Control Center Procedures for Recognition and Response

Have documented leak response procedures that:

Define the processes, tools, and actions to be used by the pipeline controller to recognize and respond.

Describe action protocol for leak indications or combination of indications

Address reporting and documentation

Ensure safe pipeline restart

Appropriate action based on the process, tools, analysis, and understanding

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ALARM
MANAGEMENT

Alarms happen when they should

Alarms don't happen when they shouldn't

CREDIBILITY

Alarms identify what's wrong

Alarms show why it's wrong

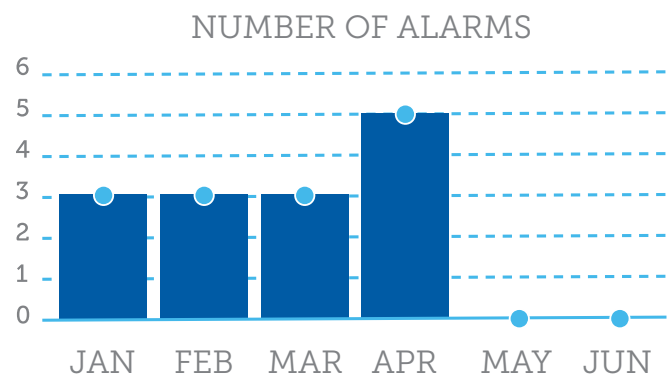**CLARITY**

Periodic Alarm Review:
The process of analyzing alarms with the goal
of increasing confidence in the alarms

Threshold Setting:
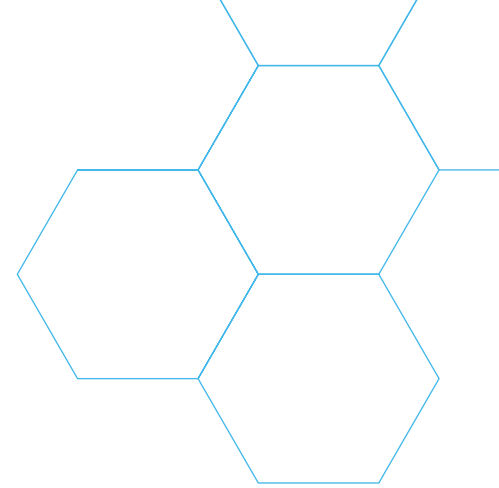Considers if adjustments are needed
to maintain credibility

Tuning:
Adjusting the Leak Detection (LD) System for more
precise functioning or target performance

NUMBER OF ALARMS

Use alarm data to improve credibility and ensure clarity

Alarm review – evaluate the KPI's potential for further
action or improvements

ROLES AND RESPONSIBILITIES

Pipeline Operators Need Descriptions of the Stakeholder's Roles and Responsibilities

Help the stakeholder(s) understand their areas of responsibility and expectation(s) for compliance

STAKEHOLDERS

API RP-1175	Management	Control Center	Analyst	Engineering	IT Group	SCADA Support	Field Operations	Public / Land Owners
Aerial Surveillance	A						R	
Alarm Management & Threshold	A	R, C, I	I	R		R, C, I	I, C	
Culture / Strategy	R, A	I, C	I	C, I	I	I	I	I
Design	A	I, C	I	R		C, I	I	
Emergency Response	A	R, C, I		R		I	R	I
Performance	A	I	C	R, C, I		R, C, I		
Recordkeeping & Reporting	A	R, C, I					R	
Restart Authorization	R, A	C, I		I			C, I	
Leak / Rupture	R, A	R, C, I	C	C, I			R, C, I	
Testing	A	C	C, I			R	R	
Training	A	R	I			R	R	

RESPONSIBILITIES

R: Responsible, A: Accountable, C: Consulted, I: Informed

TRAINING

Training modules may be focused on the roles of the individuals and support the pipeline operator's culture and strategy

Training metrics may include effectiveness measures

Employees should be trained to work together effectively as a team

Effective training has the potential to greatly reduce the consequences of a release

ROLES

LEVEL OF TRAINING	Management	Control Center	Analyst: Leak Detection Staff	Engineering: Support Staff	IT Group	SCADA Support	Field Operations: Field Staff	Field Operations: ROW Staff	Field Operations: Connecting Facilities Staff	Public: External Response	Public: Government Agencies of Regulations	Public: Land Owners / ROW Users
LD Program Operational		X										
LD Program Technical		X	X	X	X	X						
Internal LD Principles		X	X	X		X	X					
External LD Principles		X	X	X			X	X				
SCADA Deviation Alarms		X	X	X		X						
Pipeline Over/Short Calcs		X	X	X		X						
LD Program Awareness		X					X	X	X			
LD Program Basics		X					X	X	X	X	X	X
LD Program Regulations / Standards	X	X	X	X								
LD Program Strategy and Culture	X	X	X	X	X	X	X	X			X	
LD Program Management	X	X	X									

Reliability Centered Maintenance (RCM) for Leak Detection Equipment

Ensure that all components of the Leak Detection (LD) system and its supporting infrastructure are designed for reliability and maintained appropriately

Discuss the LD system and supporting components of the maintenance program with the users of the LD system and/or with vendors

Integrate the LD system components into the pipeline operator's maintenance management system

Develop processes for scheduled and unscheduled maintenance

Identify critical backup and redundancy components

Conduct reliability assessments; evaluate against metrics

Review failure mechanisms; understand probabilities of failure

Ensure people have tools, training/qualification, and time

Maintenance should include field instruments, communications, and software, etc.

Overall Performance Evaluation of the Leak Detection Program

Capture noteworthy results from operation of the Leak Detection (LD) program

Compare company and industry performance

Report the results to management annually on the overall performance monitoring

Internally, evaluate all performance aspects of API RP 1175

Externally, review leak detection industry information, including incident reports, databases, PHMSA guidance, activities in the pipeline industry, and changes to regulations

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Defining the KPIs, collecting the data, reporting out, and acting on the data

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MANAGEMENT OF CHANGE

Implementing This Program Will Require Some Change for Every Operator. It's Essential:

• To define scope of changes
• To review carefully and approve appropriately
• To include testing processes, procedures, and training
• To communicate to all affected stakeholders; controllers, management, field operations, others
• To complete documentation

Pipeline operators shall apply their formal Management of Change (MOC) process as required in 49 CFR Part 195.446(f).

The MOC process should include the requirements of API RP 1167, Section 14 and API RP 1160, Section 13.

The Process Should Include:

• Scope of the change(s)
• Clearly defined roles and approval responsibilities
   – Include stakeholders in planning
• Requirements for evaluating changes (e.g. risk assessment)
• Testing and test methods (as needed)
• Documentation plan
• Notification requirements (Including controllers and shift workers)
• Training

Special Situations:

• Emergencies
• Short-term changes

IMPROVEMENT PLANNING AND PROCESS

Identify and Define Opportunities to Improve Any Part of the Leak Detection Program on a Regular Basis

Define the tasks needed to retain the freshness of the Leak Detection (LD) program

The opportunities should be planned, budgeted, and scheduled

Assign clear accountability for each opportunity and track to completion

LD program strategy should be reviewed annually

The Process Should:

Be performed periodically to define, plan for, and track to completion improvements that are needed to meet existing or new LD program goals

Report results of improvements undertaken and/or underway in an annual report or as part of a pipeline operator's integrity management plan annual report

Identify and define opportunities to improve any part of the LD program

The opportunities should be planned (resources budgeted and scheduled)

Consider who is responsible

When the opportunities will be completed

Tracked to completion

Updated and improved on a regular basis

**The results of the improvement process will be a better LD program**

HOW TO BEGIN?

Conducting Gap Assessments

A key step in implementing API RP 1175 is assessing the gap between the operator's current Leak Detection (LD) program and the components of the RP.

Each operator needs to perform a gap assessment to determine whether all components of API RP 1175 are met and documented in their LD program. API has a tool available for this use.

Photo courtesy of
TransCanada

GAP ASSESSMENTS
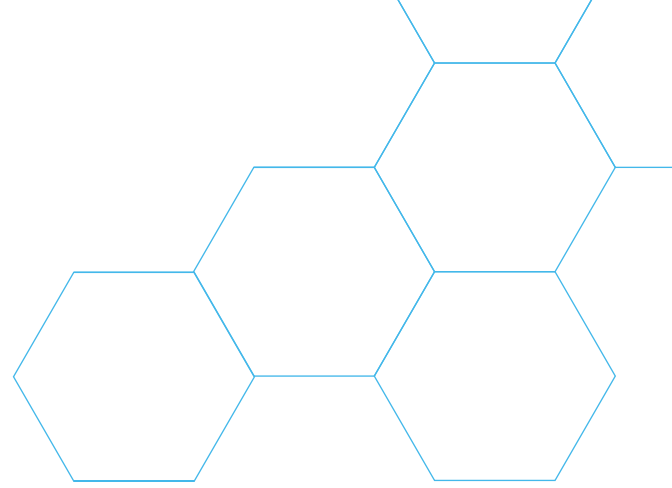
Timeline for Operators:

Assess the operator's current Leak Detection (LD) program vs. API RP 1175 in Year 1.

Respond to the API survey to report the operator's progress; API will protect confidentiality and report aggregate industry benchmarking progress.

Implement operator action plans.

Reassess operator's LD program vs. API RP 1175 in Year 2 to measure progress.

To Perform Gap Assessment

Understand the specific obligations of API RP 1175. The use of the Gap Assessment Tool is not a replacement for understanding API RP 1175, but serves as a helpful supplement.

Identify where API RP 1175 components are not met by the operator's current practices and procedures.

Prioritize those gaps for improvement and develop an action plan to close the gaps.

Assess the quality of the operator's current practices and procedures, and identify any opportunities to improve the operator's LD program.

To download the Gap Assessment Tool, go to www.pipelinesms.org/index.php/moresystems/#leak-detection-management

Rotate and follow along with the example on the following pages.
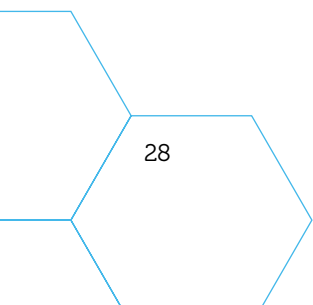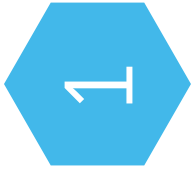
For Each "Informational Item" (Yellow Boxes)

Input an "X" for "Deployed," "Partially Deployed," "Not Deployed," or "N/A"

The items checked as "Not Deployed" and "Partially Deployed" should guide you to better answer the "Primary Requirements" and to build your company's action plan

Step 1 • Check Informational Items

Component/ Sub-components	RP 1175 Reference	Informational Items	Check List				Description of Potential Action(s) to Close Gaps	Responsible Party
			Deployed	Partially Deployed	Not Deployed	N/A		
			2	2	0	0		
		- The testing process is rigorous and planned and executed using sound engineering and technical judgement	X					
		- The requirements of API 1130 are tailored to accommodate the operator's LDS and its assets	X					
		- The testing process may use actual leaks in lieu of periodic testing, evaluation testing, and validation testing		X				
		- Detailed testing plans including purpose, methods, process, procedures, checklists, testing of control, and room staff		X				

2

For Each "Primary Requirement" (Green Boxes)

Assess the gap (the larger the number, the larger the gap) by selecting one option:

Gap Score of "1" if requirement is met, documented, and part of the company's culture

Gap Score of "25" if requirement is clearly documented but not consistently done

Gap Score of "50" if requirement is partially met but not sufficiently documented

Gap Score of "75" if requirement is generally not met and only partially documented

Gap Score of "100" if requirement is not met or documented

Step 2 • Evaluate Primary Requirements

Component/Sub-components	RP 1175 Reference	Primary Requirements	Gap Score
Testing	**8**		
		LDSs used in an LDP shall be tested when implemented and on a regular basis not to exceed five (5) years or when there has been a significant change in the pipeline's operation or a physical change in the configuration.	50
		The testing process shall include the requirements of LDS testing as outlined in API 1130.	1

3

Fill Out Action Plans (Blue Boxes)

Enter improvement action plan for each Primary Requirement in columns E through H (blue boxes) that has a gap

If the personnel performing the Gap Assessment are very familiar with the RP, the informational requirements checklist may be skipped

The tool is fit for purpose and Operators can use it as it bests fits their needs

Step 3

• Fill Out Action Plan

| Who performed the assessment?	Score Justification		Description of Potential Action(s) to Close Gaps	Responsible Party
Marieli Romero, Quality and Compliance Engineer (LDE &OCC)	Testing guidelines are documented but the testing has not been performed within the timeframe		Improve testing documentation Improve governance around testing timelines	LD Technology Initiatives & BD Support Team

Gap Assessment Tool Results Table

API will request just this information each year to understand industry's progress and ensure implementation execution along with continuous improvement; API will protect confidentiality and only report aggregate values.

Component Weight	Component # (RP 1175 Reference)	Components		Gap Score (from Tabs)
18%	4 & 5	Leak Detection Culture and Strategy	🔴	56
16%	6	Selection of Leak Detection Methods	🟡	47
5%	7	Performance Targets, Metrics and KPI	🔴	63
5%	8	Testing	🟢	1
12%	9	Control Center Procedures, Recognition and Response	🟡	11
7%	10	Alarm Management	🟡	13
9%	11	Roles, Responsibilities and Training	🟡	50
6%	12	Reliability Centered Maintenance for LD Equipment	🟡	25
7%	13	Overall Performance Evaluation of the LDP	🔴	75
5%	14	Management of Change	🟢	1
10%	15	Improvement Process	🔴	63
		Total Gap Score	🟡	**41**

Total Gap Score	Description
1	RP 1175 Requirements are met, documented and part of company culture
2 - 25	RP 1175 Requirements are clearly documented but not consistently done
26 - 50	RP 1175 Requirements are partially met but not sufficiently documented
51 - 75	RP 1175 Requirements are generally not met and only partially documented
76 - 100	RP 1175 Requirements are not met or documented

Gap Scores Overview

A simple spider graph is available after the Gap Assessment Tool is complete; gives a snapshot of where each company stands, with the goal being all scores in the middle
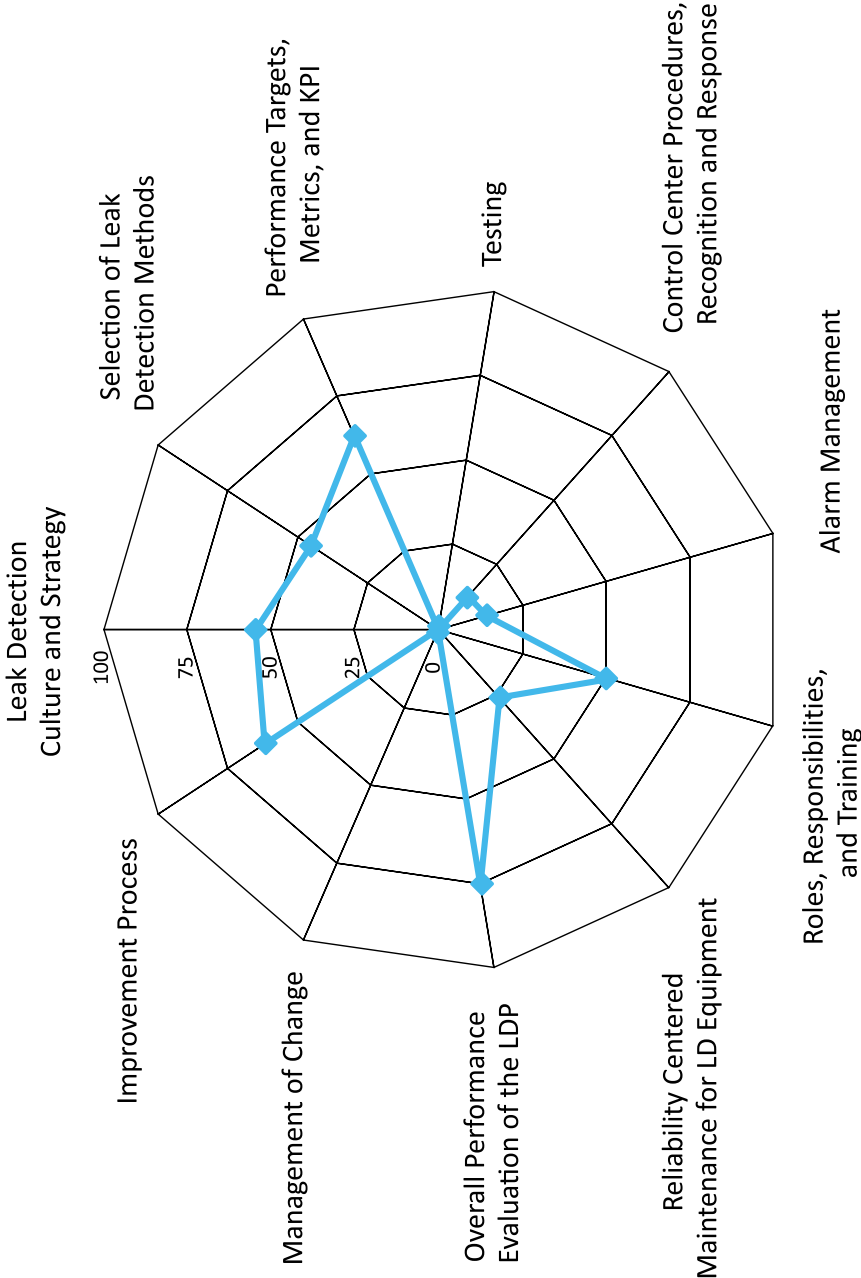
For more information on Leak Detection Implementation, visit: http://www.pipelinesms.org/index.php/moresystems/#leak-detection-management

To order API RP 1175, go to API's Publications Store, http://www.techstreet.com/api

Contact PipelineLDP@api.org with any questions.