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PIPELINE SAFETY

Department of Transportation Needs to Complete Regulatory, Data, and Guidance Efforts

Statement of Susan A. Fleming, Director, Physical Infrastructure Issues

GAO-15-843T

GAO Highlights

Highlights of GAO-15-843T, a testimony before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security; Committee on Commerce, Science, and Transportation; U.S. Senate

Why GAO Did This Study

The nation relies on a pipeline network of more than 2.6 million miles to transport hazardous liquids and natural gas. This network includes gathering pipelines that transport products to processing facilities and transmission pipelines that transport products from processing facilities to users (see figure). Pipeline safety oversight from PHMSA, along with state partners, covers issues such as incident response planning and integrity management. PHMSA uses a risk-based approach to regulate pipelines, resulting in regulation of all transmission pipelines and about 10 percent of gathering pipelines. Specifically, PHMSA does not regulate gathering pipelines that are smaller, operate at lower pressure, and are located in rural areas.

This statement addresses PHMSA's efforts in the areas of (1) gathering pipeline safety, (2) pipeline operator incident response, and (3) assessment of natural gas pipeline integrity. It is based on GAO's March 2012, January 2013, June 2013, and August 2014 reports on pipeline safety and July 2015 updates from PHMSA on its actions to respond to the reports' recommendations.

What GAO Recommends

In its reports, GAO made seven recommendations to DOT to improve pipeline safety data and guidance and to move forward with proposed rulemaking to address safety risks. GAO recommended, for example, that DOT move forward with proposed rulemaking to address risks from newer gathering pipelines. DOT is taking actions to respond to the recommendations.

View GAO-15-843T. For more information, contact Susan Fleming at (202) 512-2834 or flemings@gao.gov.

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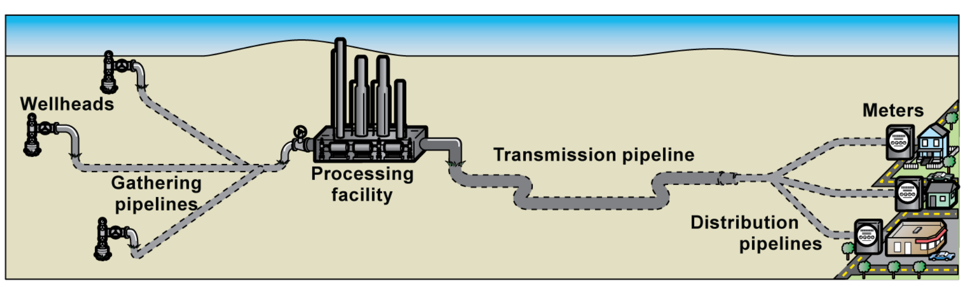
What GAO Found

The Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) has begun but not completed efforts to improve pipeline safety in response to GAO's prior recommendations:

- **Gathering pipelines**: In 2012, GAO found that while gathering pipelines that are not regulated by PHMSA were generally considered to present less safety risk than other pipelines, PHMSA did not collect comprehensive data to identify such risks. GAO concluded that such data could help pipeline safety officials and pipeline operators increase the safety of these pipelines by better identifying and quantifying safety risks. In 2014, GAO found that construction of larger, higher-pressure gathering pipelines had increased due to the increased production of oil and gas, raising safety concerns because an incident could affect a greater area than an incident from a smaller, lower-pressure pipeline. PHMSA plans to issue proposed rules in fall 2015 that include collecting data on unregulated gathering pipelines.
- **Pipeline operator incident response**: In January 2013, GAO found that PHMSA's data on operators' incident response times were not reliable, limiting the agency's ability to move to a performance-based approach for incident response. Improved data would allow PHMSA to determine appropriate response times for different types of pipelines, based on location and other factors. PHMSA plans to require changes in operator reporting to improve its incident response data and develop a performance-based standard as part of an upcoming rulemaking.
- **Gas pipeline assessment**: In June 2013, GAO found that a requirement for gas transmission pipeline operators to reassess the integrity of their pipelines every 7 years provided a safeguard that issues were regularly addressed, but was not fully consistent with risk-based practices. A risk-based approach based on individual pipeline characteristics could call for assessments to occur more or less frequently than 7 years. However, implementing intervals longer than 7 years could require additional inspection resources to verify that operators appropriately assessed risk. GAO also found that guidance for calculating assessment intervals was lacking. PHMSA plans to issue guidance in 2016 and is researching the feasibility of risk-based assessments occurring less frequently than every 7 years.

Pipeline System



Sources: Pipeline and Hazardous Materials Safety Administration; and GAO. | GAO-15-843T

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
441 G St. N.W.
Washington, DC 20548

Chairman Fischer, Ranking Member Booker, and Members of the Subcommittee:

Thank you for the opportunity to participate in this hearing on pipeline safety. The Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), working in conjunction with state pipeline safety offices, oversees a vital network of over 2.6 million miles of pipelines carrying oil and natural gas products to refineries, businesses, and homes. This network includes gathering pipelines that convey crude oil and natural gas from production wells to processing facilities; transmission pipelines that transport the processed products over long distances to communities and large-volume users; and distribution pipelines that split off from natural gas transmission pipelines to deliver gas to residential, commercial, and industrial customers. As you know, pipelines are a relatively safe means of transporting these hazardous materials; however, catastrophic incidents[1] can and do occur when pipelines leak or rupture, resulting in death, injury, and environmental and property damage. PHMSA establishes regulations that pipeline operators must follow to construct and maintain pipelines, as well as prepare for and respond to incidents. Since 2002, PHMSA has required operators to follow a risk-based approach to pipeline safety. For example, the Pipeline Safety Improvement Act of 2002 required PHMSA to implement a risk-based "integrity management" program for natural gas transmission pipeline safety that required pipeline operators to complete a baseline safety assessment of their pipelines and complete reassessments of those pipelines at least every 7 years.[2]

My statement today highlights our past work on:

1) the safety of gathering pipelines, particularly in light of the boom in oil and natural gas production from shale sources;

[1]In its regulations, PHMSA refers to the release of natural gas from a pipeline as an "incident" and a spill from a hazardous liquid pipeline as an "accident." (49 C.F.R. Part 195, Subpart B). For simplicity, this statement will refer to both as "incidents."

[2]Pub. L. No. 107-355, § 14(a), 116. Stat. 2985, 3002 (2002) (codified as amended at 49 U.S.C. § 60109(c)(3)(A)-(B)).

2) the ability of transmission pipeline operators to respond to incidents; and

3) requirements for reassessing the integrity of natural gas transmission pipelines.

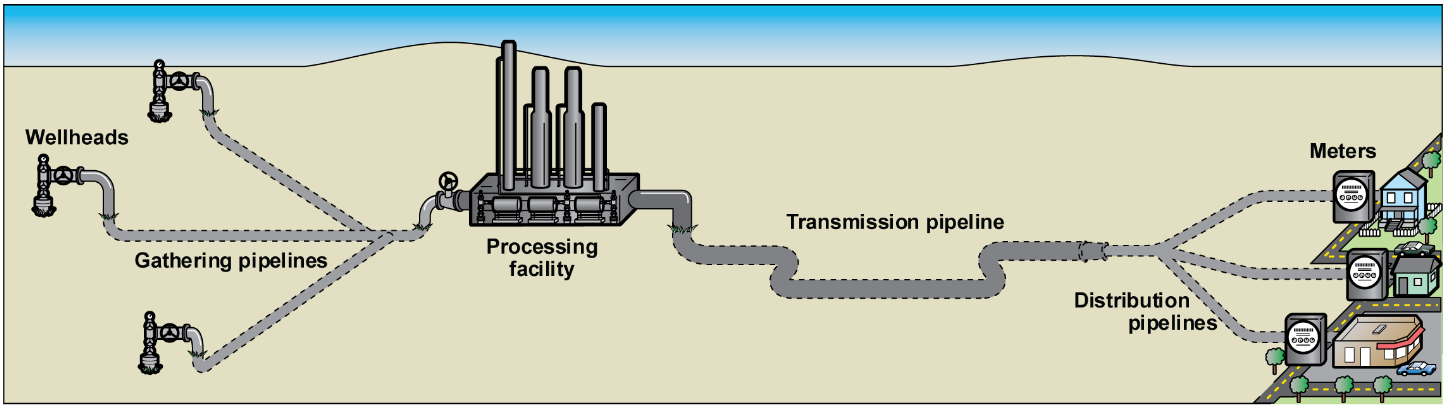
For this statement, we drew from our reports on these topics issued from 2012 through 2014.[3] For these reports, we analyzed PHMSA pipeline incident data; reviewed pipeline regulations; conducted literature reviews; and interviewed selected pipeline operators, representatives of safety and industry groups, state pipeline safety officials, and PHMSA officials. For the 2012 report on gathering pipelines, we also surveyed state pipeline safety officials in all 50 states and the District of Columbia. In addition, in July 2015, we obtained updates from PHMSA on its actions to respond to the recommendations we made in these reports. Additional information on the scope and methodology for each report can be found in these reports. Our work on each pipeline safety report was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Pipelines transport roughly two-thirds of domestic energy supplies through over 2.6 million miles of pipelines across the United States. These pipelines carry hazardous liquids and natural gas from producing wells to end users, such as businesses and homes. Within this nationwide system, there are three main types of pipelines—gathering, transmission, and gas distribution—managed by about 3,000 operators. (See fig. 1.)

[3] GAO, *Pipeline Safety: Collecting Data and Sharing Information on Federally Unregulated Gathering Pipelines Could Help Enhance Safety*, GAO-12-388 (Washington, D.C.: Mar. 22, 2012); *Pipeline Safety: Better Data and Guidance Needed to Improve Pipeline Operator Incident Response*, GAO-13-168 (Washington, D.C.: Jan. 23, 2013); *Gas Pipeline Safety: Guidance and More Information Needed before Using Risk-Based Reassessment Intervals*, GAO-13-577 (Washington, D.C.: June 27, 2013); and *Oil and Gas Transportation Safety: Department of Transportation Is Taking Actions to Address Rail Safety, but Additional Actions Are Needed to Improve Pipeline Safety,* GAO-14-667 (Washington, D.C.: Aug. 21, 2014).

Figure 1: Pipeline System



Sources: Pipeline and Hazardous Materials Safety Administration; and GAO. | GAO-15-843T

Gathering pipelines. Gas gathering pipelines collect natural gas from production areas, while hazardous liquid gathering pipelines collect oil and other petroleum products. These pipelines then typically transport the products to processing facilities, which in turn refine the products and send them to transmission pipelines. Unlike the other types of pipelines, many of these pipelines have not been subject to PHMSA regulation because they are generally located in rural areas, are smaller in diameter than transmission pipelines (traditionally about 2 to 12 inches), and operate at lower pressures, ranging from about 5 to 800 pounds per square inch (psi).[4] PHMSA regulates gathering pipelines in nonrural areas, resulting in regulation of approximately 10 percent of gathering pipelines.[5]

Transmission pipelines. Transmission pipelines carry hazardous liquid or natural gas, sometimes over hundreds of miles, to communities and

[4]PHMSA has limited statutory authority to regulate such pipelines under 49 U.S.C § 60101(b). The law authorizes PHMSA, if deemed appropriate, to define which gathering pipelines are regulated on the basis of factors such as location, length, operating pressure, throughput, diameter, and composition of the transported gas or hazardous liquid. Crude oil gathering pipelines with a diameter of not more than 6 inches that operate at low pressure and are located in a rural area that is not unusually sensitive to environmental damage are specifically exempted from regulation.

[5]49 C.F.R. Part 192.5 and 49 C.F.R. § §195.1(a)(4) and 195.11(a)(2).

large-volume users (e.g., factories).[6] For natural gas transmission pipelines, compression stations located periodically along the pipeline maintain product pressure. Similarly, pumping stations along hazardous liquid transmission pipelines maintain product flow. Transmission pipelines tend to have the largest diameters and pressures of the three types of pipelines, generally ranging from 12 to 42 inches in diameter and operating at pressures ranging from 400 to 1440 psi. PHMSA's regulations cover all hazardous liquid and natural gas transmission pipelines.

Gas distribution pipelines. Natural gas distribution pipelines transport natural gas from transmission pipelines to residential, commercial, and industrial customers. These pipelines tend to be smaller, sometimes less than 1 inch in diameter, and operate at lower pressures—0.25 to 100 psi.

PHMSA estimated that in 2014 there were about 200,000 miles of hazardous liquid pipelines,[7] 302,000 miles of gas transmission pipelines, 18,000 miles of gas gathering pipelines, and 2.2 million miles of gas distribution pipelines based on annual reports from pipeline operators.

Transporting hazardous liquids and natural gas by pipelines is associated with far fewer fatalities and injuries than other modes of transportation. From 2010 to 2014, there was an average of about 14 fatalities per year for all pipeline incidents reported to PHMSA, including an average of about 2 fatalities per year resulting from incidents on hazardous liquid and natural gas transmission pipelines. In comparison, in 2013, 3,964 fatalities resulted from incidents involving large trucks and 703 additional fatalities resulted from railroad incidents. Yet risks to pipelines exist, such as corrosion and third-party excavation, which can damage a pipeline's integrity and result in leaks and ruptures. A leak is a slow release of a product over a relatively small area. A rupture is a breach in the pipeline that may occur suddenly; the product may then ignite, resulting in an explosion.[8] According to pipeline operators we met with in our previous

[6]For the purposes of this statement, we use the term transmission pipeline to refer to both hazardous liquid and natural gas pipelines carrying product over long distances to users.

[7]PHMSA's data do not categorize hazardous liquid pipelines into transmission and gathering pipelines.

[8]The risks and consequences posed by gas and hazardous liquids incidents also differ. Natural gas tends to ignite more easily, resulting in more explosions. Hazardous liquids ignite less easily, but can spill and pollute the environment.

work, of the two types of pipeline incidents, leaks are more common but generally cause less damage. Ruptures are relatively rare but can have much higher consequences because of the damage that can be caused by an associated explosion.

PHMSA administers two general sets of pipeline safety requirements and works with state pipeline safety offices to inspect pipelines and enforce the requirements.[9] The first set of requirements is minimum safety standards that cover specifications for the design, construction, testing, inspection, operation, and maintenance of pipelines. Under PHMSA's minimum safety standards, operators are required to have a plan for responding to an incident that addresses leak detection, coordinating with emergency responders, and shutting down the affected pipeline segment. The amount of time it takes to shut down a pipeline segment depends on the type of valve installed on the pipeline. For example, manual valves require a person to arrive on site and either turn a wheel crank or activate a push-button actuator. In contrast, automated valves generally take less time to close than manual valves. They include remote-control valves that can be closed via a command from a control room and automatic-shutoff valves that can close without human intervention based on sensor readings.[10] PHMSA's minimum safety standards dictate the spacing of all valves, regardless of the type of equipment installed to close them.[11]

The second set of requirements is part of a supplemental risk-based regulatory program termed "integrity management," whereby operators are required to systematically identify and mitigate risks to pipeline segments that are located in "high-consequence areas" where an incident would have greater consequences for public safety or the environment.[12]

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[9]For pipelines, there are 48 states, the District of Columbia, and Puerto Rico in PHMSA's natural gas pipeline program and 17 states in its hazardous liquid pipeline program (49 U.S.C. § 60104(c)).

[10]Hazardous liquid regulations refer to emergency flow restriction devices, which include remote-control valves and "check" valves that automatically prevent product from flowing in a specific direction. See 49 C.F.R. § 195.452(i)(4). We refer to all of these valves as automated valves.

[11]49 C.F.R. §§ 192.179, 195.260.

[12]High-consequence areas are defined differently for hazardous liquid and natural gas pipelines. For hazardous liquid pipelines, such areas include highly populated areas (i.e. urban areas), other populated areas (i.e. a city, town, or village), navigable waterways, and areas unusually sensitive to environmental damage. For natural gas pipelines, high-consequence areas typically include highly populated or frequented areas, such as parks.

For example, natural gas transmission pipeline operators were required to assess the integrity of their pipelines within high-consequence areas by December 2012, repair or otherwise address anomalies found during the assessment, and reassess these segments at least once every 7 years thereafter. Integrity management regulations also require that all transmission pipeline operators consider the use of automated valves when identifying and mitigating pipeline risks. These requirements have been in effect for all hazardous liquid pipelines since 2002, for natural gas transmission pipelines since 2004, and for natural gas distribution pipelines since 2010.

Gathering Pipelines Pose Safety Risks That PHMSA Is Working to Address

In our 2012 and 2014 reports, we identified safety risks associated with gas and hazardous liquid gathering pipelines that PHMSA was planning to but had not yet addressed through regulatory proposals. In 2012, we found that PHMSA does not collect comprehensive data on safety risks associated with gathering pipelines.[13] Although gathering pipelines generally pose lower safety risks than other types of pipelines, our survey of state pipeline safety agencies found problems including construction quality, maintenance practices, unknown or uncertain locations, and limited or no information on current pipeline integrity as safety risks for federally unregulated gathering pipelines. Operators of federally unregulated gathering pipelines are not required by federal law to report information on such risk factors. Furthermore, the survey, as well as interviews with other pipeline industry stakeholders, identified land-use changes—namely urban development encroaching on existing pipeline rights-of-way—and the increased extraction of oil and gas from shale as changes in the operating environments that could increase the safety risks for federally unregulated gathering pipelines. Consequently, federal and state pipeline safety officials do not know the extent to which individual operators collect such information and use it to monitor the safety of their pipelines.

In our 2012 report, we found that the data PHMSA collects for regulated pipelines help federal and state safety officials and pipeline operators increase the safety of these pipelines by better identifying and quantifying safety risks, as well as by implementing mitigation strategies, and addressing potential regulatory needs. We concluded that collecting such

[13] GAO-12-388. Although PHMSA has the legal authority to collect data on unregulated gathering pipelines, the agency is not required and has not yet exercised its authority to do so.

data about gathering pipelines could facilitate quantitatively assessing the safety risks posed by unregulated gathering pipelines. We recommended that PHMSA collect data from operators of federally unregulated onshore hazardous liquid and gas gathering pipelines subsequent to an analysis of the benefits and industry burdens associated with such data collection. We recommended that data collected should be comparable to what PHMSA collects annually from operators of regulated gathering pipelines (e.g., fatalities, injuries, property damage, location, mileage, size, operating pressure, maintenance history, and the causes and consequences of incidents). In July 2015, PHMSA officials told us that regulatory proposals the agency plans to issue for both natural gas and hazardous liquid pipelines will call for collecting data on unregulated gathering pipelines through both annual reports and accident/incident reports. As of September 2015, DOT estimated that Notices of Proposed Rulemaking on these issues would be published in October 2015.

We also found in our 2012 report that a small number of state pipeline safety agencies we surveyed reported using at least one of five practices that were most frequently cited to help ensure the safety of federally unregulated pipelines.[14] However, we also found that the sharing of information among states on the safety practices used appeared to be limited, and that some state and PHMSA officials we interviewed had limited awareness of safety practices used by other states. We recommended that PHMSA establish an online clearinghouse or other resource for sharing information on pipeline safety practices. In response, PHMSA requested that the National Association of Pipeline Safety Representatives develop an online resource document library for states to obtain and post information related to gathering pipelines. This online library was established in May 2014 and includes, among other things, state-specific regulatory information for gathering pipelines, such as rules, definitions, and inspection form examples.

In our 2014 report, we examined the transportation impacts of increased oil and gas extraction and found that construction of larger, higher-pressure gathering pipelines had increased to meet the increased oil and

[14]These practices include (1) damage prevention programs, (2) considering areas of highest risk to target resources, (3) safety inspections, (4) public outreach and communication, and (5) increased regulatory attention on operators with prior spills or leaks.

gas production.[15] Such pipelines, if located in rural areas, are generally not subject to DOT safety regulations that apply to other pipelines. This includes requirements for emergency response planning that apply to other pipelines but do not apply to rural unregulated gathering pipelines. For example, transmission pipeline operators with pipelines similar in size to the new gathering pipelines are required to develop comprehensive emergency response plans and coordinate with local emergency responders. Emergency response officials we spoke with stated that without information about the location of some gathering pipelines, responders—particularly in rural areas—may not be adequately prepared to respond to an incident. Consequently, response planning in rural areas with federally unregulated gathering pipelines may be inadequate to address a major incident. Historically, gathering pipelines were smaller and operated at lower pressure and thus posed less risk than long-distance pipelines. However, state pipeline regulators, PHMSA officials, and pipeline operators we spoke with said that some newly built gathering pipelines have larger diameters and higher operating pressures that more closely resemble transmission pipelines than traditional gathering pipelines. For example, while gathering pipelines have traditionally been 2 to 12 inches in diameter, one company operating in a Texas shale region showed us plans to build 30- and 36-inch natural gas gathering pipelines, which is near the high end of diameters for regulated transmission pipelines. The recent increase in their size and pressure raises safety concerns because they could affect a greater area in the event of an incident. Although states may regulate some gathering pipelines in rural areas, a 2013 report on state pipeline oversight by an association of state

[15] GAO-14-667. We found that the increase in pipeline mileage is unknown because data on gathering pipelines are not systematically collected by PHMSA or by every state. Technology advancements such as horizontal drilling and hydraulic fracturing (pumping water, sand, and chemicals into wells to fracture underground rock formations and allow oil or gas to flow) have allowed companies to extract oil and gas from shale and other tight geological formations. As a result, oil and gas production increased more than fivefold from 2007 through 2012.

pipeline regulators showed that most states do not currently regulate gathering pipelines in rural areas.[16]

PHMSA has been working to propose regulatory changes to address safety risks of unregulated gathering pipelines, but this effort is not yet complete. PHMSA issued Advance Notices of Proposed Rulemaking for onshore hazardous liquid and gas pipelines in October 2010 and August 2011, respectively, seeking comment on whether to require operators to report on federally unregulated gathering pipelines, as well as on whether to establish a new, risk-based regime of safety requirements for large-diameter, high-pressure gas gathering pipelines, including those pipelines in rural locations.[17] PHMSA also noted that enforcement of current requirements has been hampered by the conflicting and ambiguous language of the current regulation that can produce multiple classifications for the same pipeline system, which means that parts of a single pipeline system can be classified as rural gathering pipelines and therefore be federally unregulated, while other parts of the same pipeline with the same characteristics are regulated. In our 2014 report, we recommended that PHMSA move forward with a Notice of Proposed Rulemaking to address gathering pipeline safety that addresses the risks of larger-diameter, higher-pressure federally unregulated gathering pipelines, including subjecting such pipelines to emergency response planning requirements that currently do not apply. DOT generally concurred with the recommendation. In July 2015, PHMSA officials told us the proposed regulations the agency expects to publish in October 2015 will address this recommendation. Specifically, officials said that the gas pipeline proposal will extend certain requirements (including emergency response planning) to previously unregulated gathering pipelines with a diameter greater than 8 inches. PHMSA officials also said that in the hazardous liquid pipeline proposal, they are planning on using the proposed annual report and accident data collection from federally

[16]The National Association of Pipeline Safety Representatives, an association representing state pipeline safety officials, produced a compendium of state pipeline regulations showing that most states with delegated authority from PHMSA to conduct intrastate inspections do not have regulations that cover oversight of gathering pipelines. Based on our analysis, we determined that regulations vary by state, but the compendium shows that at least 6 states have some form of gathering-pipeline regulation. National Association of Pipeline Safety Representatives, *Compendium of State Pipeline Safety Requirements & Initiatives Providing Increased Public Safety Levels compared to Code of Federal Regulations*, second edition (Sept. 9, 2013).

[17]75 *Fed. Reg.* 63774 (Oct. 18, 2010) and 76 *Fed. Reg.* 53086 (Aug. 25, 2011).

unregulated hazardous liquid gathering pipelines to develop appropriate and relevant regulations for certain hazardous liquid gathering pipelines that are currently unregulated.

Better Guidance on Use of Automated Valves and a Performance-Based Approach to Incident Response Could Improve Operators' Response Times

In our January 2013 report on pipeline operator incident response, we found that numerous variables influence the ability of transmission pipeline operators to respond to incidents.[18] For example, the accuracy of a leak detection system, the location of response personnel, the preparedness of emergency responders, and the use of manual or automated valves can affect the amount of time it takes for operators to respond to incidents, which can range from minutes to days.[19] However, even though the primary advantage of installing automated valves is that operators can respond quickly to isolate the affected pipeline segment and reduce the amount of product released, automated valves can have disadvantages as well. Specifically, accidental closures can lead to loss of service to customers or even cause a rupture. Because the advantages and disadvantages of installing an automated valve are closely related to the specifics of the valve's location, it is appropriate that operators decide whether to install automated valves on a case-by-case basis. However, not all operators we spoke with were aware of existing PHMSA guidance designed to assist operators in deciding when to use automated valves. Consequently, we recommended that PHMSA use its existing information-sharing mechanisms to alert all pipeline operators of inspection and enforcement guidance that provides additional information on how to interpret regulations on automated valves. PHMSA officials said they plan to address this recommendation by highlighting existing guidance during public presentations and in other forums pipeline operators attend and through an upcoming rulemaking on rupture detection and valve rules. PHMSA plans to publish a Notice of Proposed Rulemaking on this issue in February 2016.

In our January 2013 report, we concluded that PHMSA has an opportunity to improve incident response times by developing a performance-based approach for pipeline operators to improve incident response times. We have also previously concluded that a performance-based approach—including goals and associated performance measures

[18]GAO-13-168.

[19]Variables outside of operators' control—such as weather conditions—can also influence incident response time.

and targets—can allow those being regulated to determine the most appropriate way to achieve desired outcomes. While PHMSA has established a national goal for pipeline operators to respond to incidents in a “prompt and effective” manner, it has not linked performance measures or targets to this goal.

Defining performance measures and targets for incident response can be challenging, but we identified a potential strategy for PHMSA to move toward a more quantifiable, performance-based approach to improve incident response based on nationwide incident response data. For example, PHMSA could evaluate nationwide data to determine response times for different types of pipeline (based on location, operating pressure, and pipeline diameter, among other factors). First, though, PHMSA must improve the data it collects on incident response times. These data are not reliable both because operators are not required to fill out certain time-related fields in the reporting form and because operators told us they interpret these data fields in different ways. Consequently, we found that some pipeline operators did not consistently report the date and time for when the incident was identified or for when operator resources arrived on the site of the incident. Some operators also did not consistently report whether the incident led to a shutdown of a pipeline or facility. Reliable data would improve PHMSA’s ability to measure incident response and assist the agency in exploring the feasibility of developing a performance-based approach for improving operator response to pipeline incidents.

We recommended that PHMSA improve the reliability of incident response data and use these data to evaluate whether to implement a performance-based framework for incident response times. In July 2015, PHMSA officials told us they have taken several steps toward addressing this recommendation, including making changes to its incident reports and requiring that operators report specific pieces of information regarding an incident. Additionally, PHMSA officials said that, later this year, they plan to propose further changes to the report forms to collect additional data that will allow the agency to better track incident response times. PHMSA officials also said they plan to develop a more specific performance-based standard for incident response as part of the upcoming February 2016 rulemaking.

Guidance and More Information Needed for Use of Risk-Based Reassessment Intervals

The current statutory requirement for natural gas transmission pipeline operators to reassess pipeline integrity at least every 7 years provides a safeguard by allowing operators and regulators to identify and address problems on a continual basis, but in our June 2013 report, we found that this requirement is not fully consistent with risk-management practices, which are the basis for PHMSA's integrity management program.[20] The primary advantage of the 7-year reassessment requirement is that it is more frequent than the intervals found in industry consensus standards, which specify 10-, 15-, or 20-year intervals depending on the characteristics of individual pipelines.[21] This conservative approach provides greater assurance that operators are regularly monitoring their pipelines to address threats before leaks or ruptures occur. However, this requirement is not fully consistent with risk-based management practices. Under a risk-based approach, operators could, for example, use information to identify, assess, and prioritize risks so that resources may be allocated to address higher risks first. While operators are currently required to determine an appropriate reassessment interval based on the threats to their pipelines in high-consequence areas, they must reassess those pipelines at least every 7 years regardless of the risks identified. If the operator's risk analysis indicates that reassessments should be done at intervals shorter than 7 years, the operator is required to do so.

Implementing risk-based reassessment intervals that are longer than 7 years for natural gas transmission pipelines would require a statutory change and could exacerbate current workload, staffing, and expertise challenges for operators and regulators. For example, PHMSA officials told us that allowing longer intervals could require inspectors to spend more time and resources than they do currently to verify that operators appropriately assessed risk, and state pipeline safety offices we met with noted potential concerns with staffing and training to effectively evaluate risk-based reassessment intervals. Further, some operators told us that extending reassessment intervals to be longer than 7 years would likely require additional data analyses beyond those currently required. In our June 2013 report, we found that operators we met with varied in the

[20]GAO-13-577.

[21]The American Society of Mechanical Engineers developed an industry consensus standard—subsequently approved by the American National Standards Institute—on maximum reassessment intervals for all safety risks (including corrosion damage) that PHMSA incorporated into its regulations. See 49 C.F.R. § 192.939.

extent to which they calculated reassessment intervals and used the results of data analyses. Further, we found that guidance to calculate reassessment intervals was lacking, and as a result, operators may perform a less rigorous determination of their reassessment intervals. As a result, some operators could be following the 7-year reassessment interval when their pipeline should be reassessed more frequently (e.g. within 5 years). To improve how operators calculate reassessment intervals, we recommended that PHMSA develop guidance for operators to use in determining risks and calculating reassessment intervals. PHMSA officials said the agency has drafted guidance on calculating reassessment intervals that are shorter than 7 years; this guidance is currently under internal review and agency officials anticipate that it will be posted on PHMSA's website by February 2016.

At the request of a congressional committee, in 2008, PHMSA described how it would establish and enforce risk-based criteria for extending the 7-year reassessment interval for natural gas transmission pipelines. At that time, PHMSA proposed retaining the current 7-year reassessment requirement, but also establishing a process by which operators could use risk-based reassessment intervals that are longer than 7 years if they met certain potential criteria, such as demonstrating sound risk analysis. This process would be similar to that used by PHMSA for hazardous liquid pipeline reassessment intervals.[22] While we and PHMSA have supported the concept of risk-based reassessment intervals that are longer than 7 years, given the breadth of potential challenges with implementation, more information might help decision-makers better understand the resource requirements and potential safety implications of such a change. For example, PHMSA has used pilot programs to collect such information and study the effects prior to rule changes. To better identify the resource requirements needed to implement risk-based reassessment intervals that are longer than 7 years for gas transmission pipelines, we recommended that PHMSA collect information on the feasibility of addressing the potential challenges of implementing risk-based reassessment intervals that are longer than 7 years, for example by preparing a report or developing a legislative proposal for a pilot program, in consultation with Congress, that studies the impact to

[22]Reassessment interval requirements for hazardous liquid pipelines were established by PHMSA rulemaking rather than through legislation. The gas transmission pipeline reassessment interval requirements were established in the 2002 Pipeline Safety Improvement Act.

regulators and operators of a potential rule change. PHMSA is studying the potential to implement risk-based reassessment intervals that are longer than 7 years for gas transmission pipelines; agency officials plan to complete this research by March 2016.

Chairman Fischer, Ranking Member Booker, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this testimony, please contact Susan A. Fleming, Director, Physical Infrastructure Issues, at (202) 512-2834 or flemings@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Sara Vermillion (Assistant Director), Melissa Bodeau, Matthew Cook, Juan Garcia, David Hooper, Andrew Huddleston, SaraAnn Moessbauer, and Daniel Paepke.

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