DIMP — Leak Management Program

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DIMP — Leak Management Program

Code Requirement:

Subpart P--Gas Distribution Pipeline Integrity Management (IM)

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§192.1007 What are the required elements of an integrity management plan?

(d)Identify and implement measures to address risks.

- Determine and implement measures designed to reduce the risks from failure of its gas distribution pipeline. These measures must include an **effective leak management program** (unless all leaks are repaired when found).

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- This presentation is designed to help you understand what “an effective leak management program” is.
- An effective leak management program is one of the major factors in identification and implementation of measures to address risk.
- As we all know that risk management is accomplished by acting to reduce the likelihood of an occurrence, by alleviating the consequences of an occurrence, or both. Appropriate actions are dependent upon the type of threat, magnitude of risk, and the viability of the actions in effectively allocating resources to manage the relevant risk factors. Risk reduction activities can be in the form of high-level programs applied uniformly to a wide group of facilities or a single, specific activity aimed at a targeted facility.

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An effective leak management program should include but not limited to the following steps:

- Locate the Leaks
- Evaluate the Potential Hazards
- Act Appropriately
- Keep Records
- Self Assess

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1. Locate the Leaks

An effective leak management program includes locating leaks by visual inspection and leak survey equipment, timely response to customer notification of a gas odor, and a variety of other means. It involves the use of qualified personnel to perform leaks detection activities and the selection of appropriate leak detection equipment.

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Each operator should develop its internal procedures that specify the frequency and type of leak surveys to be conducted based on environmental conditions, operator's knowledge of the distribution system and regulatory requirements. These procedures should include, but are not limited to:

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- Procedures for General Policy for Gas Leakage Inspection and Control
- Procedures for Leakage Surveys
- Procedures for Leakage Survey and Test Methods
- Procedures for Gas Detection Equipment Calibration and Operational Checks
- Procedures for Propane Systems Leakage Survey and Test Methods
- Procedures for Inside Leak Investigation
- Procedures for Outside Leak Investigation
- Procedures for Investigation of Gas Indication from an Unknown Source

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2. Evaluate the potential hazards

- An effective leak management program includes evaluating the severity of leaks according to established classification criteria. These classification criteria take into consideration the safety risk posed by the leak. The determination of leak migration is part of the process.

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Leaks should be classified using the following criteria:

1. Leaks that require immediate action (Grade 1 Leaks): A leak that represents an existing or probable hazard to persons or property, and requires immediate repair or continuous action until the conditions are no longer hazardous.
2. Leaks scheduled for repair (Grade 2 Leaks): A leak that is recognized as being non-hazardous at the time of detection, but justifies scheduled repair based on probable future hazard. Some Grade 2 leaks require an accelerated repair schedule.
3. Monitored leaks (Grade 3 Leaks): A leak that is non-hazardous at the time detection and can be reasonably expected to remain non-hazardous.

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3. Act appropriately

Once a leak has been located and evaluated, the operator should take actions that are consistent with the severity of the leak. This may include temporary or permanent repair, replacement or other steps that reduce any immediate hazard posed by the leak. This may also include scheduling the line for repair or periodic monitoring in the case of non-hazardous leaks.

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The operator should at a minimum have the following internal procedures that provide guidance on appropriate actions under varying circumstances:

- Leakage - Classification and response
- Leakage - Distribution pipe repair
- Leakage - Pinpointing
- Leakage - Sampling of unknown/stray gas

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4. Keep records

- An effective leak management program includes the collection and recording of data pertinent to a leak to increase the operator's knowledge of the system, measure its performance and comply with regulatory requirements. The operator should have internal procedures for leak record keeping.

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5. Self-assess

- The operator's leak management program should include a self-assessment of the distribution system by compiling associated performance metrics and by analyzing pertinent information to determine if further risk control practices are needed to enhance the safety of the system. Additional risk control practices may include modifying the cathodic protection system, patrols, procedure reviews, personnel qualifications, pipe and component replacement and public education.

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Key Points to Note:

1. An effective leak management program must have excellent data resources and data scrubbing. (System Knowledge)
2. Data derived from annual reports should match what is reported in your DIMP Program.
3. Efforts should be made by leak inspectors to make sure that leak reports filled out in the field are accurate and depicts the exact condition of pipe.
4. Bad data will result in bad output. You can't believe on the number of incorrectly filled out annual reports that sent to
5. Examples of good leak management spreadsheet tables.

Table 1: Programs Implemented to Address Risk

Risk Mitigation Prorgams	Specific Progrms	Corrosion	Natural Forces	Excavation Damage	Other Outside Force Damage	Material, Weld, or Joint Failure	Equipment	Incorrect Operations	Department Responsible	Gas Standard Referencs
Leak Management Program	Leak Management Program	C*	C	C	C	C	C	C	System Operations	Refer to O&M Plan Sec 5
Replacement Programs	Pipe Replacement Program	P**	P			P			Engineering & Planning	n/a
Damage Prevention Prgrams	Damage Prevention Program			PC					Pipeline Safety & Compliance	Damage Prevention Plan
Public Awarness Program	Public Awarness Program	C	C	PC	C	C	C	C	Communications	Public Awareness Plan
Programs to Address Human Factors	Operator Qualification Program							C	Pipeline Safety & Compliance	Operator Qualification Plan
	Control Room Management						PC	PC	Gas Control	CRM Plan
	Drug & Alcohol Plans							P	Pipeline Safety & Compliance	Drug & Alcohol Plan
	Construction Inspection					P		P	Construction Services	n/a
	O&M Manaul / Gas Standards	PC	PC	PC	PC	PC	PC	PC	Pipeline Safety & Compliance	n/a
Internal Auditing	Internal Operations Audit							P	Pipeline Safety & Compliance	n/a
	Service QA/QC							P	Pipeline Safety & Compliance	n/a
	Leakage QA/QC							P	Pipeline Safety & Compliance	n/a
Facility Inspections and Monitoring	CP System Inspections	P							System Operations	Refer to O&M Plan Sec 8.1
	Atmospheric Corrosion Monitoring	P							System Operations	Refer to O&M Plan Sec 8.2
	Active Corrosion Monitoring	P							System Operations	Refer to O&M Plan Sec 8.3
	Patrolling		P		P				System Operations	Refer to O&M Plan Sec 9.0
	Regulator Station Inspections						PC		System Operations	Refer to O&M Plan Sec 10.2
	Regulator Station Capacity Review						PC		System Operations	Refer to O&M Plan Sec 10.3
	Critical Valve Inspections	C	C	C	C	C	C	C	System Operations	Refer to O&M Plan Sec 11.1
Material Management	Material Management / Standards					P				
	Material Failure Reporting Program					P				
Failure Mitigation Programs	Odorant Monitoring	C	C	C	C	C	C	C	System Operations	Refer to O&M Plan Sec 6.0
	SCADA						C	C	Gas Control	n/a
	Excess Flow Valves				C				Engineering & Planning	Refer to O&M Plan Sec 11.5
	Emergency Planning	C	C	C	C	C	C	C	Field Operations	Emergency Manual
	Relief Valve Capacity Review						C		Engineering & Planning	Refer to O&M Plan Sec 10.3

*Consequencce reduction

**Probability reduction