



## Pipeline Emergency Preparedness & Training: Case Study – Analysis of Response to a Liquids Pipeline Emergency

*The following is a summary of an account of an actual incident involving a response to a flammable liquids emergency. The parties involved have not been identified and the intent is not to place blame. This is presented as a learning opportunity for public and private sector responders that may respond to a pipeline emergency.*

At 9:00 p.m. the local fire department received a call to respond to a tank explosion at a nearby fuel storage terminal. The initial arriving unit was on the scene at 9:06 p.m. and discovered an 80,000 barrel storage tank containing approximately 7,500 barrels of diesel fuel collapsed and on fire. The tank had previously contained gasoline and at the time was being supplied with the diesel fuel.

At the height of the response 13 fire departments were involved in the incident, as well as private sector responders from various entities. While initial response efforts were effective, failure to eliminate power to an overhead electrical line resulted in the line succumbing to heat damage and subsequently falling into a dike containing unburned diesel fuel. This resulted in the ignition of the unburned fuel. Complicating matters, the fire in the original tank of origin intensified due to degradation of the firefighting foam that was initially applied.

The incident lasted 21 hours and resulted in damage to two other storage tanks. Property damage exceeded two million dollars and the incident resulted in the evacuation of three hundred local residents. There were no fatalities or injuries as a result of the incident.

An investigation was conducted by the National Transportation Safety Board (NTSB), which determined that the probable cause of the incident was ignition of a fuel-air mixture by a static electricity discharge.

The “take-aways” or lessons learned from the incident are:

- **Make sure that all appropriate parties are engaged in the ICS structure**  
Responding electric utility personnel indicated that they had not been involved in response planning with the Incident Commander or with any pre-planning activities.

## Keeping Pipelines Safe/ Practices & Protocols: Pipeline Damage Prevention

Outside force damage is a leading cause of pipeline incidents across the nation. While great strides have been made by utilities and transmission pipeline operators to prevent damage to their underground assets, these incidents still occur.

Pipeline operators take many steps to prevent damage to their systems, including regular safety patrols by foot, vehicle and aircraft. These patrols focus on signs of unauthorized right of way encroachment, or actual pipeline damage. Pipeline markers are installed at many locations along the right of way, including at all road crossings to inform potential excavators about the presence of underground systems. Pipeline operators also participate in a wide range of damage prevention cooperative efforts, such as state one-call associations, as well as the newly established 811 national number for excavators.

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- **Conduct thorough Pre-Planning** – Thorough pre-planning should be conducted in consultation with facility operators. Attention should be given to water source locations and adequacy. Pre-planning should include other involved parties such as utility personnel that may be called upon during a site emergency.
- **Ensure that responders are trained on response to flammable liquids incidents** – Periodic training evolutions should be conducted on response to flammable liquids spills and fires. Further, responders should take advantage of opportunities to train with pipeline and terminal facility personnel. ■

### Pipeline Emergency Response Tactics: Tips for Use of Atmospheric Monitoring Equipment

Atmospheric monitoring is a key tactical priority during response to a gas or liquids hazardous materials incident. Determining where hazardous vapors are present in relation to areas of public occupancy, and potential ignition sources, is a critical step in responding to a spill or leak.

Many response organizations are equipped with atmospheric monitoring equipment such as multi-gas detectors, individual gas detectors, and in some cases, gas sampling equipment. Regardless of the type of detector used, there are some common guidelines to be followed when using these devices.

**Conduct a thorough Scene Size-Up** – Before conducting atmospheric monitoring operations, the Incident Commander should ensure that a thorough scene size-up is conducted to identify any hazards that may pose a threat to responders and to the public.

**Identify the Product** – Identifying the product involved in a hazardous materials incident is a key step in the response process. For pipelines, this identification can be made by locating a nearby pipeline marker. In some cases, pipelines transporting different products may be located in adjacent rights of way, so it's very important to call the emergency number on the marker to notify the operator and determine the exact product involved.

**Ensure That You Have the Right Equipment for the Task** - When using monitoring equipment, it is important to remember that calibration of these devices is performed using specific calibration gas. For example, when monitoring for one type of flammable gas, such as propane, using a combustible gas indicator (CGI) calibrated to methane (natural gas), a conversion factor will have to be used to determine the accurate gas concentration. The bottom line...know your product and know your equipment!

**Other Key Points to Remember** - Here are some other things to keep in mind related to use of atmospheric monitoring equipment:

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While many of us think about excavators as construction companies operating backhoes and other heavy construction equipment, the term is much broader than that. Anyone that digs is considered an excavator. This includes homeowners or farmers that may be installing a fence using an auger. In many cases, homeowners assume that they know the location of buried utilities or that their excavation activities will not be deep enough to interfere with them. This thinking can sometimes lead to tragic results.

The term excavators, also includes loggers who may be crossing pipeline rights of way for access to wooded areas. Depending on their activities, land surveyors may also be considered excavators.

So why is this important to emergency responders? As our partner in safety, we need you to help spread the word about the importance of calling 811 before digging. You may have neighbors or family members that engage in excavation activities, or you yourself may be involved! Help us spread the word to your neighbors and family, call 811 before you dig so we can all achieve the common goal of reducing pipeline incidents through outside force damage. ■



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- **Maintenance** - When was the last time your monitoring device was calibrated? How about the last time the batteries were changed or charged if rechargeable?
- **Know What it is Telling You** - Ensure that your personnel are properly trained in how to use the equipment AND in what it is telling them. "Chief, I have fifty-percent!" Is that fifty percent of the Lower Explosive Limit (LEL) or fifty percent gas? The devil is in the details, and training in this area is critically important.
- **Use Your Resources** – Pipeline operator personnel have atmospheric monitoring equipment and are well trained on how to use it. Rely on them to help you determine the existence and location of hazardous vapors so that you can make informed strategic, and tactical response decisions. ■

## Overview of Pipeline Systems: Liquids Pipeline Pump Stations

Flammable liquids pipelines employ pump stations along the pipeline to boost pressures and augment flow. These pump stations operate in a similar manner to natural gas compressor stations that have been discussed in a previous issue of The Responder. Elevation and friction loss results in pressure loss in a pipeline, just like it does in a fire hose. Very much like the fire apparatus, pumps are used to maintain the appropriate delivery pressure.



Pipeline pump stations vary in design and will contain a specific number of pumps based on the size, location, and topography of the pipeline. Pipeline pumping stations may be manned or un-manned, but are continually monitored either way. Un-manned pump stations are usually monitored through a computerized Supervisory Control and Data Acquisition system, otherwise known as SCADA. The SCADA system has the ability to continually monitor pressure and flow in the pipeline, as well as the ability to start and stop pumps based on varying pressure requirements along the line. Additionally, SCADA systems have the ability to monitor pumps for any abnormal conditions that may occur such as high temperatures and low flow. When abnormal conditions are detected SCADA operators can shut down the pumps and dispatch technicians to investigate and make any needed repairs.



While pipeline pump stations vary in construction, they do have some common components:

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## Best Practices from Emergency Response Peers

*"Our local emergency responders attend local pipeline operator sponsored training meetings."*

**Goshen County Emergency Management, Torrington, Wyoming**

*"I attend local pipeline training and hold yearly safety meetings with my EMT's."*

**Thomas County EMS, Colby, Kansas**

*"We hold yearly pipeline incident tabletop drills and attend local pipeline operator-sponsored training meetings."*

**Concordia Fire Department, Concordia, Kansas**

*"We send responders to operators' trainings, tour local facility annually, talk with local Kinder Morgan representatives at least annually."*

**Roanoke County Fire/Rescue, Roanoke, Virginia**

*"We attend local pipeline operator-sponsored training meetings and visit with employees of the pipelines to keep us updated on what is happening in our area."*

**Mountain View Police Department, Mountain View, Oklahoma**

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**Pumps** – Pumps of varying size and horsepower are used in the stations. They can be powered by internal combustion diesel engines, turbine engines, or electric motors.

**Piping** – Piping and pipe manifolds are used throughout the pump station for product delivery into the facility and distribution back into the pipeline. In addition piping also is used for the transportation of lubricating oils and fuel for the engines used to power the pumps.

**Fire Detection and Suppression Equipment** – Fire detection and suppression systems are employed in pump stations in the unlikely event of an emergency. These systems are remotely monitored through the SCADA system and are maintained by highly trained pipeline operator personnel.

**Other Equipment** - Other equipment at pipeline pump stations may include pig launchers and receivers, used to insert and remove, clean and inspect devices commonly referred to as “pigs”. Additionally, storage tanks may be installed at pump stations for holding and distribution of product.

If pipeline pump stations are located in your response area, feel free to contact the pipeline operator to gain more information about the particulars of the stations near you. Pipeline operators will welcome the opportunity to share this information with you. ■

### Did you know...

While 911 is the readily identifiable telephone number to report an emergency, **811** is the number to provide notification of pending excavation activity so that utilities can properly locate underground assets. Help us spread the word for safety.... **Call 811 before you dig!**



### FYI..

WISER, Wireless Information System for Emergency Responders, is now available for Google Android devices! WISER, a database of chemical, biological, and radiological substances is designed to assist responders during a hazardous materials incident. WISER was one electronic tool for emergency responders highlighted in our March issue of *The Responder*. To access information about the Android version of WISER, go to: [http://wiser.nlm.nih.gov/whats\\_new\\_android\\_1\\_0.html](http://wiser.nlm.nih.gov/whats_new_android_1_0.html)

### Pipeline Safety Brochure for Emergency Responders Available Online

Download a copy of Kinder Morgan's safety brochure for emergency responders at [www.kindermorgan.com/public\\_awareness/AdditionalInformation/KMSafetyBrochures.cfm](http://www.kindermorgan.com/public_awareness/AdditionalInformation/KMSafetyBrochures.cfm). The brochure includes pipeline emergency response information and details about Kinder Morgan's operations including emergency contact numbers.

### Share "The Responder"

Forward this issue to other responders in your department and in your community. Encourage them to subscribe to the Responder by e-mailing their name, title, agency name and agency address to [publicawarenesscoord@kindermorgan.com](mailto:publicawarenesscoord@kindermorgan.com). ■

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### Note

Find out who operates a pipeline in your area by accessing the National Pipeline Mapping System at <http://www.npms.phmsa.dot.gov/>