Pipeline Emergency Preparedness & Training: Tabletop Scenario – A Hazardous Liquids Pipeline Incident

“A squall line of fast moving thunderstorms has traversed the area resulting in numerous reports of wind damage and lightning strikes. As your unit clears up from a false alarm at a commercial building triggered by a nearby lightning strike, the call comes in….District 6, respond to a fire at the pipeline terminal located at 2154 Highway 17”.

In route to the scene, you begin to think about the site visits that you have conducted at the pipeline terminal in the past, and begin to review your preplan information. Upon arrival at the gate of the facility, a security guard informs you that a pipe manifold in the rear of the plant took a lightning strike and there is a “huge fire back there”. As you pass the rows of petroleum storage tanks, the manifold piping area comes into view and you observe a large area involved in fire and several pool fires of spilled product.

A company shift supervisor quickly arrives and informs you that a measurement technician employee was working in the area when a lightning strike occurred and that employee has not been accounted for. He further informs you that the pipe manifold is leaking jet fuel from a nearby tank containing 15,000 barrels of product.

A security guard then informs you that a tanker truck with an MC331 type trailer was attempting to turn into the terminal and was struck broadside by a flatbed truck transporting lumber. It was reported that the driver of the flatbed was distracted by the fire. You observe the tanker truck through binoculars and note a placard containing the Identification Number 1075. Subsequent reports indicate that there is product leaking from the rear of the tank, and that the driver of the flatbed truck is severely injured.

Fox 5 News and Action 7 News have camera crews on the scene and are requesting interviews with emergency response personnel.

Best Practices from Emergency Response Peers

“We attend annual pipeline operator sponsored training.”
Laramie County Emergency Management Agency, Cheyenne, WY

“Yearly sessions are posted in advance and participation is encouraged, although not mandatory.”
Scottsbluff Police Department, Scottsbluff, NE

“We try to work with all pipeline companies to make sure the correct emergency notification process is in place to get the system alerts started.”
Not Provided
You have established a Command Post in a safe location at the terminal site, requested mutual assistance and started developing strategic objectives...

- What are your priorities based on Life Safety, Incident Stabilization, and Property Conservation?
- As the Incident Commander what actions do you direct of responding resources?
- What are your safety concerns based on the scene size-up/site assessment?
- What resources do you need at the scene to assist in managing the incident?

While this is a complex event, they sometimes do occur. How well prepared is your organization to respond to an event of this nature? When was the last time that you conducted a response exercise that tests your agency’s capability to respond to an event of this magnitude?

**Pipeline Emergency Response Tactics: Hazardous Liquids Spill Control**

Spills from hazardous liquids pipelines pose unique challenges to the public sector emergency responder. Of primary importance in the early stages of a pipeline emergency is the determination of what product is involved. As explained in Issue 2 of the 2010 Responder, hazardous liquids pipelines may transport products in batches, so a pipeline may contain different products depending on the time and location. Pipeline system control is the best source of information concerning the contents of the pipeline. Once the product is identified, the U.S. Department of Transportation’s Emergency Response Guidebook can be used to aid in initial response planning. Further, a material safety data sheet on the product can be supplied by the pipeline company which outlines response and product handling recommendations.

It is important to keep in mind that while initially appearing small, a pipeline spill will continue to gather product even after the valves are quickly isolated, due to residual product in the line. Therefore, timely and proactive spill control is essential to minimizing the impacts of the incident. It is far better to plan for a large spill than to have to revert to a reactive mode as the event evolves.

Proper scene size-up/site assessment is essential to ensuring successful hazardous liquids control. Is the area of the spill rural or urban? What is the proximity of storm drains, sewers, or bodies of water? What are the weather conditions? Will pending rain result in spreading the release? These are but a few of the questions that should be addressed through an effective assessment effort.

Upon arrival, responders should implement the Incident Command System and:

- Conduct an effective scene size-up/site assessment
- Isolate the area
- Eliminate ignition sources
- Identify and notify the pipeline operator
- Identify the product
- Initiate spill control planning

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**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. Help us spread the word for safety.... **Call 811 before you dig!**

**FYI...**

WISER for iOS 3, the Wireless Information System for Emergency Responders, is now available in the Apple App Store. This new version provides native support for the iPad and provides WISER’s interface with the protective distance mapping feature for the iPad, iPhone, and iPod touch. The free application is provided by the National Library of Medicine and provides useful information for responders faced with a hazardous materials incident. ■
Of concern for responders are limitations based on training, materials, manpower and equipment. When responders lack appropriate personal protective equipment and training, defensive spill control operations should be employed and responders need to avoid any contact with the leaking material. Defensive diking and damming can be effectively employed to minimize the impact from spill run-off. Liquid pipeline operators are technical experts on their respective systems and products. In addition, they have access to hazardous materials response teams that are trained and equipped to respond effectively to product releases.

Overview of Pipeline Systems: Liquefied Petroleum Gas (LPG) Transportation

Liquefied Petroleum Gas (LPG) is a widely used petroleum product consisting primarily of propane, butane, and propylene. LPG is transported and stored under pressure in liquid form. The expansion ratio from liquid to gas for LPG is approximately 270:1, making transportation as a liquid highly effective.

LPG is a product of the hydrocarbon refining process of crude oil and natural gas. After extraction from either oil or natural gas and being processed, the LPG is transported by refined product transmission lines to bulk storage facilities which may consist of above ground tank farms, or underground storage caverns. Pipeline pressures for the transportation of LPG may exceed 1,000 psig. Mainline valves are strategically placed at points along the pipeline system in the event isolation is required. In addition, over-pressurization safety devices are employed to minimize risk to the pipeline from excessive pressure. Pump stations are also located at various points along the pipeline route to enhance delivery pressures as needed.

Once delivered to bulk storage facilities, LPG is further distributed by tank truck using MC331 type trailer trucks and the familiar “bobtail” type delivery vehicle for commercial distribution. In addition, LPG is delivered by rail using DOT 105, 112, and 114 pressurized tank cars.

When responding to a transportation incident involving LPG, it is important to remember that responders may encounter the product in liquid and gaseous forms. Given that LPG is transported as a liquid at -44°, when exposed to atmospheric conditions the liquid will quickly vaporize. The vapor density of LPG is 1.5, so releases into the atmosphere will typically stay close to the ground and have the potential to collect in low lying areas. LPG is colorless and odorless in its natural state. A commercial odorant, ethyl mercaptan, is added for safety purposes. Un-odorized LPG may be encountered in some transportation and storage scenarios. Responders should not rely solely on sense of smell to identify LPG releases. The most effective method for determining the location of released LPG is through the use of a combustible gas indicator (CGI) calibrated to propane.

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. The brochure includes pipeline emergency response information and details about Kinder Morgan’s operations including emergency contact numbers.

FYI...

The 2012 Department of Transportation Emergency Response Guidebook has been published and is currently in distribution. In addition to other updates, the 2012 Emergency Response Guidebook contains expanded sections regards natural gas and hazardous liquids pipeline identification and emergency response. An electronic version of the ERG in Adobe PDF format is available at http://www.phmsa.dot.gov/hazmat/erg2012.
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Transporters of LPG are invaluable resources for emergency responders and can provide current material safety data sheet (MSDS) information as well as incident response recommendations.

**Keeping Pipelines Safe/Practices & Protocols: SCADA/ Pipeline Control Centers**

Thousands of miles of natural gas and hazardous liquids pipelines traverse the United States. So how are these pipelines operated and controlled? Transmission pipelines employ sophisticated control centers manned by highly trained and experienced system controllers. These individuals are at the heart of a complex, highly automated system that is designed to ensure the safe and efficient transportation of natural gas and petroleum products throughout our nation.

All KM pipelines are controlled through computerized Supervisory Control and Data Acquisition or SCADA systems. Through computerized schematics of the pipeline system, displayed on monitors, Controllers can monitor pressures and flow, open and close designated valves, start and shut down compressors/pumps, and adjust automated equipment in real time. Information from various points along the pipeline system such as valve sites, pump stations/compressor facilities is transmitted to control centers through landline, cell phone and satellite communication systems. Control centers maintain high levels of security for physical access due to the critical nature of the operations. Further, extensive cyber security measures are taken to prevent unauthorized access to the SCADA system itself.

Controllers undergo extensive training to operate the pipeline system, and are required by federal Department of Transportation Pipeline Safety Regulations to be periodically evaluated on their ability to perform tasks associated with operating the pipelines. Like aircraft pilots, Controllers are often trained using simulators that can replicate a fictitious, off-line version of the pipeline system where abnormal operations and emergencies can be simulated for training purposes. Further, pipeline companies often conduct emergency drills that test Controllers and other operations employees’ abilities to respond to, and manage incidents.

In most cases, control centers also serve as the central answering point and initial dispatch center for pipeline operations. Emergency numbers posted on pipeline markers and at above ground facilities are often answered directly by Controllers. In the event of an emergency, Controllers often will see an indication of an unusual occurrence on the pipeline system before reports from the public are received. However, pipeline operators encourage the public and especially emergency responders, to be our partners in safety and call to report anything that seems abnormal involving the pipeline system.

**Note**

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