

Gas Distribution Pipeline Integrity

Mission- Enhance Safety

- Develop a risk based approach
 - Identify
 - Risks to the system – (understand the infrastructure, identify and characterize the threats) **Maps & Records**
 - Risk control options – (prevention, detection and mitigation and/or replacement) **Process**

Path Forward

1. *Guidance with mandatory adoption by states*
2. *High-level flexible federal rule*

GPTC Guidance Document

- PIPES Act requires rulemaking by December 2007.
- GPTC has finalized guidance but waiting on rulemaking before releasing.

GPTC Guidance Document

- D.I.T.G. Chapters
 - Elements of a written program.
 - Know Infrastructure
 - I.D. Threats and Risks
 - Evaluate and Rank Risks
 - Implement techniques to manage risks
 - Measure performance monitor results
 - Reports to regulators.

Develop & Implement Plan

- Document how each of the seven elements will be addressed and implemented.
- The program should be sufficient for personnel to understand and implement.
- Not intended to include extensive technical justifications or detailed process definitions.

Develop & Implement Plan

- APGA "SHRIMP" Program
- Similar Concept to "Turbo Tax" software.
- Will require good knowledge of system.

Identify Threats Prioritize Risks

- Consider 8 Primary Threats
 - Corrosion
 - Natural forces
 - Excavation
 - Other outside force damage
 - Material or Welds
 - Equipment
 - Operations
 - Other

Know Your Gas System

- **Type of Materials**
- **Construction practices**
- **Maintenance practices**
- **Pipe Location**

Know Your Gas System *(type of materials)*

- Type of pipe (bare steel, PE, PVC, ABS)
Type of Risers
- Size and age of anodes
- Service Regulators
- Coating: coal tar, fusion bond epoxy, wax
- Type of connection: screwed vs.welded;
compression fitting

Know Your Gas System *(construction)*

- Plumbers installed
- Rocky fill
- joining methods
- installation method: open trench, plow, boring, direction drilling, casings, cast iron on concrete block).
- Extra Deep pipe on bores

Know Your Gas System *(maintenance practices)*

- Deteriorating tracer wire
- Compression fittings used for repair
- Location of former "Squeeze offs" of larger OD pipe.
- CP initiated years after installation

Know Your Gas System *(maintenance practices, cont'd)*

- third party hits
- special survey results; subsidence
- Shallow pipe
- CP interference
- Map of leak repairs
- Types of leaks; corrosion, 3rd party

Know Your Gas System

(pipe location)

High profile areas such as hospitals & schools; business districts

- Wall-to-wall pavement
- Location of meters: property line or next to house
- Access to car traffic

**Primary
Threat**

**Sub-Threat
Categories**

**Questions to Check
Sub-Threat Applicability
to System**

External
corrosion

External
corrosion: bare
steel pipe.

Is the pipe cathodically
protected?

Have corrosion leaks
occurred?

Do existing pipe
inspections indicate
external corrosion?

Primary Threat	Sub-Threat Categories	Questions to Check Sub-Threat Applicability to System
OPERATIONS	Construction/workmanship defects.	Have you experienced failures due to workmanship defects?

Know Your Gas System

where to look

- **Update/Confirm records based on categories chosen.**
- **Bell hole reports; (Steel and Plastic)**
- **Replacement projects**
- **Leak Repairs**
- **Construction Records; (Old and New)**
- **maps**

Rank Threats Based on Risk

- Risk is:
 - ***Risk: Combines hazard, vulnerability, exposure and probability.***
 - ***Hazard: Potential to do harm.***
 - ***Vulnerability: susceptibility to harm, damage, loss.***
 - ***Exposure: People, property, systems or functions that could be lost to a hazard.***

Rank Threats Based on Risk

- Risk is:

- *Chance of a problem occurring*

X

- *The consequences that could be caused by the problem if it occurs*

Frequency of Excavation Damage

(Chance of Problem Occurring)

Frequency Factor	Considerations
Low	Few damages; experienced excavators; good mapping/locating
Medium	Average damages; Some excavator problems; some mapping locating errors.
High	Many damages; no tracer wire; poor maps; excavators never call.

Consequence of Excavation Damage

Frequency Factor	Considerations
Low	Rural; small diameter pipe; low pressure.
Medium	Residential; medium diameter; medium to high pressure.
High	Class 4; large pipe; over 60 psi operating.

Threat Ranking Examples

1. 2" PE main in a residential neighborhood with multiple utilities in the ROW.
2. 4" PVC piping serving irrigation customers.
3. Property line meter sets with 1" steel risers screwed connections in a business district.
4. Unprotected 4" bare steel pipe under the street in front of the hospital.
5. 2" coated, CP steel main 30 years old located in a rear easement, other utilities present.

Threat Ranking Examples

4, 3, 1, 5, 2

1. 2" PE main in a residential neighborhood with multiple utilities in the ROW.
2. 4" PVC piping serving irrigation customers.
3. Property line meter sets with 1" steel risers screwed connections in a business district.
4. Unprotected 4" bare steel pipe under the street in front of the hospital.
5. 2" coated, CP steel main 30 years old located in a rear easement, other utilities present.

IDENTIFY AND IMPLEMENT APPROPRIATE TECHNIQUES TO MANAGE RISKS

- address either the likelihood of a problem
OR
- the consequence of a problem.

- **Examples**
 - More frequent leak surveys.
 - Improved or revised training.
 - Replace or repair.
 - Install barricades.
 - More frequent odorant testing.

address either the likelihood of a problem
OR
the consequence of a problem.

1. Unprotected 4" bare steel pipe under the street in front of the hospital. *Replace, lower pressure, more frequent leak surveys.*
2. Property line meter sets with 1" steel risers screwed connections in a business district. *Replace, barriers, public awareness.*

address either the likelihood of a problem
OR
the consequence of a problem.

1. 2" PE main in a residential neighborhood with multiple utilities in the ROW. *Public awareness; good locating.*
2. 2" coated, CP steel main 50 years old located in a rear easement, other utilities present. *Monitor leaks; consider close interval survey.*
3. 4" PVC piping serving irrigation customers. *Nothing.*

Measure Performance; Monitor Results

- Performance Measure for each Risk Management Practice.
- Select just a few “critical” measures.
- Use numbers if possible to establish trends.

Measure Performance; Monitor Results

- **Performance measures should address the specific risk management practices**
- **use data already collected to compare to history**

Measure Performance; Monitor Results

Examples

- **3rd party damage where excavator did not have ticket.**
- **Leaks due to corrosion.**
- **Leaks on previously damaged pipe.**

Evaluate and Improve the Program

- Review on same frequency as other programs (*O&M, OQ, Public Awareness*)
- Review when major change occurs, (*replacement program, all meters go to AMR*)
- Review performance measures for effectiveness.
- Some measures may only need to be reviewed after several years, (*CP improvements*)

Report to Regulators

- Based on whatever ends up being written in the rule.

Excess Flow Valves

- **Section 9 also requires that the DIMP regulations include a requirement for gas distribution operators to install excess flow valves (EFVs) on lines serving single-family residences installed or entirely replaced beginning on June 1, 2008**
- **. In the course of this rulemaking proceeding, PHMSA will determine the applicability of the requirements to distribution operators.**
- **In doing so, PHMSA will consider the potential impacts on small operators such as master meter systems and liquefied petroleum gas (LPG) systems.**
- **PHMSA intends to meet its obligation to provide the necessary and appropriate degree of regulatory flexibility to operators with these or similar implementation challenges.**