HPIR Class
Composite Pipeline System

Prevention First – 24 October 2012
Today’s Discussion Points

- Traditional Pipeline Replacement Issues
  - Rural & Urban Locations
  - Environmental Impact

- Latest Development in Composite Pipe Technology
  - Environmental and Safety Benefits
  - Smart Pipe®
  - Examples
Urban Impact
Urban Safety
Rural Impact
Resource Intensive

- Permitting
  - inc. Environmental Impact Studies
- Labor & Equipment
- Scheduling
- Costs
  - Engineering
  - Labor & Equipment
  - Operational Downtime
  - Trenching
HPIR Class Composite Pipeline Development

- Robust R&D Program
- Extensive Testing
- ASTM F2896-11

Specifically to address issues associated with replacing old/corroded pipelines in difficult or impossible to access locations, including DoT Class 3 & 4 Pipelines
**Additional Benefits of Composite Trenchless Technology**

- Superior properties compared to steel
- Less maintenance costs (non-metallic)
- Less frequent cleaning
- Higher resistance to 3rd party damage & earthquakes
- Increased through-put as a result of higher operating pressures and reduced friction
- Shorter project turnaround time
HPIR Class Composite Pipeline Development

- Large Diameter Pipelines
  - >6” (Currently up to 16” in long continuous segments)
- High Pressures
  - up to 1,000 psi
- Long Replacement Lengths
  - up to several miles in one continuous segment

Additional Features
- Portable Factory
- Integrated Fiber Optics for Real Time Leak Detection and Movement Monitoring
The fiber *is* the sensor

Measurements all along a 10km fiber = 10,000 sensors

Standard multi- or single-mode optical fiber

Backscattered light provides measurement point every 1m

1-10m pulse of light
Smart Pipe®
Portable Factory
ASTM Standard

Standard F2896-11 Issued November 2011

“STANDARD SPECIFICATION FOR REINFORCED POLYETHYLENE COMPOSITE PIPE FOR THE TRANSPORT OF OIL AND GAS AND HAZARDOUS LIQUIDS”
Issued State Waivers

Illinois

California

Texas
Four River Crossings
XPL-306-245
Difficult Excavation Points
Conclusion

HPIR Class composite pipelines offer a better alternative to steel for replacing old/corroded lines due to their:

- Superior performance properties
- Less maintenance costs due to corrosion
- Ability to be inserted into old pipelines in long lengths
- Minimal environmental impact along pipeline right-of-way
- Ability to address high pressure, large diameter applications
- Ability to continually monitor the pipeline for leaks, damage, etc.
IN AREAS OF EXTREME ENVIRONMENTAL SENSITIVITY, SMART PIPE® SHOULD BE CONSIDERED TO PROVIDE A “DOUBLE BARRIER” IN EXISTING OR NEW PIPELINES CROSSING RIVERS, BAYS, BEACHES, ETC.

“PREVENTION FIRST”
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