

the Energy to Lead

Operations Technology Development (OTD) Research

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Panel on Leak Detection/Mitigation & Storage
Government/Industry Pipeline R&D Forum

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Topics for Discussion

- > Gas distribution/transmission leak survey
 - Technologies to detect leaks
 - Technology advances over last two decades
 - Gaps and future improvements

Ground-level leaks of a few ppms
Low cost
Easy to operate

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Technologies

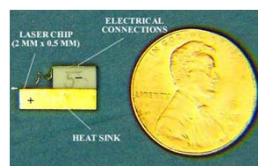
- > Flame Ionization Detector (FID)
 - Walking and mobile leak survey
- > Combustible Gas Indicator (CGI)
 - Leak pinpointing/centering
- > Optical Methane Detector (OMD)
 - Mobile leak survey
- > Portable Methane Detector (PMD)
 - Walking leak survey/pinpointing
- > IR Ethane Detector (IRed)
 - Discriminate natural gas leak from other sources of methane

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Laser-based Remote Leak Survey

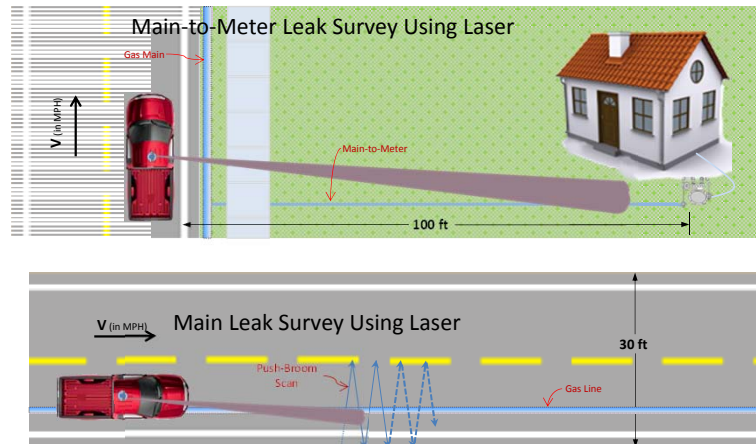
- > Improve leak survey operations for gas distribution mains/ services and transmission pipelines
- > Why lasers?
 - Improvements in semiconductor based lasers at 3.315 microns
 - Significantly more absorption of methane, increasing low level detection capabilities
 - Simplicity and ease of operation
 - Solid-state design
 - Inexpensive to manufacture
 - Increased data processing speed
 - No influence of wind directions
 - Ground and aerial operations for remote leak survey



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Remote Leak Survey Technology: Concept

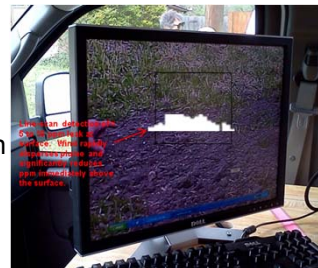


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Challenges and Gaps

- > Accurately locate leaks at ground level
 - Very limited research
 - System on the moving platform (20 mph) for leak survey
 - > Test and demonstrate in field operations
 - Accuracy (plume location and concentration)
 - Real-time operation
 - Determine plume width
 - Cost-effectiveness
 - Real-time alert and prioritization



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Challenges and Gaps (cont.)

- > Airborne/UAV application to detect/locate transmission pipe line leaks
 - Improve laser power
 - Extend range
 - Enhance detection
 - Improve location accuracy
 - Boost processing for real-time application
- > Real-time leak plume imaging capabilities

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Summary

- > Development/improvements will assist core industry objectives
 - Improve leak survey operations
 - Contribute to survey efficiency and improve safety
 - Integrally support Part 192 requirements
 - Introduce rapid threat assessment & reporting capabilities
 - Accelerate availability of next generation leak survey equipment to the industry

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Thank you.

Questions?



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