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PIPELINE SAFETY

Better Data and Guidance Needed to Improve Pipeline Operator Incident Response

GAO Highlights

Accountability * Integrity * Reliability

Highlights of GAO-13-168, a report to congressional committees

Why GAO Did This Study

The nation's 2.5 million mile network of hazardous liquid and natural gas pipelines includes more than 400,000 miles of "transmission" pipelines, which transport products from processing facilities to communities and large-volume users. To minimize the risk of leaks and ruptures, PHMSA requires pipeline operators to develop incident response plans. Pipeline operators with pipelines in highly populated and environmentally sensitive areas ("high-consequence areas") are also required to consider installing automated valves.

The Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 directed GAO to examine the ability of transmission pipeline operators to respond to a product release. Accordingly, GAO examined (1) opportunities to improve the ability of transmission pipeline operators to respond to incidents and (2) the advantages and disadvantages of installing automated valves in high-consequence areas and ways that PHMSA can assist operators in deciding whether to install valves in these areas. GAO examined incident data; conducted a literature review; and interviewed selected operators, industry stakeholders, state pipeline safety offices, and PHMSA officials.

What GAO Recommends

DOT should (1) improve incident response data and use these data to evaluate whether to implement a performance-based framework for incident response times and (2) share guidance and information on evaluation approaches to inform operators' decisions. DOT agreed to consider these recommendations.

View GAO-13-168. For more information, contact Susan A. Fleming at (202) 512-2834 or flemings@gao.gov.

What GAO Found

The Department of Transportation's (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) has an opportunity to improve the ability of pipeline operators to respond to incidents by developing a performance-based approach for incident response times. The ability of transmission pipeline operators to respond to incidents—such as leaks and ruptures—is affected by numerous variables, some of which are under operators' control. For example, the use of different valve types (manual valves or "automated" valves that can be closed automatically or remotely) and the location of response personnel can affect the amount of time it takes for operators to respond to incidents. Variables outside of operators' control, such as weather conditions, can also influence incident response time, which can range from minutes to days. GAO has previously reported that a performance-based approach—including goals and associated performance measures and targets—can allow those being regulated to determine the most appropriate way to achieve desired outcomes. In addition, several organizations in the pipeline industry have developed methods for quantitatively evaluating response times to incidents, including setting specific, measurable performance goals. While defining performance measures and targets for incident response can be challenging, PHMSA could move toward a performance-based approach by evaluating nationwide data to determine response times for different types of pipeline (based on location, operating pressure, and pipeline diameter, among other factors). However, PHMSA must first 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. 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.

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; however, automated valves can have disadvantages, including the potential for accidental closures—which can lead to loss of service to customers or even cause a rupture—and monetary costs. Because the advantages and disadvantages of installing an automated valve are closely related to the specifics of the valve's location, it is appropriate to decide whether to install automated valves on a case-by-case basis. Several operators we spoke with have developed approaches to evaluate the advantages and disadvantages of installing automated valves. For example, some operators of hazardous liquid pipelines use spill-modeling software to estimate the amount of product release and extent of damage that would occur in the event of an incident. While PHMSA conducts a variety of information-sharing activities, the agency does not formally collect or share evaluation approaches used by operators to decide whether to install automated valves. Furthermore, not all operators we spoke with were aware of existing PHMSA guidance designed to assist operators in making these decisions. PHMSA could assist operators in making this decision by formally collecting and sharing evaluation approaches and ensuring operators are aware of existing guidance.