred due to improper tools or procedure
  - Slow crack growth in older plastics where non-modern construction practices were used
  - Water main leakage areas or areas of soil subsidence with cast iron mains
  - Installation of mechanical fittings without restraint (category 2 & 3) in soils or conditions (excavation damage) that cause pipe to pull out of fitting

Evaluate and Rank Risks

- System subdivision for the evaluation and ranking of risks must be sufficient to appropriately analyze risk(s) present in the Operator's unique operating environment.
- System subdivisions may be predicated on threats (materials, construction, etc.) and consequences (wall-to-wall pavement, high density population areas, etc.)
- Geographical segmentation may be appropriate when systems are separated by space or a specific, predominate threat exists (e.g., where flooding can be expected, earthquake prone area). However, different materials may be a predominate threat in a region, and segmentation may need to be refined to accommodate different failure rates.
- Risk ranking must include all risks to pipeline facilities.

Evaluate and Rank Risks (cont.)

- The risk ranking model results must be validated. One operator identified that the “COF” can be diluted by Frequency of Failure (“FOF”) – a larger range for consequences was needed to get reasonable results.
- Plan must provide explanation of the process used to validate the data used in the risk ranking and to review the output of the risk ranking model for “reasonableness”.
- The Plan (or Model used) must address risks specific to services as well as mains.
- When changes are made to a risk model, the risk ranking should be re-run and results incorporated into DIMP promptly.

Measures to Address Risks

- The Plan must contain or reference an effective leak management plan unless all leaks are repaired when found.
- Self-assessment by the operator of their leak management program is a key component of an effective plan.
- If an Operator repairs all leaks when found, that must be stated or referenced in the DIMP.
- The Plan must provide for a link between the specific risk (either a threat or consequence) and the measure to reduce risk that has been identified and implemented.
- Intervals must be established for the re-evaluation of implemented measures to reduce risks to gage their effectiveness and identify if the measure is appropriate.
- DIMP Models must rank proposed projects/replacements based on risk and not the cost.

Measure to Address Risks (Threats)

- Table 1 in PHMSA DIMP Inspection Forms 22 & 23 provides a quick overview of risk reduction and monitoring methods

	Primary Threat Category	Threat Subcategory, as appropriate	Measure to Reduce Risk	Performance Measure
1	Corrosion	External Corrosion on Copper Service Lines	Replace approximately 100 copper service lines each calendar year	Track number of leaks caused by external corrosion per 1000 copper service lines annually
2	Excavation Damage	Third Party Damage	Conduct pre-construction meetings or Monitor locate for life of ticket	Track frequency of failures per 1000 excavation tickets annually
3	Equipment Failure	Mechanical Fittings, Couplings or Caps/Seals	Repair or replace problem materials as found	Track frequency of failures by equipment type annually

Performance Measurement

- Operators must develop and monitor performance measures from an established baseline to evaluate the effectiveness of its IM program.
- A DIMP must include procedures for establishing baselines for Performance Measures required in 192.1007(e)
- Some Operator's Plans identified “triggers” to initiate development of new performance measures depending on the program performance and the operating environment
- Each Measure Implemented to Reduce Risk must have a Performance Measure established to monitor its effectiveness
- Operators have identified a single performance measure to evaluate the effectiveness of multiple risk control measures

Periodic Evaluation and Improvement

- A Plan must contain procedures for conducting periodic evaluations.
- If it is found necessary to make changes to the periodic evaluation procedure when an Operator implements this element, the changes would be handled with revisions to the original procedure.
- Plans are expected to include procedures for notifying appropriate operator personnel of changes and improvements made to the plan or plan requirements when they are affected by the change.
- The Plan must provide for the incorporation of pipe replacement program in the DIMP as the future risk results will be affected by the removal of vintage pipeline facilities.

Report Results

- The DIMP must include (or reference) procedure(s) describing the collection and reporting of Annual Report data as part of the annual report to PHMSA.
- If a State agency exercises jurisdiction over the Operator's pipeline and requires reporting, a procedure must include instruction to send reporting information to the state pipeline safety authority.
- While Performance Measures 192.1007(e)(v) & (vi) are not required to be reported, they must be monitored by the operator and maintained for inspections. Some Operators are failing to collect and analyze these performance measures that address hazardous leaks eliminated or repaired categorized by material ((e)(v)) and performance measures developed to monitor actions implemented to control identified threats and reduce risks ((e)(vi)).

Records Required to be Maintained

- An operator must maintain records demonstrating compliance with the requirements of this subpart for at least 10 years (Including records not otherwise kept for 10 years).
- The Plan must describe how superseded plans and data will be maintained and kept secure
- Plans must include an adequate revision log that includes: the Plan effective date, revision dates, and a description of each revision
- Some Plans included statements that “all Company records were used in the development of the DIMP.” Only the records actually used to develop and implement the DIMP should be referenced; otherwise all records must be kept for 10 years.

DIMP Website

PHMSA
U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration

Pipeline Technical Resources

Return to Pipeline Safety Community

Home | Alternative MAOP | Cased Crossings and GWUT | Class Location | CRM | DIMP | Gas IM

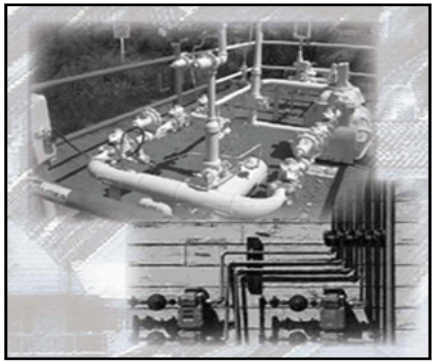
HL IM | High Volume EFV | Low Strength Pipe | OQ | Pipeline Construction | R&D | Public Meetings

DIMP Menu

- Home
- History
- Meetings
- Resources
- FAQs
- Performance Measures
- Regulator Contacts
- What's New
- Feedback

- Regulations
- Advisory Bulletins
- Interpretations

Gas Distribution Integrity Management Program



The Pipeline and Hazardous Materials Safety Administration (PHMSA) published the final rule establishing integrity management requirements for gas distribution pipeline systems on December 4, 2009 (74 FR 63906). The effective date of the rule is February 12, 2010. Operators are given until August 2, 2011 to write and implement their program.

PHMSA previously implemented integrity management regulations for hazardous liquid and gas transmission pipelines. These regulations aim to assure pipeline integrity and improve the already admirable safety record for the transportation of energy products. Congress and other stakeholders expressed interest in understanding the nature of similarly focused requirements for gas distribution pipelines. Significant differences in system design and local conditions affecting distribution pipeline safety preclude applying the same tools and management practices as were used for transmission pipeline systems. Therefore, PHMSA took a slightly different approach for distribution integrity management, following a joint effort involving PHMSA, the gas distribution industry, representatives of the public, and the National Association of Pipeline Safety Representatives to explore potential approaches.

The regulation requires operators, such as natural gas distribution companies to develop, write, and implement a distribution integrity management program with the following elements:

- Knowledge
- Identify Threats
- Evaluate and Rank Risks
- Identify and Implement Measures to Address Risks
- Measure Performance, Monitor Results, and Evaluate Effectiveness
- Periodically Evaluate and Improve Program

http://primis.phmsa.dot.gov/dimp/index.htm

DIMP Performance Measures

Summary of Gas Distribution Pipeline Performance

Time run: 3/22/2013 4:57:19 AM

SMART Data as of **3/21/2013 7:45:24 PM**
Portal Date as of **3/22/2013 12:37:01 AM**

	2005	2006	2007	2008	2009	2010	2011	2012
Total Leaks Eliminated/Repaired	516,307	502,501	485,737	487,367	553,096	484,770	481,744	489,992
Hazardous Leaks Eliminated/Repaired						185,581	192,847	186,657
Excavation Damages per 1000 Excavation Tickets						3.8	3.7	3.5
Total Number of EFVs on Single-Family Residential Services Installed During Year						504,861	597,596	677,747
Estimated Number of EFVs in System at End of Year						6,357,362	6,912,980	7,612,315

(Note: Hazardous Leaks and Excavation Damages were not required to be reported prior to 2010.)

Click here to see year-by-year plots of **Total Leaks** eliminated/repaired as well as plots of Leaks by Failure Cause.

Click here to see a table depicting **Hazardous Leaks** by Failure Cause.

Click here to see plots depicting **Incidents** by Year and Failure Cause.

Quick Facts on Mechanical Fitting Failure Reporting for Distribution Integrity Management [More]

Quick Facts on Pipe Material in Distribution Pipeline Systems [More]

http://primis.phmsa.dot.gov/dimp/perfmeasures.htm

DIMP Website

Please regularly use PHMSA websites as they are a primary form of communication with Stakeholders

PHMSA Office of Pipeline safety

http://phmsa.dot.gov/pipeline

DIMP Home Page

http://primis.phmsa.dot.gov/dimp/index.htm

Pipeline Safety Stakeholder Communications

http://primis.phmsa.dot.gov/comm/

Cast Iron Discussion Page

http://opsweb.phmsa.dot.gov/pipeline_replacement/

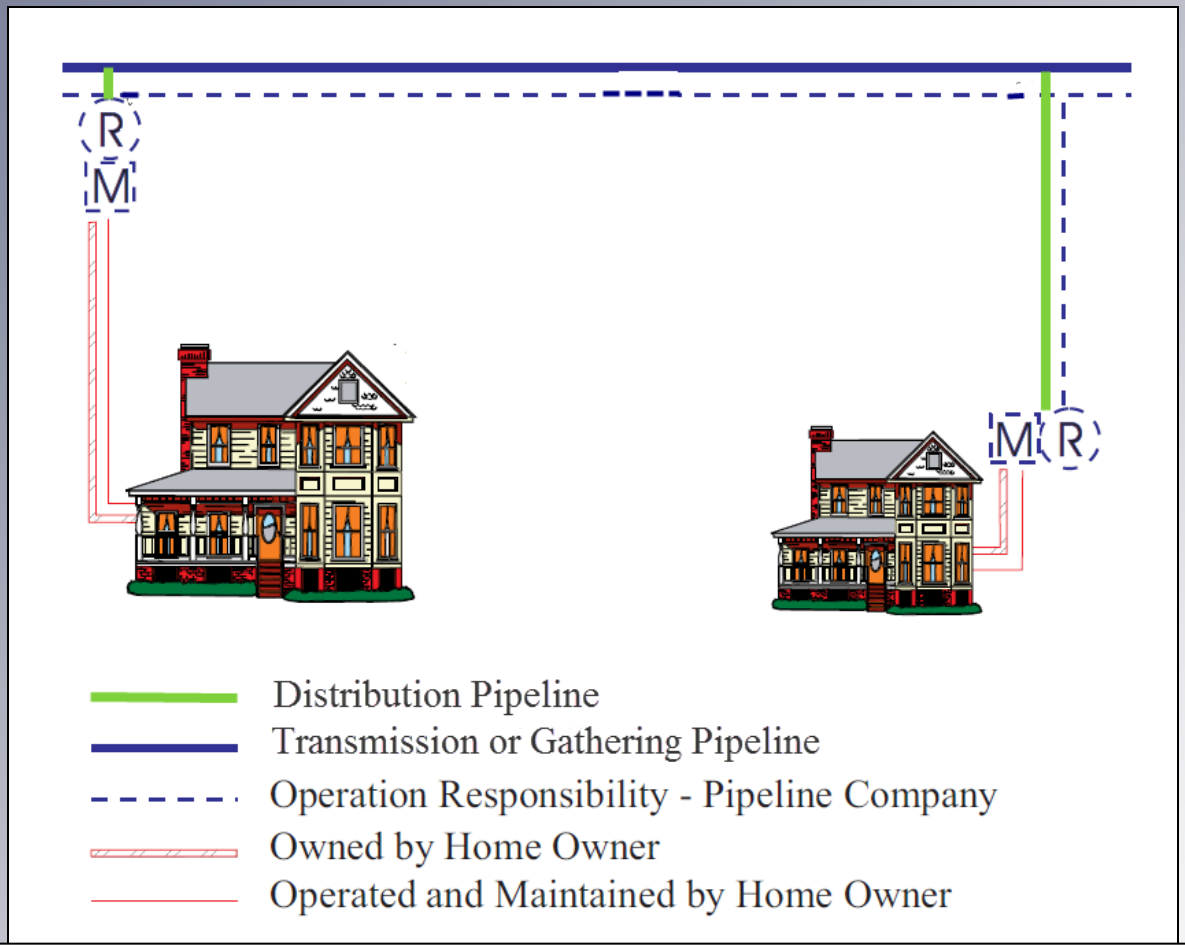
Farm Taps

Quotes from preamble materials in "Customer-Owned Service Lines", 60 Fed. Reg. 41821, 41823 (August 14, 1995):

PHMSA has defined a 'farm tap' as "industry jargon for a pipeline that branches from a transmission or gathering line to deliver gas to a farmer or other landowner."

"… Some operators primarily engaged in the gathering or transmission of gas also operate distribution pipelines. They do so when they deliver gas directly to customers through farm taps and industrial taps. In fact, because portions of these delivery lines qualify as service lines, gathering and transmission operators report them as distribution pipelines under 49 CFR 191.13. Moreover, farm and industrial tap customers are not immune from harm by potential hazards that could occur on their piping. And surely not all farm and industrial tap customers know enough about gas piping safety to make even a single maintenance notice unnecessary."

Farm Taps – Distribution Service Lines



- Do the facilities meet the definition of Gathering? No.
- Do they meet the definition of transmission? No.
- If No to both,

Then the facilities are distribution.

The “farm tap” is pipeline upstream of the outlet of the customer meter or connection to the customer piping, whichever is further downstream, and is responsibility of the operator. The pipeline downstream of this point is the responsibility of the customer. Some States require the operator to maintain certain portions of customer owned pipeline. The pipeline maintained by the operator must be in compliance with 49 Part 192.

Treatment of Farm Taps in DIMP

We have discussed the treatment of farm taps in DIMP FAQ C.3.7 (issued 08/02/2010) and in the 3 DIMP Webinars.

PHMSA's position is that since a farm tap is neither a transmission pipeline or a gathering pipeline it is a distribution pipeline

From 192.3 Definitions:

- "Gathering Line means a pipeline that transports gas from a current production facility to a transmission line or main."
- "Transmission line means a pipeline, other than a gathering line, that: (1) transports gas from a gathering line or storage facility to a gas distribution center, storage facility, or large volume customer that is not down-stream from a gas distribution center; (2) operates at a hoop stress of 20 percent or more of SMYS; or (3) transports gas within a storage field."

Treatment of Farm Taps in DIMP

- PHMSA continues to meet with and talk to industry groups to gather information, understand the need for change, and discuss solutions, and the Farm tap discussion involves regulated and unregulated production, gathering, transmission, and distribution pipeline operators.
- PHMSA takes Industry's concerns on the treatment of Farm Taps and their inclusion in DIMP very seriously, but there is a process that we have to go through in this matter. It is not a simple matter, and there are ramifications in each option that we discuss with Industry.
- PHMSA has considered Industry's concern over the inclusion of farm taps in the DIMP rule and believes that the risk to the public from farm taps is generally low. Therefore, PHMSA is considering amending Part 192 to exempt farm taps from the requirements of Part 192, Subpart P - Gas Distribution Pipeline Integrity Management..

DIMP Enforcement Guidance

- DIMP Enforcement Guidance has been posted.
- This guidance is publicly available and posted on PHMSA's website with the other Enforcement Guidance documents currently posted at http://www.phmsa.dot.gov/foia/e-reading-room
- This posting allows Operators to understand Regulators' expectations with regards to the DIMP Regulation

PHMSA High Level Topics

- Underlying principles, Environmental Factors & Punch Lines
- Perspective on Past Performance and Its Implications
- Current realities
- Safety Management Systems

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:
  - PHMSA's primary role is to establish minimum safety standards
- PHMSA also strives to impact operator performance beyond mere compliance with the regulations

Environmental Factors

- Non conventional oil and gas
- Growing public intolerance to risk – yet highly rate sensitive
- Under-informed populace highly dependent on a fossil fuel fed, overly lean, energy supply chain
- 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)
- Fiscal impacts from potential sequestration – real and growing
- Regulatory process stuck in amber – affecting all rules
- Energy pipelines have graduated to the national stage, many times for the wrong reasons

Punch Lines

- Energy pipelines have served the U.S. exceeding well for many decades, but with few exceptions they were invisible
- Energy pipelines and their issues are no longer invisible
- Pipeline industry has incredible opportunity ahead of it – if they don't kill the goose that is laying this golden egg
- Regulatory and rate models for energy pipelines seem broken and little is being done to overhaul them
- The price of failure is growing
- Pipeline industry needs to seize the moment to secure the future – lots of opportunities individually and collectively

Perspective on Past Performance

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

Missed Opportunity 1: 1990's

- **Incidents:**
  - **Edison, New Jersey (natural gas)**
  - **Herndon, Virginia (hazardous liquid)**
- **Congress calls for more prescriptive regulations**
- **OPS and industry respond with Risk Assessment Quality Teams (RAQTs) and Risk Management Demonstration Program (RMDP)**
- **But very few of the RMDP participants developed substantive risk management programs**

Missed Opportunity 2: 2000's

- **Incidents:**
  - **Bellingham, WA (hazardous liquid)**
  - **Carlsbad, NM (natural gas)**

- **Congress again calls for more prescriptive regulations**
- **OPS counters with the Integrity Management Program, whose centerpiece is a pipeline-specific risk assessment**
- **But after 10 years, there are still major deficiencies in many operators' risk assessment programs**

Recent Events Illustrate Weaknesses in Managing Risk

- Effective risk analysis might have prevented or mitigated recent high consequence accidents
- Weaknesses 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

Inspections Identify Weaknesses in Risk Analysis

The current challenge is for industry to develop

- **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**

Our Current World: 2010's

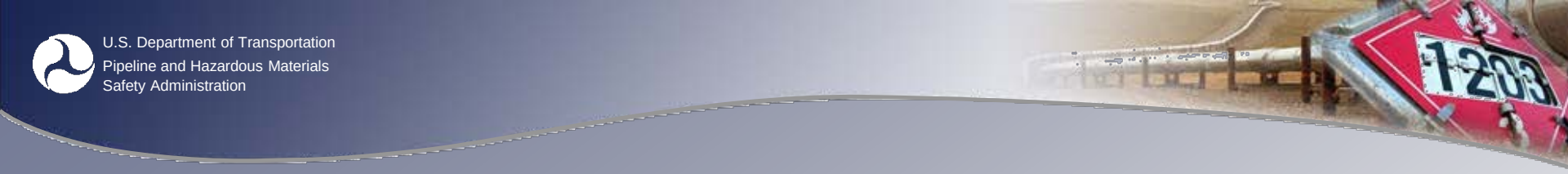
- Response to major accidents again takes center stage
- PHMSA forced to divert attention from improving the efficiency of inspection and enforcement of current regulations to evaluating the need for new and more prescriptive regulations
  - NTSB Investigation Recommendations
  - Reauthorization includes multiple new mandates
  - Multiple OIG/GAO Audits
  - Numerous Workshops
  - New Studies Related to Effectiveness of Regulations
  - Secretary's Call to Action
- Reauthorization of the PS laws – After 15 Congressional Hearings
- Largest Civil Penalty in Our History

New Opportunity 3: 2010's

- **Incidents:**
  - **San Bruno (natural gas)**
  - **Marshall; Yellowstone (hazardous liquid)**
  - **Numerous others**
- **Congress again calls for PHMSA to evaluate the need for additional and more prescriptive regulations**
- **PHMSA is evaluating the right balance between more prescriptive regulations and stronger requirements for risk management programs**
- **How will we respond this time?**
- **Another lost opportunity may mean far more prescriptive regulations in the future will be unavoidable**

Broad Changes Called for in Pipeline Safety Statute

- Expanding the principles of IM within and beyond HCA's
- Tightening up excavation damage prevention
- Stronger State Programs
- Increased Civil Penalty Amounts
- Faster accident notification – "confirmed discovery"



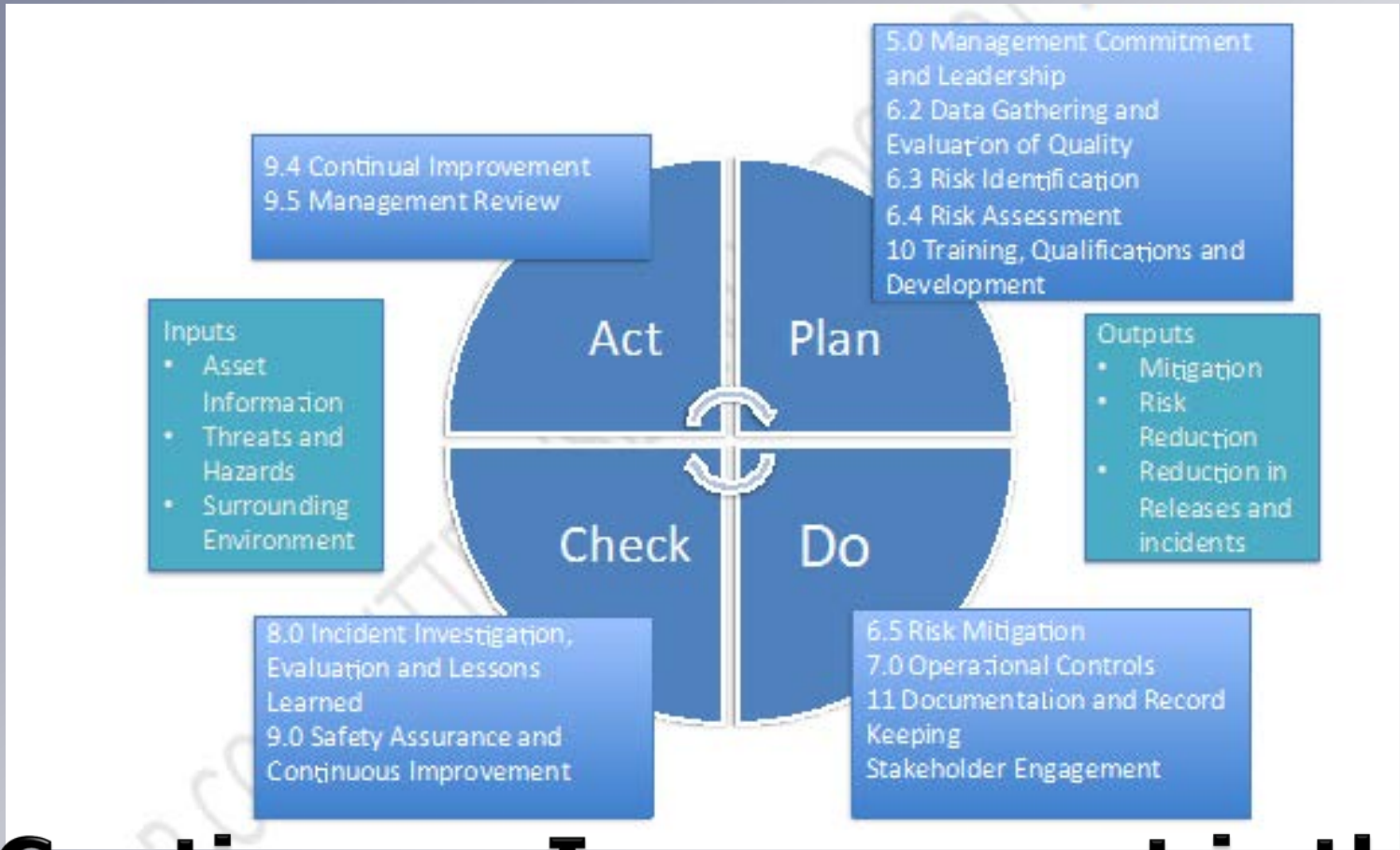
Safety Management Systems

API RP 1173 Development

Safety Management Systems

- API Recommended Practice 1173
- Embodies the Best of a Dozen Other Approaches from Other High Hazard Industries
- Predicated on “Plan – Do - Check – Act” CI 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 Better Socialize SMS Through Webinars and Workshops

Plan, Do, Check, Act



Continuous Improvement is the Goal of the standard . . .

Other Major Elements Common To Most SMS

Plan

- Policies
- Strategies
- Objectives
- Plans

Do

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

Some Critical (*and Often Missing*) Elements

Check

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

Act

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

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 the most 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.

A Look Ahead

- Setting Our Own Course
  - IMP 1.0 – good progress, but plenty of work undone
    - Records and data gaps, incomplete knowledge of “environment” around pipe, interactive threats, etc.
  - IMP 2.0 – warm up to multi-day workshops early 2014
    - Integrity Verification Process (IVP); leak detection, valves; and missing Safety Management Systems elements: employee involvement; meaningful metrics; near miss/voluntary reporting; independent audits; and contractor alignment, and oversight, etc.
  - Continued focus on construction QA/QC issues

Actions

- Both industry and PHMSA need to demonstrate that risk-based flexibility in the regulations is a viable regulatory strategy.
- Industry needs to make significant improvements in their risk assessments and the manner in which they use risk information to make safety-related decisions.
- PHMSA needs to provide more detailed and clear guidance to industry on what it expects in an adequate risk management program.
- We must both come fully prepared to effectively use the ongoing studies, workshops, and other interactions to develop responsible risk-based safety programs that allow pipeline-specific flexibility while fully protecting public safety.

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SHRIMP

SHRIMP Users

- Over 1,600 systems have used SHRIMP in creating their DIMP programs
- There are 1,148 current SHRIMP users
- There are 77 current SHRIMP users in Alabama, including utilities and master meter operators (many housing authorities)

SHRIMP Updates

All SHRIMP Announcements

2013-10-28	**SHRIMP 2** Version 2.1.13

SHRIMP 2 has been updated to address the following issues.

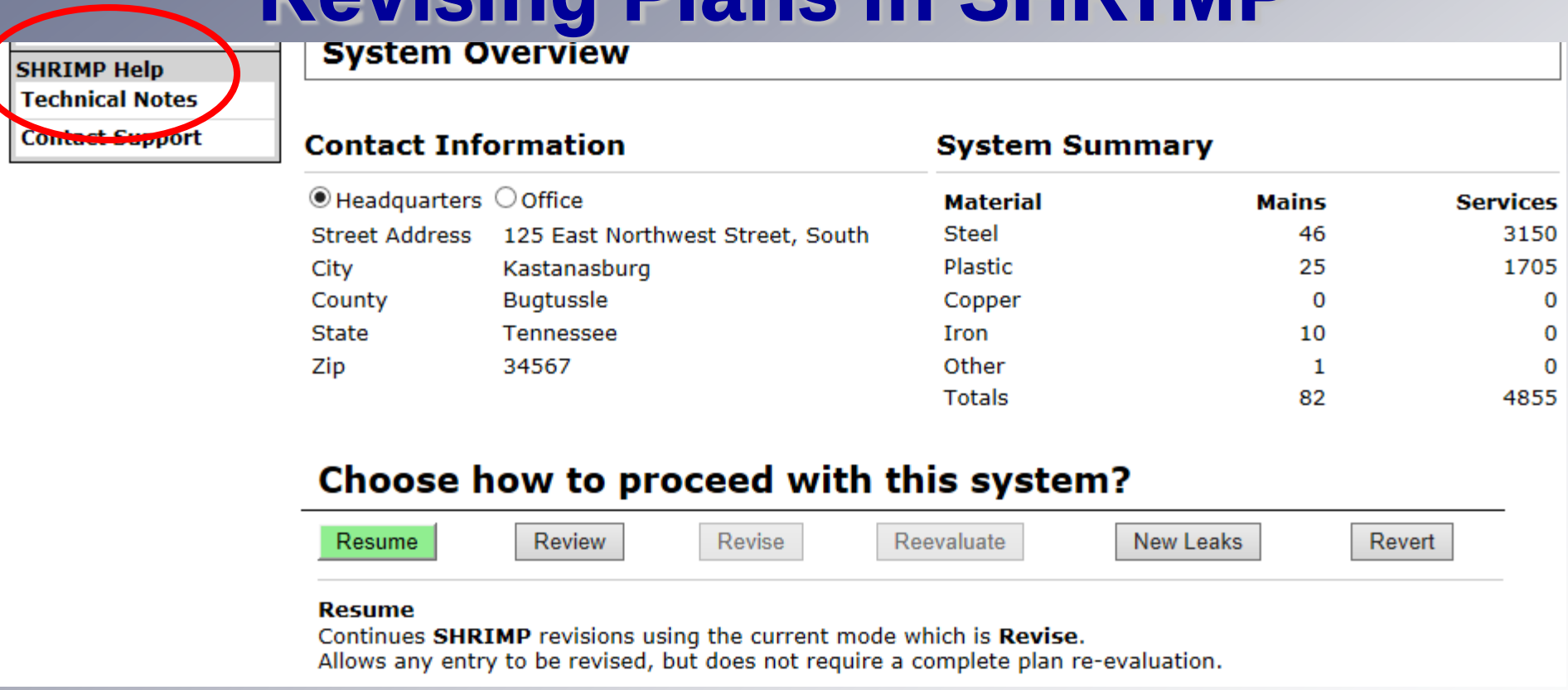
None of these changes requires that you redo any existing plans – these are new features that are available the next time you use **SHRIMP 2**.

- **New Section Added To Written Plan**:
  Section 11.5: "RISK EVALUATION AND PRIORITIZATION (Consolidated Sections)" has been added to the written plan.
  This is presented by threat-section in the same order as the "Risk Ranking" chapter and consolidates the following information:
  - Threat assessment
  - Risk ranking
  - AA's with Implementation Plan
  - PM's with Implementation Plan

2013-10-09	**SHRIMP 2** Version 2.1.11

- SHRIMP is now on version 2.1.13
- Use the Announcements button in SHRIMP to view description of changes

Revising Plans in SHRIMP



- In the new version, plan re-evaluations are managed.
- Please read Technical Notes on how to proceed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SC Pipeline Safety Seminar
and SIF Conference
Columbia, South Carolina
August 6-8, 2013

Cross reference available

Go directly to the SHRIMP TOOL at http://shrimp.imp-tools.com. You will need to be a current SHRIMP subscriber and enter your SHRIMP SIF login to access the SHRIMP tool.

- cost
- purchase SHRIMP or renew SHRIMP
- SHRIMP 2.1.7 users guide
- First time using SHRIMP 2.0? Click here to read the technical notes about going from SHRIMP 1 to SHRIMP 2.
- example of a SHRIMP-generated DIMP written plan
- DIMP enforcement guide
- data requirements for using SHRIMP (WORD doc)
- Distribution Integrity Management Program (DIMP) Inspection Form For Operators of Gas Distribution Systems For Requirements of 192.1005 – 192.1011 (PDF)
- Distribution Integrity Management: Guidance for Master Meter and Small Liquefied Petroleum Gas Pipeline Operators (PDF)
- Procedures for developing and implementing DIMP elements using SHRIMP (DOC)
- PHMSA DIMP Inspection Form Questions 5/2/2011 and a Discussion of How Each Item Is Addressed In a Written DIMP Plan Created Using SHRIMP (DOC)
- Learn more about PHMSA's rules on Integrity Management

Having any problems with SHRIMP? Please email shrimp@apgasif.org.

SHRIMP Registration and Refund Poli

Inspection Form Questions

3. (Information Only) Does the operator's plan assign responsibility, including titles and positions, of those accountable for developing and implementing required actions?

The SHRIMP written plan includes an attachment "Implementation Plan". The SHRIMP User's Guide and guidance within SHRIMP advise the user that the above information is expected to be included in the Implementation Plan.

4. .1007(a)(1) Do the written procedures identify or reference the appropriate sources used to determine the following characteristics necessary to assess the threats and risks to the integrity of the pipeline:
    a. Design (e.g. type of construction, inserted pipe, rehabilitated pipe method, materials, sizes, dates of installation, mains and services, etc.)?
    b. Operating Conditions (e.g. pressure, gas quality, etc.)?
    c. Operating Environmental Factors (e.g. corrosive soil conditions, frost heave, land subsidence, landslides, washouts, snow damage, external heat sources, business districts, wall-to-wall paving, population density, difficult to evacuate facilities, valve placement, etc.)?

SHRIMP includes a Data Source field in each interview screen in which the user can enter a description of the source of information used to answer each question. The text entered by the user is included in the attachment to the plan showing the answers provided by the user to each interview question.

SHRIMP interview questions are based on the Gas Piping Technology Committee (GPTC) guidance and supplemented with additional questions developed by the

Enhancements to SHRIMP

- Written procedures have been added to the SHRIMP written plan where asked for in the inspection form
- A new written plan section has been added summarizing threat, risk, AA and PM information by segment
- Improvements to the Risk Ranking model are nearing completion

Enhancements to SHRIMP

- The next version will include a means to track and analyze performance measures within SHRIMP
- Future enhancements may include the ability to submit distribution annual reports to PHMSA from within SHRIMP
- Continue feedback from users and regulators will result in continuing improvements

Questions and Answers

Thank you for Your Participation