

**Testimony of the Honorable Christopher A. Hart
Vice Chairman
National Transportation Safety Board
Before the
Subcommittee on Energy and Environment
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Introduction/Overview

Chairman Markey, Ranking Member Upton, Members of the Subcommittee, thank you for the opportunity to address you today on the reauthorization of the U.S. Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA has made significant progress over the past 5 years. Much of the credit for this success is due to the implementation of statutory mandates included in the Pipeline Safety Improvement Act of 2002, as well as the Pipeline, Inspection, Protection, Enforcement and Safety (PIPES) Act of 2006.

PHMSA has been responsive to the National Transportation Safety Board's (NTSB) pipeline safety recommendations. Between January 1, 2002, and June 1, 2010, the NTSB issued twenty-four pipeline recommendations to PHMSA. As of this date, nine remain open and fifteen have been closed following an NTSB assessment that PHMSA had taken an "acceptable action" or "acceptable alternate action" in response to the recommendation. None were closed with the categorization of "unacceptable action." Additionally, only one recommendation issued prior to 2002 remains open.

Noteworthy accomplishments by PHMSA include implementing regulations addressing integrity management programs for gas transmission pipelines, hazardous liquid pipelines, and natural gas distribution pipeline systems. Regulations and improved industry practices also are in place for expanded public awareness and education programs meant to heighten the awareness of the American public and regional emergency response agencies. The implementation of the 811 one-call system requires the identification and marking of buried pipelines before excavation work occurs.

Additionally, partnerships between the industry and PHMSA have led to a number of joint initiatives, such as development of training programs for public and municipal officials, enhanced collection and analysis of accident data, and greater coordination with state agencies that have been delegated enforcement authority by PHMSA for federal pipeline safety standards.

As a result of the NTSB's 2005 Safety Study, *Supervisory Control and Data Acquisition (SCADA) in Liquid Pipelines*, the Board issued Safety Recommendations P-05-1 through -3

which called on PHMSA to: (1) require hazardous liquid pipeline operators to follow the American Petroleum Institute's recommended practice for the use of graphics on SCADA computer screens, (2) require pipeline companies to have a policy for the review and audit of SCADA alarms, and (3) require training for pipeline controllers to include simulator or non-computerized simulations for controller recognition of abnormal operating conditions, particularly leak events. These three recommendations were also incorporated directly into the PIPES Act. PHMSA published a final rule on December 4, 2009 that included the recommended requirements and applied them to all pipeline systems.

Despite these notable and varied accomplishments, the NTSB has concerns about certain other aspects of PHMSA's pipeline safety program. Two such areas specifically addressed in the PIPES Act are the regulation of low-stress pipeline systems and requirements for the use of excess flow valves.

Regulation of Low-Stress Pipeline Systems

Corrosion failures on the BP Exploration, Inc.'s, low-stress oil transit lines from the Prudhoe Bay oil fields to the Trans Alaska pipeline in 2006, led to provisions in the PIPES Act mandating that PHMSA issue regulations subjecting low-stress hazardous liquid pipelines near unusually sensitive environmental areas to the same standards and regulations as other hazardous liquid pipelines. Low-stress pipelines are those that are operated at a stress level of 20 percent or less of their strength ratings.

At the time the PIPES Act was enacted, federal pipeline safety regulations only applied to low-stress pipelines that were located in populated areas, crossed navigable waterways, or carried highly volatile liquids, such as compressed liquefied propane. In a Notice of Proposed Rulemaking (NPRM), "Pipeline Safety: Protecting Unusually Sensitive Areas from Rural Onshore Hazardous Liquid Gathering Lines and Low-Stress Lines," published on September 6, 2006, PHMSA proposed regulations for rural low-stress pipelines that have a diameter of at least 8 5/8 inches and that are within 1/4 mile of an area defined as unusually sensitive. (The distance in the final rule is 1/2 mile.)

The NPRM also proposed regulations for rural gathering lines that operate at a stress level greater than 20 percent, have a diameter between 6 5/8 and 8 5/8 inches and are within 1/4 mile of an area defined as unusually sensitive. A "gathering line" is a pipeline with a diameter of 8 5/8 inches or less that transports petroleum from a production facility. Again, at the time the PIPES Act was enacted, only gathering lines in populated areas were subject to federal pipeline regulations.

Exempted from the proposed requirements in the NPRM were gathering lines in the inlets of the Gulf of Mexico. Certain gathering lines in inlets of the Gulf of Mexico are subject to burial requirements to ensure that the lines are not exposed and do not pose a hazard to navigation. Otherwise, they are not regulated.

In comments submitted by the NTSB on November 21, 2006, we note that most low-stress pipelines and on- and off-shore gathering pipelines would remain essentially unregulated.

The NTSB also notes that the NPRM would apply a less stringent patchwork of requirements to address corrosion and excavation damages to those low-stress pipelines and gathering pipelines covered by the proposed standards. The NTSB states its belief that the standards codified in Title 49 Code of Federal Regulations, Part 195 for hazardous liquid pipelines should also apply in its entirety to the low-stress pipelines and gathering lines. PHMSA published the final rule on June 3, 2008, without significant change to the NPRM. Publication of this final rule concluded phase one of PHMSA's two phase plan to implement its PIPES mandate to regulate low-stress pipelines.

On June 22, 2010, PHMSA published a second NPRM regarding the regulation of all rural onshore hazardous liquid low-stress pipelines. This second NPRM represents phase two of PHMSA's implementation of its mandate in the PIPES Act. In this NPRM, PHMSA proposes safety requirements for all rural low-stress pipelines not included under the phase one final rule. Specifically, the low-stress pipelines captured under the new NPRM include (1) rural low-stress pipelines of a diameter less than 8 5/8 inches located in or within one-half mile of an unusually sensitive area and (2) all other rural low-stress pipelines that were not included under phase one. PHMSA estimates that the NPRM will apply to 1,384 miles of low-stress pipelines not covered by the previous rule. It appears this latest NPRM will apply to onshore gathering lines that are also low-stress pipelines. However, the NPRM does not address gathering lines in the inlets of the Gulf of Mexico or offshore gathering lines. In comments submitted to PHMSA on August 23, 2010, the NTSB supported the proposal to further regulate low-stress pipelines, but noted the estimated number of miles of additional pipelines that would be covered by the proposed rulemaking was a very small percentage of the hazardous liquid pipelines now in service. The NTSB expressed concerns that many hazardous liquid pipelines would remain unregulated, even though these pipelines pose risks comparable to those now being regulated. The NTSB believes that regulation of a pipeline should be based on the level of risk it poses to the public and to the environment.

The crude oil pipeline rupture in Marshall, Michigan illustrates the devastating impact an oil spill can cause. While the spill has been contained and remediation and restoration of the environment are underway, the effects from the spill will be felt by that community for years to come.

Integrity Management Programs for Distribution Systems and the Use of Excess Flow Valves

The PIPES Act also mandates that the DOT prescribe minimum standards for integrity management programs for distribution pipeline systems. On June 25, 2008, PHMSA published an NPRM, "Integrity Management Program for Gas Distribution Pipelines," with proposed regulations that would require operators of gas distribution pipelines to develop and implement integrity management programs with the same objectives as the existing integrity management programs for hazardous liquid and gas transmission pipelines.

Integrity management programs for hazardous liquid and gas transmission pipelines typically require operators to assess the condition of their pipelines by using "in-line" inspection tools that travel through the pipeline to determine the nature and extent of any defects or pressure

testing that yields information about the integrity of the pipeline. Such techniques are not feasible for typical distribution pipeline systems because of the differences in the design and operating parameters between distribution pipeline systems and hazardous liquid and gas transmission pipelines.

Further, the failure of a distribution pipeline is often initially detected from reports of a gas leak rather than a catastrophic rupture. As a result, development and implementation of an effective leak management program is an important element of an integrity management program for a distribution pipeline.

PHMSA acknowledged these differences in the NPRM and properly emphasized the importance of various leak detection methods as essential elements of an integrity management program for distribution pipeline systems.

In its comments on the NPRM, the NTSB emphasized that while an effective leak detection program is a crucial element of the overall leak management program, the use of equipment that prevents or mitigates leaks is equally important. One such device that mitigates a gas pipeline leak is an “excess flow valve.” An excess flow valve is a device installed on the distribution line, usually serving a user residence or facility, that detects an abnormally high flow rate, and when an excess flow is detected, automatically closes a valve, thus shutting off the flow of gas through the distribution line. The NPRM did not adequately address this aspect of leak management, other than incorporating the mandate for PHMSA to require excess flow valves on new or replacement distribution lines serving single family residences. PHMSA complied with this provision of the PIPES Act on December 4, 2009, when it published the final rule on integrity management programs for distribution pipeline systems.

The NTSB has long advocated the use of excess flow valves in gas distribution pipeline systems as an effective means of preventing explosions caused by natural gas leaking from distribution systems. On July 7, 1998, a natural gas explosion and fire destroyed a newly constructed residence in South Riding, Virginia, a suburb of Washington. The accident caused one fatality and one serious injury. The NTSB determined that the gas service line to the home had failed and that an uncontrolled release of gas had accumulated in the basement and subsequently ignited. The NTSB concluded from its investigation that had an excess flow valve been installed in the service line, the valve would have closed shortly after the hole in the service line developed and the explosion likely would not have occurred. The NTSB recommended that PHMSA require excess flow valves be installed in all new and renewed gas service lines, regardless of a customer’s classification, when the operating conditions are compatible with readily available valves. The NTSB believes that apartment buildings, other multifamily dwellings, and commercial properties are susceptible to the same risks from leaking gas lines as single-family residences, and we believe this gap in the law and the regulations should be eliminated.

Oversight of Integrity Management and Other Risk-Based Pipeline Safety Programs

Over the past decade or more, PHMSA has adopted a risk-based assessment approach for regulating the DOT pipeline safety program. PHMSA has successfully built a partnership with

various facets of the pipeline industry to develop, implement and execute a multi-part pipeline safety program. All stakeholders, including PHMSA, have, in the NTSB's view, come to rely heavily upon this approach. The NTSB believes that a risk-based approach can be an effective method to develop and execute the pipeline safety program, and there are many positive elements to PHMSA's approach.

The DOT pipeline safety regulations based on risk assessment principles provide the structure, content, and scope for many aspects of the overall pipeline safety program. Within this regulatory framework, pipeline operators have the flexibility and responsibility to develop their individual programs and plans, determine the specific performance standards, implement their plans and programs, and conduct periodic self-evaluations that best fit their particular pipeline systems. PHMSA likewise has the responsibility to review pipeline operators' plans and programs for regulatory compliance and effectiveness.

The NTSB believes that with the risk-based assessment there should be increased responsibilities on both the individual pipeline operators and PHMSA. Operators must diligently and objectively scrutinize the effectiveness of their programs, identify areas for improvement, and implement corrective measures. PHMSA, as the regulator, must also do the same in its audits of the operators' programs and in self-assessments of its own programs. In short, both operator and regulator need to verify whether risk-based assessments are being executed as planned, and more importantly, whether these programs are effective.

In its recent pipeline investigations, the NTSB discovered indications that PHMSA and operator oversight of risk-based assessment programs, specifically integrity management programs and public education programs, has been lacking and has failed to detect flaws and weaknesses in such programs.

In its investigation of the October 2004, rupture of an anhydrous ammonia pipeline near Kingman, Kansas, the NTSB identified deficiencies in PHMSA's auditing procedures when evaluating the operator's integrity management program. The operator did not include assessments of leak history when calculating relative risk scores for various segments of the pipeline. These relative risk scores were used to establish an initial baseline assessment of the integrity of the pipeline in the decision-making process for prioritizing the inspection schedule. Though PHMSA did find omissions of other risk factors during its review of the operator's integrity management program, PHMSA did not identify the omission of the leak history data during its initial review or during a subsequent review of the corrected plan. Consequently, the ruptured pipeline segment was not scheduled for a baseline assessment until 2006, almost 2 years after the October 27, 2004, rupture. The NTSB recommended that PHMSA require an operator to revise its pipeline risk assessment plan whenever it has failed to consider one or more risk factors that can affect pipeline integrity.

The November 1, 2007, rupture of a propane pipeline in Carmichael, Mississippi, resulted in two fatalities, seven injuries, and property damage exceeding \$3 million. Before the accident, the pipeline operator relied upon contractors to obtain accurate mailing data and ensure that mailings to the public were completed. However, the operator did not perform oversight to ensure that all appropriate recipients were on the mailing lists and that the mailings met

appropriate regulatory requirements. The operator also had not taken any action to determine whether recipients who received the mailings understood the guidance they contained. The NTSB determined that the pipeline operator failed to properly assess its public awareness and education program by relying upon contractors without appropriate oversight. The NTSB recommended that PHMSA initiate a program to evaluate pipeline operators' public education programs, including the operators' self-evaluations of the effectiveness of their public education programs.

On May 4, 2009, an 18-inch diameter gas transmission pipeline with an operating pressure of 850 psi ruptured near Palm City, Florida. The rupture was located in the Florida Turnpike right-of-way, between I-95 and the Florida Turnpike. The turnpike and interstate were closed for approximately 3 hours due to the accident. Two gas transmission pipelines operated by the same pipeline company were also located in the right-of-way but were reportedly not damaged.

The force of the released gas created a crater approximately 116.5 feet long by 17 feet wide by approximately 2.8 feet deep. Roughly 104 feet of the pipe was ejected from the ruptured pipeline and landed next to the crater. The closest edge of the crater was approximately 25 feet from the northbound paved edge of the Florida Turnpike.

There was no ignition of the released gas, and no fatalities were reported. However, two people were injured when their car reportedly hit debris, ran off the road, and turned over; a Deputy Sheriff was hospitalized after walking through a gas cloud; and the accident resulted in the evacuation of a nearby school and residential community.

The NTSB's ongoing investigation has determined that at the time of the accident, the operator had not identified the ruptured segment as located within a high consequence area, and therefore not covered by the operator's integrity management plan. However, an independent evaluation done by PHMSA at the NTSB's request shows the segment in fact is in a high consequence area. The NTSB is collecting documentation that will determine the cause of this error.

As a result of these investigations, the NTSB is concerned that the level of self-evaluation and oversight currently being exercised is not uniformly applied by some pipeline operators and PHMSA to ensure that the risk-based safety programs are effective. The NTSB believes that to ensure effective risk-based integrity management programs are employed throughout the pipeline industry, PHMSA must establish an aggressive oversight program that thoroughly examines each operator's decision-making process for each element of its integrity management program.

Recent Pipeline Accidents

Since this summer, the NTSB has been involved in investigating four pipeline accidents. In Cleburne, Texas, a natural gas pipeline measuring 36-inches in diameter was struck by a contractor. One person was killed and 6 others were hospitalized.

In July, a 30-inch diameter crude oil pipeline operated by Enbridge ruptured in Marshall, Michigan, spilling anywhere from 800,000 to 1,000,000 gallons of oil into Talmadge Creek and the Kalamazoo River. The NTSB dispatched a team of over 10 investigators to the scene in Michigan. We are currently working on this investigation and have begun examining the pipe in our Materials Laboratory.

In September, another Enbridge crude oil pipeline ruptured in Romeoville, Illinois. Last week, this pipeline was transported to our facilities in Ashburn, Virginia where we will remove segments for testing and further study.

Finally, on September 9, a tragic rupture and explosion of a 30-inch natural gas transmission pipeline claimed the lives of at least 4 people in San Bruno, California. The damage also leveled many of the surrounding homes. I accompanied our investigators to San Bruno as the Board Member on scene. We are only beginning our investigation of this tragedy, and we are still in the early stages of the Marshall investigation. We have much information to collect and analyze, but our investigations into each of these four accidents may focus on:

- **Supervisory Control and Data Acquisition (SCADA) data operations.**
- **Pipeline controller performance.** NTSB investigators are examining the work experience, health, work/rest schedule, qualification, training, and activities of each control room operator involved in the accident.
- **Operator notification and spill response.** The NTSB is gathering and evaluating information from interviews and electronic sources to further determine the timeline of events. This information will accurately reflect when the spill occurred, when notification was made, and how the operator responded.
- **Emergency response and oil spill response.** The team will review the notifications and actions of emergency responders and the pipeline operators to the release of natural gas in San Bruno and the oil spill in Marshall
- **Inspection and Maintenance History.** The NTSB will review and evaluate the inspection and maintenance history of the operator, including but not limited to integrity management plans, risk-based programs, and inspection history.
- **Oversight Activities and Actions.** Federal and state regulators have a role in overseeing the integrity of the pipeline system and ensuring the safety of our national pipeline system. The NTSB will evaluate the oversight exercised by state regulators and PHMSA of the pipeline operators in the San Bruno and Marshall accidents.
- **Aging Pipelines.** The NTSB has noted that the many of the major pipeline accident investigations it has conducted in recent years have involved pipeline systems that exceed 30 years or more of age. The NTSB is uncertain whether this is a definite trend, but will pursue this issue with PHMSA.

Closing

In summary, PHMSA has made great strides in addressing a number of matters mandated by Congress in the Pipeline Safety Improvement Act of 2002, as well as the Pipeline, Inspection, Protection, Enforcement and Safety Act of 2006. The major pipeline accidents in the past few weeks, however, clearly demonstrate that despite the progress, improvements are still needed. The NTSB believes more can be done in these areas and looks forward to a constructive dialogue with PHMSA and the DOT as we advance the interests of pipeline safety, and thus the safety of people living and working near, and receiving service from, our nation's pipelines.

This concludes my testimony and I would be happy to answer any questions you may have.