

Readout Report: Working Group #3A Leak Detection for Pipelines

Working Group Leaders

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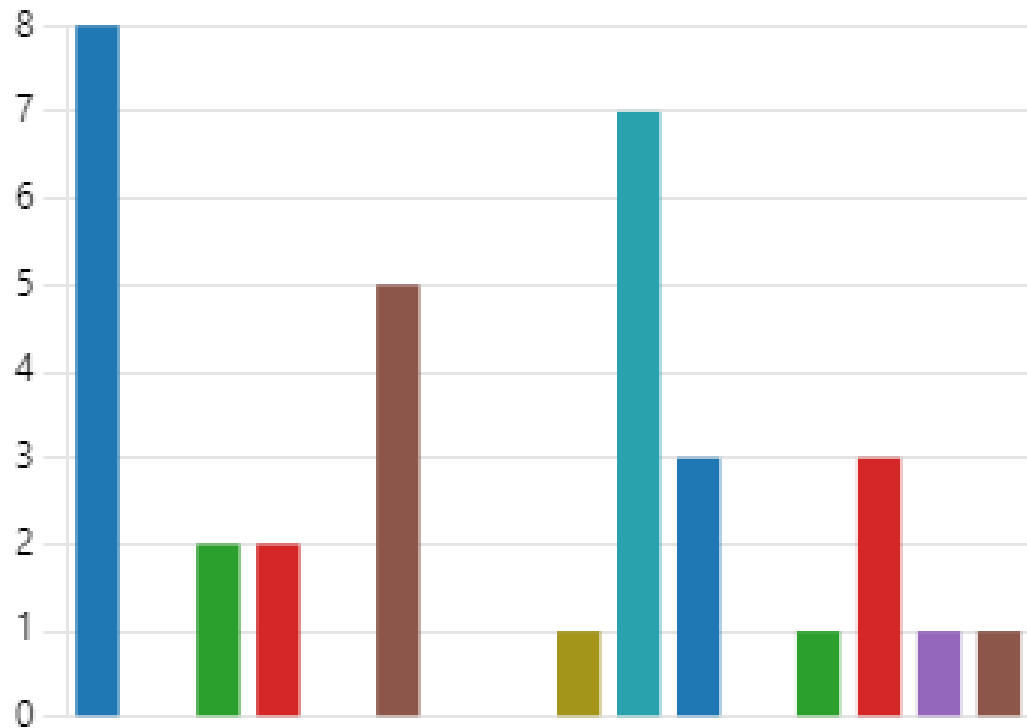
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Working Group Participation by Industry

- Academia 8
 - Aviation 0
 - Consultant 2
 - Government 2
 - Laboratory 0
 - Leak Detection 5
 - Locating/Mapping 0
 - Marketing 0
 - Pipeline Association 1
 - Pipeline/Facility Operator 7
 - Researcher 3
 - Codes and Standards 0
 - Service Provider 1
 - Technology Development 3
 - General Public 1
 - Other 1
- Other: Satellite intelligence



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Top 4 Identified R&D Gaps

NOTE: **Red** text indicates gaps with a possible academic focus.

Gap #1 – Lack of Guidance for Technology Selection (Technology Development & General Knowledge)

Gap #2 – Leak Detection Accuracy (Technology Development)

Gap #3 – Improved Leak Detection (Technology Development)

Gap #4 – Synthesize Data to Inform Decisions (General Knowledge)

Technology operates in all types of operating environments (internal and external to the pipe, above and underground), and addresses all infrastructure types (gathering, transmission, distribution) for both liquid and gas.

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Gap #1 Lack of Guidance for Technology Selection

Title: Guidance for Technology Selection

Main Objective: Provides consistent guidance for operators to select optimal leak detection technologies based on their assets and operating environment. Will include a process for operators to evaluate new or alternate technologies performance.

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New or Improved Technology

- a. Are there any functionality and/or performance requirements?
 - i. Understand technology parameters and identify equivalence testing for alternate technologies based on assets being evaluated
- b. Targeted Timeframe & Estimated Cost: 12-18 months, \$250K -\$500K (1 liquid & 1 gas project, potentially \$250-500K each)

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Gap #2 Leak Detection Accuracy

Title: Pinpointing Leaks/ Detecting Leaks (*to minimize excavation*)

Main Objective: Pinpointing/detecting leaks without barholing/excavation through use of innovation, existing technology, existing data, AI, or alternative methods.

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New or Improved Technology

- a. Are there any functionality and/or performance requirements?
 - i. Identify exact component of system
 - ii. Confirmed leak, not a leak indication
 - iii. Aligns with federal requirements
- b. Does the gap address related consensus standards? [GPTC Guidance](#)
- c. Targeted Timeframe & Estimated Cost: [24-36 months, \\$2M \(per project\)](#)

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Gap #3 Improved Leak Detection

Title: Sensor Development to enhance leak detection

Main Objective: Develop or improve sensors to enhance pipeline and environmental safety. Enhancements to sensors could include increased monitoring, precision and accuracy, coverage and resolution, quantity of collected data, or cost.

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New or Improved Technology

- a. Are there any functionality and/or performance requirements?
 - i. Safety and environmental, address both
- b. Does the gap address related consensus standards? [RP 1175](#)
- c. What technical or regulatory roadblocks or barriers prevent the technology deployment?
 - i. Improve performance and reduce cost to address existing standards
- d. Targeted Timeframe & Estimated Cost: [18-36 months, \\$1-2M \(per project\)](#)

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Gap #4 Synthesize Data to Inform Decisions

Title: Improving Modeling and Data Analytics to Minimize System Leaks

Main Objective: To create a framework that integrates information about system composition, performance, and monitoring to proactively identify potential leaks or emissions.

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New or Improved Technology/Knowledge

- a. Are there any functionality and/or performance requirements?
 - i. Inform risk-based decision making
- b. What technical details or scope items are necessary and recommended?
 - i. Integrate physics-informed models
- c. Does the gap address any regulatory, congressional, or NTSB drivers? [LDAR NPRM, 195.444](#)
- d. What technical or regulatory roadblocks or barriers prevent the technology deployment?
 - i. Availability of data
 - ii. Infrastructure requirements of machine-learning systems
- e. Targeted Timeframe & Estimated Cost: [12-36 months, \\$500K-\\$2M](#)

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Thank You!/Questions?

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