

# NTSB MOST WANTED LIST

CRITICAL CHANGES NEEDED TO REDUCE TRANSPORTATION ACCIDENTS AND SAVE LIVES

2014

## ENHANCE PIPELINE SAFETY

### What is the Problem?

On December 11, 2012, a buried 20-inch diameter natural gas transmission pipeline ruptured near Interstate 77 in Sissonville, West Virginia. The rupture caused a 20-foot section of pipe to separate, landing more than 40 feet from its original location. Although there were no fatalities or injuries, three homes were destroyed by the ignition of the gas and ensuing fire. This most recent in a series of catastrophic pipeline ruptures and explosions investigated by the NTSB has brought increased attention to the 2.5 million miles of pipeline that traverse the nation. Pipelines remain one of the safest and most efficient means of transporting vital commodities used to power homes and supply businesses, but the consequences can be tragic when safe operational practices are not employed and standards are not implemented.

High pressure natural gas pipeline failures frequently result in explosive releases that, if ignited, become intense “jetfires” that can cause extensive damage. In addition to large-scale environmental damage, hazardous liquid pipeline accidents also pose a risk of ignition, which occurred in June 1999, when a gasoline pipeline ruptured and ignited in Bellingham, Washington, killing three. As the nation’s demand for oil and gas grows and the pipeline infrastructure ages, we cannot afford to overlook the transportation mode that lies buried beneath us.

### What can be done?

Safe operation of natural gas and hazardous liquid transmission pipelines is a shared responsibility among the operator, government oversight agencies, and local communities. It begins with companies strengthening their operating practices to address safety concerns in design, installation, operation, maintenance, and inspection. Improving in-line inspection technologies and expanding the use of pipeline inspection tools improve the chances of locating defects early and reduces the probability of a catastrophic failure. Companies should also incorporate hydrostatic pressure testing, which is used to demonstrate that existing flaws in the steel pipe will not grow and cause a leak or failure under normal pipeline operating limits.



Aerial photo of the damage from the December 11, 2012, pipeline rupture that occurred west of I-77 near Sissonville, West Virginia.

Oversight agencies also play a role, especially when operators are reluctant to initiate safety improvements. Regulators can mandate specific safety program improvements to ensure pipeline operators adopt and improve practices that reduce the risk and consequences of pipeline failures. For example, given the gas industry’s reluctance to expand the use of automatic shutoff valves and remote controlled valves, the Pipeline and Hazardous Materials Safety Administration (PHMSA) should require this technology, which can isolate a rupture within minutes and reduce the volume of gas released and the duration of a fire.

Additionally, safety can be enhanced through improved communications between pipeline operators and the communities through which their pipelines travel. Improving communication with emergency response personnel is particularly important. Pipeline operators should provide accurate route maps to emergency responders and strengthen their internal procedures for notifying the local emergency response personnel when leaks or ruptures are suspected. Early recognition that a pipeline release has occurred coupled with accurate location information and notification to the local emergency responders can help reduce the consequences from an accident.

for more information, visit: [www.nts.gov/mostwanted](http://www.nts.gov/mostwanted)



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## ENHANCE PIPELINE SAFETY

### What is the NTSB doing?

The NTSB has investigated several pipeline accidents in which lives were lost and communities severely affected. In 2007, in Carmichael, Mississippi, a propane transmission pipeline ruptured, and the ensuing cloud of released gas ignited and created a fireball; two people were killed, seven were injured and four homes were destroyed. In 2010, in Marshall, Michigan, a crude oil transmission pipeline ruptured and released oil for over 17 hours before being discovered. As a result, nearly 850,000 gallons of crude oil spilled into the surrounding area and flowed into local waterways, resulting in the most expensive environmental response and clean-up for an onshore oil spill in US history. Just over a month after the Marshall accident, a natural gas transmission pipeline in San Bruno, California, ruptured and ignited in a residential neighborhood; eight people were killed, and 34 homes destroyed.

Through these investigations, the NTSB has issued a body of safety recommendations to address recurring problems:

- (1) operational practices;
- (2) oversight deficiencies; and
- (3) effective communication with emergency responders and local communities.

In addition to accident investigations, in 2005, the NTSB completed a study of Supervisory Control and Data Acquisition (SCADA) systems that are used by pipeline operators to manage and operate their pipelines. These systems collect critical near real-time information about the entire pipeline operation and transmit this information back to computer consoles within a control center. SCADA systems allow pipeline controllers to monitor and detect anomalies in the system and to make changes to the operation, such as opening and closing valves or starting and stopping pumps, from a single remote location. The 2005 study uncovered five areas for potential improvement: display graphics, alarm management, controller training, controller fatigue, and leak detection systems. These findings in part led to a significant step forward for an industry that did not previously have any rules governing hours of service. In December 2009, PHMSA published a final rule that required pipeline operators to establish shift lengths and schedule rotations that provide controllers off-duty time sufficient to achieve 8 hours of continuous sleep. Together, the NTSB's recent investigation of the Sissonville transmission pipeline rupture, lessons learned from previous investigations, and the SCADA study have prompted the NTSB to once again place pipeline safety on our Most Wanted List.

## Critical changes needed to reduce transportation accidents and save lives



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The National Transportation Safety Board is an independent Federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in other modes of transportation - railroad, highway, marine and pipeline. The NTSB determines the probable cause of the accidents and issues safety recommendations aimed at preventing future accidents. In addition, the NTSB carries out special studies concerning transportation safety and coordinates the resources of the Federal Government and other organizations to provide assistance to victims and their family members impacted by major transportation disasters.

