

# **Working Group #1**

# **Threat Prevention**

Brian Weeks  
Gweneyette Broussard  
James Merritt  
Patrick Landon

# Attendance Breakdown

Approximate total attendance	34
Federal Regulators	3
State Regulators	0
International Regulators	0
Service Providers	13
Pipeline Operators	10
Standard Developing Organizations	0
Researchers	3
Academics	1
Other	4

# Top 5 Identified R&D Gaps

**Gap #1 – Threat / Change Detection of ROW that might result in Damage.**

**Knowledge/Technology**

- Aerial and ground platform
- Manned / unmanned aerial
- societal issues need to be addressed

**Gap #2 – Need improvements in plastic pipe location techniques. Technology**

- Systems for new pipe
- Systems for existing pipe
- Training for locator operators

**Gap #3 – Need better method of documenting pipe materials installed in the ground.**

**Knowledge/ Standards/Technology.**

- International suppliers don't conform to US standards
- Improve methods for collecting information on pipe in place – includes Transmission, Distribution, and Gathering
- Pipe components standards not currently recognized
- Need consistent data collection across the industry

**Gap #4 – Common Industry database Knowledge / Standards**

- One source for information on all pipelines
- Common terminology for threats
- Resource for training, regulators, and pipeline operators
- Consolidate available data for industry use in standard format

**Gap #5 – Need a location device with multi-utility capability Technology**

- Recognize specific pipe being searched (multiple pipelines in ROW)
- Alert operator of presence and location of other utilities (Telco, water, etc)

# Associated Details

## (Gap #1)

**Gap #1 – Threat / Change Detection of ROW that might result in Damage.**

### **Knowledge/Technology**

#### *New or Improved Technology*

- a. What pipeline type(s) does the technology target? All
- b. What operating environment(s) would the technology operate? All
- c. What are any functionality and or performance requirements? Real-time monitoring and multi-utility capable
- d. What road blocks or barriers prevent the technology deployment? Level of autonomy, Automatic change recognition, frequency of inspection, societal issues, cost.
- e. What are anticipated targets or timeframes to complete this research? 3-5 years plus continual improvements

#### *Creation and Dissemination of General Knowledge*

- a. What pipeline type(s) does the new knowledge target? All
- b. What operating environment(s) does the new knowledge target? All
- c. What technical details are necessary and recommended? Identify requirements and performance parameters (false positives, etc)
- d. Can any targets or timeframes be identified to complete this research? 3-5 years, plus continual improvements

# Associated Details

## (Gap #2)

**Gap #2 – Need improvements in plastic pipe location techniques. Technology**

### 1. New or Improved Technology

- a. What pipeline type(s) does the technology target? Non-metallic
- b. What operating environment(s) would the technology operate? all
- c. What are any functionality and or performance requirements? Requirements and performance parameters (establish tolerance for false positives) design for life of pipe, soil types.
- d. What road blocks or barriers prevent the technology deployment? One solution not applicable for all (new vs used)
- e. What are anticipated targets or timeframes to complete this research? Deliverables every year – 1 year for new pipe location tech.

# Associated Details

## (Gap #3)

**Gap #3 – Need better method of documenting pipe materials installed in the ground. Knowledge/ Standards**

### New or Revised Consensus Standards (standards, guidelines or recommend practices)

- a. Does the need address safety or specification related consensus standards? Safety related and construction specs.
- b. Which standard developing organization and which consensus standard name and number is affected?  
Multiple, (ASTM, API, ASME, etc)
- c. What pipeline type(s) does the consensus standard target? all
- d. What operating environment(s) does the consensus standard target? All
- e. What technical details are necessary and recommended? Centralized Data Repository,  
Easy way to input data, overcome proprietary issues
- f. Can any targets or timeframes be identified to complete this research? Early framework 2-3 years.  
Populating the database is multi-year

### Creation and Dissemination of General Knowledge

- a. What pipeline type(s) does the new knowledge target? All
- b. What operating environment(s) does the new knowledge target? All
- c. What technical details are necessary and recommended? Centralized Data Repository,  
Easy way to input data, overcome proprietary issues
- d. Can any targets or timeframes be identified to complete this research? 2-3 years for early framework.  
Populating the database is multi-year

# Associated Details

## (Gap #4)

### Gap #4 – Common Industry database **Knowledge / Standards**

#### New or Revised Consensus Standards (standards, guidelines or recommend practices)

- a. Does the need address safety or specification related consensus standards? Safety related and construction specs.
- b. Which standard developing organization and which consensus standard name and number is affected?  
Multiple, (ASTM, API, ASME, etc)
- c. What pipeline type(s) does the consensus standard target? all
- d. What operating environment(s) does the consensus standard target? All
- e. What technical details are necessary and recommended? Centralized Data Repository,  
Easy way to input data, overcome proprietary issues
- f. Can any targets or timeframes be identified to complete this research? Early framework 2-3 years.  
Populating the database is multi-year

#### Creation and Dissemination of General Knowledge

- a. What pipeline type(s) does the new knowledge target? All
- b. What operating environment(s) does the new knowledge target? All
- c. What technical details are necessary and recommended? Centralized Data Repository,  
Easy way to input data, overcome proprietary issues
- d. Can any targets or timeframes be identified to complete this research? 2-3 years for early framework.  
Populating the database is multi-year

# Associated Details

## (Gap #5)

**Gap #5 – Need a location device with multi-utility capability **Technology****

### New or Improved Technology

- a. What pipeline type(s) does the technology target? All utilities
- b. What operating environment(s) would the technology operate? Before, during and after excavation
- c. What are any functionality and or performance requirements?  
Needs ability to provide meaning data in a congested area through various soil conditions
- d. What road blocks or barriers prevent the technology deployment? Limitations exist from current imaging technology
- e. What are anticipated targets or timeframes to complete this research? 3-5 years for development.  
Study to be performed to assess current technologies in one year



# Extra Slide to Address Other Items if Applicable

## Possible University Project Opportunities (suggestions from one or more WG attendees)

- Threat Detection from aerial platforms – specific issues not being addressed by current research / gap analysis
- Software development & tools to analyze/data mine information
- Industry Satellite
- Facilitate transfer of technologies from other industries
- Impact of land movement on pipe and its impact on high-impact areas
- ROW encroachment/maintenance surveillance technique improvements
- Multi-utility pipeline locator (one tool to locate multiple pipelines / utilities)
- Pipeline ROW markers innovations

# Additional Identified Gaps

- Lack of enforcement (all pipe but biggest impact on Distribution)
- Pipeline industry needs its own satellite
- Excavator training certification (mandatory for public and professional equipment operators)
- Software tools needed to analyze / data mine data
- Cost benefit models are needed for R&D projects (early stage)
- The pipeline industry needs more resources for testing and demonstration of new technologies
- The pipeline industry needs better means to coordinate with other industries (rail, Telco, Defense, etc) on transferring technologies that are currently used for other applications into the pipeline industry.
- More research is needed to determine long-term properties of plastic pipe
- More understanding needed on impact of land movement on pipe located in areas of “high consequence” such as urban areas.
- Need better tools to measure / anticipate loss of ground cover
- Need better monitoring of ROW encroachment
- Low stress calculations (for above-ground traffic, weight-bearing activities)
- Pipeline markers innovations