Pipeline Emergency Preparedness & Training: Case Study of Westmoreland County, PA Pipeline Rupture


Photo courtesy of Darrel Sapp/ Pittsburgh Post-Gazette

At 8:15 a.m. on the morning of April 29, 2016, a 30-inch transmission pipeline carrying natural gas exploded in Salem, Pennsylvania in Westmoreland County. The blast and fire from the explosion was seen for miles- leaving one man badly burned and damaging two nearby homes, surrounding terrain, and a local road. Local first responders reported that the injured resident's burns were not from coming in contact with the actual fire itself, but a result of the intense heat that engulfed his home.

As emergency responders arrived at the scene of the explosion, they called for immediate evacuation of a dozen homes within a quarter-mile radius of the blast, as well as closure of Route 819. By 9:22 a.m. the gas company cut the source of the gas off to the area, and with four parallel pipelines in the immediate vicinity of the explosion, the company decided it was prudent to release gas on those pipelines "out of an abundance of caution". Once the gas was shut-off by company personnel the residual gas continued to burn, but the fire was under control. Westmoreland County has a very deep infrastructure of natural gas pipelines and facilities, including a compressor station less than 2 miles from the explosion and a 39 square-mile underground natural gas storage field. In addition to first responders and company personnel, the Pennsylvania Department of Environmental Protection was on-scene to monitor the nearby gas wells during the incident.

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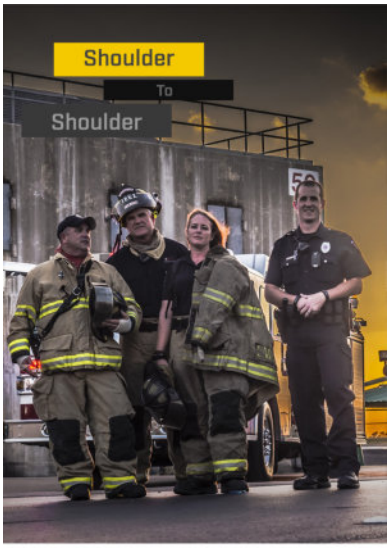
NEW - First Responder Training Video Series

Learn how to safely and effectively respond to a pipeline emergency, how pipelines work, how different products impact response, response leading practices, how to better prepare to respond to pipeline incidents and roles in pipeline response. Videos feature interviews with pipeline and emergency response experts, covering a wide variety of emergency response disciplines. * Videos available at **www.shoulder2shoulder.tv**



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The section of pipe in which the explosion occurred was placed into service in 1981. Following the incident, a preliminary investigation was conducted by the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) and found that the explosion was likely a result of corrosion. Two welded sections of pipe were coated with tape, and the coating over the welds showed defects.

This segment of the pipeline was last internally inspected in 2012, at which time it was reported that in a localized area the pipe had lost nearly one-third of its metal due to corrosion. Following the explosion, the pipeline company pinpointed 625 anomalies along the pipeline system stretching into New Jersey. The company has reevaluated its procedures on dealing with anomalies in the area of these coating systems and lowered the acceptable thresholds for corrosion, and increased their frequency of in-line inspections to every three years due to this threat.

In addition to the immediate safety and environmental consequences, pipeline incidents can have an economic impact. The pipelines in western Pennsylvania serve as a key transport area to busy Northeastern markets, and as a result of the incident and disruption of service, the U.S. commodity markets sent natural gas prices to their highest levels in 13 weeks.

Pipeline Emergency Response Tactics: Effective Scene Size-Up at a Terminals Incident

Terminals provide a key link in the distribution chain for liquid petroleum products and allow for temporary storage before transportation to end users. While types of product storage tanks vary, responses to an emergency and initial scene size-up at a terminal facility share some common elements.

Effective scene size-up begins before the call comes in with proper pre-planning and facility familiarization. Frequent comprehensive site visits of a terminal facility will help identify areas that could produce hazards in the event of an emergency, familiarize responders with specific challenges found within the terminal (e.g., inability for fire apparatus to access specific portions of the facility, proximity of fire hydrants to the facility, etc.). Further, facility personnel are experts on their operations and can provide information on hazmat storage, product transfer, isolation, and

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Best Practices

"We continually go over pipeline safety and operational safety in all of our safety meetings." **–Denver Carter, Stroud, OK**

"We will be holding a drill this year on a mock pipeline incident…We also have strong membership to our local LEPC."**-Krista Salinas, Skagit County Dept of Emergency Mgmt, Mount Vernon, WA**

"Skiatook Fire has been active in the pipeline/hazmat response and consistently seek[s] materials to make any response safer."

WISER

The Wireless Information System for Emergency Responders (WISER) is offered as a standalone application on Microsoft Windows PCs, Apple iPhone and iPod Touch, Google Android devices and Blackberry devices.

WISER
Wireless Information System for Emergency Responders

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storage processes, as well as share company emergency procedures.

Upon notification of an emergency at a terminal facility, responders should obtain as much information as possible concerning the exact location of the incident within the facility and wind direction data, which will dictate response route options. Upon arrival at the facility, responders should seek indicators of the products that may be involved in a release, fire, etc. These include tank markings of product names, NFPA 704 symbols, and safety data sheet information provided by terminal personnel. Never rush into a terminal facility until a thorough scene size up has been conducted and all known and potential hazards have been identified.

As with any response to an occupied facility, initial contact with terminal personnel should focus on personnel safety, which should include an accurate count of company employees, contractors, transportation equipment operators and any visitors. Emergency responders should request a status of the emergency at the facility. This should include a summary of the steps taken by terminal personnel to mitigate the incident. In addition, information concerning the activation of any safety processes such as fire detection or extinguishing systems or emergency shut down (ESD) activations should be obtained. Terminal personnel should be consulted in regards to evacuations of areas outside of the facility based on product release and atmospheric conditions.

Continued scene size-up should include telltale signs of product release, which can include visible vapor clouds, on-going product leaks and ground pooling of materials, or whether or not active fires involving stored petroleum liquids are growing in size. The origin of leaking materials should be identified, if possible, as well as the locations of accumulation. Never isolate or open process valves without first verifying with terminal personnel it is safe to do so. Product entry into storm drains, switch gear facilities, or bodies of water should be noted as tactical priorities. Tank truck and rail car loading/unloading racks should be surveyed to determine the existence of product releases, and the presence of personnel.

The safety of emergency response and site personnel should be the primary focus of scene size-up activities. Size-up is not a “snapshot”. It is an ongoing process that accounts for changing incident site conditions from arrival through elimination of the emergency.

For more information on Kinder Morgan’s Terminal Operations, please go to: **http://www.kindermorgan.com/business/terminals**

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NOTE

To request additional information, or to schedule a presentation or tabletop drill with Kinder Morgan, please fill out the form online at **http://PA-InfoRequest.kindermorgan.com**

We Need Your Help!

We will be emailing all recipients of *The Responder* newsletter an annual Readership Survey in the beginning of January! Your feedback and comments are very important to us and help us focus on topics important to you. Your time and effort is greatly appreciated!

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Overview of Pipeline Systems: Inside a Natural Gas Compressor Station

One of the most critical elements of the natural gas transmission system is a facility known as a compressor station. These stations, typically located every 40-70 miles along major pipeline systems, increase the pressure that is lost through friction and geographic elevation differences, which slow gas and reduce the pressure of the product moving through pipe.

In typical compressor stations, the gas enters and leaves the main "yard" of the compressor station through yard piping. Yard piping moves the product between the pipeline and the compressor station where the gas can then enter the station to be compressed, can enter the station to fuel the compressor engines or other safety and operational systems, or bypass it altogether.

Once natural gas moves inside a compressor station, filter separators, strainers or scrubbers remove any water, hydrocarbons or impurities found in the gas. After this process, large engines power the compressor units to re-pressurize the product, forcing gas to more efficiently flow through the pipeline. One type, called the centrifugal compressor, utilizes rotating, fan-shaped impellers which accelerate the gas. A more commonly used type is a reciprocating compressor which compresses gas with a piston in a cylinder.

After the compression process, the temperature of the gas increases. In some cases gas cooling systems are required at compressor stations to offset this temperature rise and cool the product before its return to the pipeline, protecting the pipeline and its coating and increasing transmission efficiency. Other key processes contained inside most compressor facilities include lube oil systems to lubricate, cool and protect moving parts and equipment; exhaust silencers or mufflers that decrease the noise generated by compressor units; fuel gas systems for those stations powered by natural gas; and backup generators that can provide power during an electrical outage.

Many compressor stations are remotely controlled, and all compressor stations are closely monitored by highly trained personnel at centralized gas control facilities.

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First Responder Online Pipeline Training

To access the API-AOPL Emergency Response Team's free online training, click **https://nasfm-training.org/**

pipa Pipelines and Informed Planning Alliance

The Pipelines and Informed Planning Alliance (PIPA) is a collaboration of various stakeholders invested in further enhancing pipeline safety in communities. To read the latest report released by PIPA on Hazard Mitigation Planning: Practices for Land-use Planning and Development near Pipelines, please click: **https://www.fema.gov/media-library-data/1422297186422-e43ce828d6821027c258e96eae10fd6d/PIPA_Hazard_Mitigation_Primer_Final.pdf**

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Compressor stations employ a variety of safety systems to protect employees and the public. In addition to the constant monitoring by local and gas control personnel, emergency shutdown systems (ESDs) are designed to isolate stations safely and quickly if any irregularities are detected. The ESD process might generate a loud noise lasting one to four minutes, as the pressure is released and gas rapidly evacuates the compressor station yard. Since natural gas is lighter than air, it dissipates safely and rapidly into the atmosphere. Regulations require that these safety shutdown systems be routinely tested.

Kinder Morgan maintains emergency response plans specific to its compressor stations, and works with local responders in the communities in which we operate to ensure emergency responders are familiar with our facilities and operations in their area. To contact us for more information on local operations or facilities, please go to **http://PA-InfoRequest.kindermorgan.com.**

Keeping Pipelines Safe/ Practices & Protocols: Damage Prevention

With over 20 million miles of underground utilities in the United States, it's no surprise that outside force or excavation damage is the leading cause of pipeline incidents. An underground utility line is struck every six minutes in the U.S., with 317,000 damages to utilities reported in 2015. Digging without knowing the exact location of buried utilities can lead to service disruptions, expensive repairs, serious injury, or death.

Kinder Morgan is a proud member of the Common Ground Alliance (CGA), which utilizes a Damage Information Reporting Tool (DIRT) to provide documentation on excavation damages from the preceding year. The most recent report, published October 4, 2016, finds that estimated excavation damages are down nine-percent from 2014. The success of the program can be attributed in part to the significant increase in recognition of the free "811" service. The recent DIRT report concludes that roughly 80 percent of excavation damage to natural gas pipelines is a result of not making a One Call notification prior to excavation, meaning that these incidents could have been prevented had a call to 811 been placed prior to construction activity.

While a CGA Survey found that only 12 percent of excavators used 811 prior to digging, it is encouraging that 38 percent of respondents state they have seen or heard advertising promoting 811, which is a significant increase from 2014.

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National Pipeline Mapping System

To access the National Pipeline Mapping System and locate transmission pipelines in your area, please go to: **https://www.npms.phmsa.dot.gov**

Did you know...

811 is the nationally recognized three digit number to provide notification of pending excavation activity so that utilities can properly locate underground assets. Locating services are free. Help us spread the word for safety... ***Call before you dig!***

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Pipeline personnel, emergency responders and the public are all partners in pipeline safety and damage prevention. By taking a minute to call 811 prior to excavation you could be preventing service disruptions, and even saving lives! Please help us spread the word- know what's below and call before you dig! ■

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