

pipeline connection

FOR EMERGENCY RESPONDERS

fall 2018

York County Natural Gas Authority Conducts Simulated Pipeline Incident and Emergency Response Training

A careless contractor, talking on a cell phone while operating a backhoe, strikes a gas main. He didn't bother to call 811 as required by law to have the utility located, and now he's injured. Gas is blowing and emergency responders are dispatched.



That's the scenario faced by Rock Hill Fire and Police Departments during a simulation conducted on October 9, 2018, as part of York County Natural Gas Authority's annual emergency responder liaison event. The evening's program began with the simulation which included response by the city's first responders and emergency response personnel from YCNGA. After executing a rescue and securing the scene, RHFD provided a charged hose line and safety coverage for the company crew that isolated the leaking main through a newly acquired steel gas line squeeze off tool. A debrief was conducted immediately following the demonstration and included a question and answer session.

Following the simulated pipeline incident, a training session was conducted for the attendees on pipeline operations and emergency response. In addition to basic properties of natural gas and the fundamentals of pipeline mechanics, emergency response recommendations were presented.



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Pipeline Inspections Using "Smart Pigs"

As with most industries, technology in the pipeline sector has developed at a rapid pace in recent years. No area has seen more advancements than that of pipeline assessments using intelligent inspection tools commonly referred to as "smart pigs". Not to be confused with intellectual swine, a smart pig is a mechanical device inserted into a natural gas or hazardous liquid transmission line for the purpose of identifying imperfections that require investigation, and in some cases repair. Once inserted into the pipeline, these tools, traveling about five miles per hour or less, use a variety of sensors that detect damage from outside forces, dents, metal loss, and corrosion. After the tool is recovered in a "pig receiver," information is downloaded and analyzed to determine if further inspections of the pipeline section are warranted. Compared to earlier versions that provided limited data, current smart pigs can deliver three dimensional depictions of the pipeline and very accurate measurements of any imperfections.

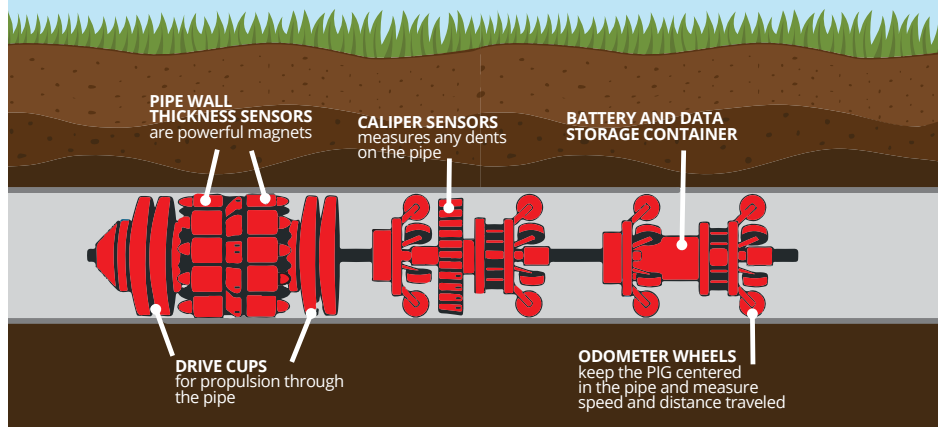
Using GPS technology, the smart pig is tracked and markers are placed along the route logging precise measurement points that are correlated with any discrepancy data. Once the information from the pig run is assessed and analyzed, a decision may be made to excavate the pipeline in a spot for visual inspection. The GPS data helps to provide an accurate location to dig. After excavation the condition of the pipeline is scrutinized and any coating or pipe repairs implemented.

In November and December, York County Natural Gas Authority, the operator of the Patriots Energy Group (PEG) Pipeline, will be conducting a smart pig project on natural gas transmission lines. Inspections of this nature are regularly conducted as part of the Authority's commitment to safety.

How smart PIGs keep pipelines safe

Smart PIGs are probes that clean and inspect pipelines to prevent leaks and environmental damage. In a natural gas line, PIGs are powered by natural gas pressure pushing them onward. Outfitted with computers, GPS, sensors and magnets that transmit data to engineers, smart PIGs can pinpoint any sign of trouble.

- **What they look for:** stress, corrosion, gouges, dents and cracks.
- **Why are they called PIGs?** in addition to being an acronym for Pipeline Inspection Gauges, they also make a squealing noise when running through a pipe.
- **How big are they?** When PIGs are used to inspect natural gas lines, they can be up to 18 feet long and can inspect pipes that are up to 30 inches in diameter.



Pig Launcher



Analysis of a Response to a Natural Gas Incident

Several years ago, in another part of the country, an incident occurred at a strip mall involving a release of natural gas resulting in a subsequent explosion. The incident, investigated by federal authorities, revealed the following:

- A gas company employee was dispatched to a reported underground gas leak. Approximately 15 minutes later, an engine company, EMS unit, and battalion chief arrived on scene.
- Shortly after, a natural gas leak was discovered near the rear exterior corner of the structure.
- An evacuation of the building was ordered and executed.
- Near the business that had reported the gas leak, a fire officer observed a fire along the roof line.
- Fire crews deployed a hand line.
- Simultaneously another fire officer observed an electrical meter on fire at the exterior of the building.
- Suspecting an imminent explosion an evacuation order was issued.
- An explosion occurred followed by “mayday” calls.
- Several firefighters and the gas company employee were injured as a result of the explosion.



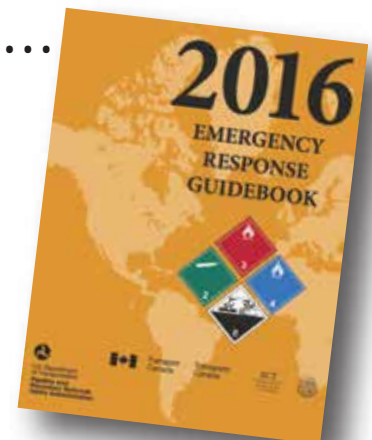
IMPORTANT TAKE-AWAYS

- **Scene Size-Up:**
conducting a thorough scene size-up early in the response is critical for scene safety. Avoid tunnel vision and engage a Safety Officer early in the response.
- **Ignition Sources:**
Eliminate possible ignition sources as quickly as possible! Think outside of the box – when electrical power is cut to the structure, will a generator kick in? If so, where is the generator in proximity to the gas leak? Are all responders’ communication devices intrinsically safe?
- **Understand the properties of flammable gases:**
Natural gas is lighter than air. Propane is typically heavier than air and can accumulate in low lying areas. Flammable ranges, auto-ignition temperatures and other physical properties vary by product. Review these characteristics and be familiar with the products transported/ used in the jurisdiction.
- **Evacuations:**
the need to evacuate was identified early in the incident which probably led to no civilian injuries. Life safety is always the top priority!
- **Combustible Gas Monitors:**
If you have monitoring equipment, such as combustible gas indicators or “CGI’s”, when was the last time they were calibrated? Are responders trained on how to use them and do they understand what the device is indicating?
- **Coordinate and train with pipeline operator personnel:**
Pipeline operators are the best source for information on the products they transport and the proper way to respond to pipeline related emergencies.

FYI – CONSULT THE ERG FOR PIPELINE SAFETY INFO

The U.S. Department of Transportation Emergency Response Guidebook (commonly referred to as the “ERG” contains pipeline safety information. Published every four years, the ERG is intended to be used during the initial phase of a hazardous materials incident. Distributed to public safety agencies in hard copy, the ERG is also available as a PDF and can be found at: <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/ERG2016.pdf>

Pages 20 through 25 of the ERG contain general pipeline safety information. For general product related response information, the response guides can be consulted. For specific information regarding any hazardous material, the applicable Safety Data Sheet (SDS) should be consulted.



Natural Gas is **NOT** the Same as Propane

We talk about propane and natural gas almost as if they're interchangeable. While both fuels are similar, they are not identical and are most certainly not interchangeable. Both can be used for cooking, heating, and powering vehicles for transport, but their sources, physical makeup, and associated costs differ greatly.

Properties of Natural Gas

- .07 Vapor Density
- 30% lighter than air
- Will rise and collect near the ceiling

Natural Gas
.6

AIR
1

Propane
1.56

Natural Gas Is... **Lighter** than air

Natural gas is 30% lighter than air. The specific gravity of natural gas is approximately 0.6 and .65, depending on the composition of the gas. Since the specific gravity of air is 1.00 by definition, this means that natural gas is lighter than air. This property of natural gas means that if a leak occurs in an open area, the gas will easily vent and dissipate into the atmosphere and, when enclosed, it will rise to the ceiling and will fill the room from top to bottom displacing oxygen.

Natural gas is NOT toxic, but can be an asphyxiant. The flammability range of natural gas is approximately between 5%-15% gas-in-air mixture, and is usually expressed in Lower Explosion Limits (LEL) and Upper Explosion Limits (UEL).

Propane Is... **HEAVIER** than air

Don't confuse natural gas with propane. The specific gravity of propane vapor is approximately 1.50 to 1.56, which is heavier than air. This property makes vapors collect near the ground and move into low-lying areas and underground structures in the absence of air movement. The dissipation of propane gas leakage into the atmosphere is primarily through diffusion and the action of air movement as propane vapor is diluted. The flammability range of propane is approximately 2% to 10% gas-in-air.



Simulated Pipeline Incident...

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While pipeline emergencies are rare, they can occur. This exercise demonstrated the complexities associated with response to a damaged gas main and the importance of a coordinated response to ensure the highest level of safety. York County Natural Gas Authority is committed to providing awareness and training related to pipeline operations and emergency response to our public safety partners. If you would like to schedule training please contact us.

CONTACT



INFO

Patriots Energy Group

Emergency (888) 609-9858
Website patriotsenergy.com

York County Natural Gas Authority

Emergency (866) 201-1001
Non-Emergency (803) 323-5304
Website ycnga.com

Chester County Natural Gas Authority

Non-Emergency (803) 385-3157
Website chestergas.com

Lancaster County Natural Gas Authority

Non-Emergency (803) 285-2045
Website lcngasc.com

SC811

Toll-free (888) 721-7877
Website SC811.com

National Pipeline System

npms.phmsa.dot.gov

USDOT Pipeline Safety

[primis.phmsa.dot.gov/comm/
EmergencyOfficials.htm](http://primis.phmsa.dot.gov/comm/EmergencyOfficials.htm)

Training Opportunities for your Department

York County Natural Gas Authority personnel are available to provide training to local emergency responders on how to safely handle a pipeline emergency. Please feel free to contact us for more information or to schedule a training session.

Glen Boatwright
Vice President of
Regulatory Compliance
and System Planning



York County Natural Gas Authority

C (803) 323-5439

M (803) 360-9890

E glen.boatwright@ycnga.com