Why Do We Need It?

The industry focus is prevention, aiming to achieve the goal of zero releases. While operators are taking significant steps towards their objective, they must have a mitigation strategy should a release occur, and the appropriate leak detection program, composed of effective leak detections systems, is a part of successful mitigation.

What Is It?

API RP 1175, Pipeline Leak Detection-Program Management, gives operators valuable guidance on the components needed, with culture and strategy being of utmost importance.

How To Begin?

The instruction in API RP 1175 is flexible and scalable, allowing any pipeline operator the opportunity to implement it. Industry must begin to implement effective LD programs, though, by identifying the gaps between their existing program and what is detailed in the RP. Then, industry must take steps to close these, with necessary reviews at periodic intervals in the program’s life cycle.
WHY DO WE NEED IT?

Leak Detection Programs are essential to minimize releases

Minimize impact of releases on people
Public and employees

Minimize impact of releases on the environment
Animals, plants, waterways, and soil

Minimize impact of releases on infrastructure
Buildings, roads, bridges, other utilities, and pipelines

Driving industry performance toward a goal of zero releases

We need systems, processes, and people to detect problems quickly and resolve them promptly
WHY WAS THIS RP NEEDED?

Pipeline Leak Detection — Program Management

It’s not enough to have a Leak Detection (LD) system

It must be designed and installed appropriately
Various operating situations and conditions

It must be maintained so it works when needed
Reliability, availability, maintainability

It must be tuned so it works as needed
Alarms only and always when it should

People must know what to do along with others
• Roles and responsibilities
• Documented procedures
• Training, testing, and drills

Leadership must support
Effective leadership strategy and supportive culture
Leak Detection (LD) Task Force
Guidance document to address concerns of mandate.

LD Initiatives & Rulemaking Considerations
PHMSA presented to API April 17, 2013, seeking feedback on path forward.

General Accounting Office (GAO) Study
"DOT should: 1) improve incident response data and use these data to evaluate whether to implement a performance-based framework for incident response times and 2) share guidance and information on evaluation approaches to inform operators' decisions."

NTSB Recommendation P-11-10
"Require that all operators of natural gas transmission and distribution pipelines equip their SCADA systems with tools to assist in recognizing and pinpointing the location of leaks, including line breaks; such tools could include real-time leak detection system and appropriately spaced flow and pressure transmitters along covered transmission lines."

Congressional Mandate
"Pipeline Safety, Regulatory Certainty and Job Creation Act of 2011, Section 8 – Leak Detection required to analyze technical, operational, and economic feasibility aspects on leak detection systems..."
WHAT IS IT?

Overview of Leak Detection Program

Pipeline leak detection shall be managed by structuring the various elements of leak detection into a leak detection program.

API RP 1175 divides a Leak Detection (LD) program into the following components:

- LD culture and strategy
- Selection of LD methods
- Performance targets, metrics, and KPIs
- Testing
- Control center procedures for recognition and response
- Alarm management
- Roles, responsibilities and training
- Reliability Centered Maintenance (RCM) for LD equipment
- Overall performance evaluation of the LD program
- Management of change
- Improvement process

API RP 1175 focuses on LD programs, not only LD systems.
Leak Detection Culture

Management support for the Leak Detection (LD) program – visible and ongoing

Employees understand the LD strategy

Recognition and integration of all methods of leak detection

Ongoing support toward improving pipeline leak detection (even if the pipeline operator is meeting leak detection goals)

Promotion and endorsement of teamwork within departments and across the organization

Collaboration between the different entities involved in the LD program

Culture is maintained by having a healthy sense of vulnerability

A strong LD culture promotes prompt action to help reduce the consequences of a leak
Leak Detection Strategy

A written document that promotes the company’s Leak Detection (LD) Culture and transforms it into action

Begins with a gap assessment to identify areas for improvement

Outlines the requirements of the LD program

Sets goals and establishes timelines and responsibility

Describes how the company will meet regulatory requirements and go beyond the minimum to implement industry best practices

Clearly defined roles, responsibilities, policies, procedures, and processes

Involves strategy planning and strategic thinking
Key Leak Detection Strategy Elements

Visible management commitment and leadership

Consistency with company goals and requirements

How goals and requirements should be satisfied

Employment of risk management

Selection of Leak Detection (LD) methods

Integration of all forms of leak detection employed

Consideration of regulatory requirements and industry standards

Ongoing measurement of program’s performance

Training, testing, and operations/procedures

Reporting

Review and approvals

Management of change

Ongoing improvement
Selection of Leak Detection Methods

Perform risk assessment with Leak Detection (LD) focus
Include regulatory requirements and best practices
Identify options for an integrated LD strategy
Consider primary, complementary, and alternative LD
Assess requirements of individual pipelines
Link to LD strategy performance targets
Evaluate best available technologies to meet LD strategy
Evaluating Leak Detection Technology Options

Leak Detection (LD) methodologies and technologies cover a wide range of different approaches and principles.

LD methodologies can be classified into internally-based and externally-based detection principles; They can be continuous or non-continuous.

LD options may depend on the complexity of the pipeline system and its operations.

Evaluate how the options meet your specific pipeline system design and its operations.

It is helpful to review LD selection options with other industry users, vendors, and consultants.
Establish performance targets, metrics, and KPIs for the Leak Detection (LD) systems

- Draw the line between satisfactory and unsatisfactory

Define, then track to ensure goals are met

Revise as part of a continual improvement process

Performance targets are part of the operator’s strategy, and selection process

API RP 1130, Annex C defines these metrics as:

- Sensitivity, reliability, accuracy, and robustness

The metrics may be applied to any LD system

In this RP, the terms “metric” and “KPI” are closely related
Testing

Leak Detection (LD) systems shall be tested when implemented, after significant pipeline changes, and on a regular basis not to exceed five years.

Testing shall include the requirements of API RP 1130 tailored to the specific pipeline LD system implementation.

A detailed, rigorous test plan should be developed and executed using sound engineering judgment.

Some LD systems (such as external) may require system-specific testing methods or detailed checklist evaluations (see API RP 1162, Annex E).

The pipeline operator may also consider methods to test control-room staff and LD response procedures.

Opportunity to improve the culture, procedures, and knowledge levels.