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GAO Report Critical of PHMSA Inspection Priorities

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The Government Accountability Office (GAO) issued a report on August 4, 2017, titled "***Pipeline Safety – Additional Actions Could Improve Federal Use of Data on Pipeline Materials and Corrosion***." The 55 page Report, prepared in response to a Congressional mandate in the 2016 Pipeline Safety Act reauthorization, summarizes pipeline materials, training and corrosion prevention technologies for gas and liquid pipeline facilities and analyzes PHMSA use of corrosion and material data to inform its inspection priorities. The Report recommends that PHMSA review, document and validate the way in which it identifies the highest risk pipelines for inspection, but makes no significant new findings, and the recommendations are largely consistent with initiatives that PHMSA already has begun.

The Report notes initially that pipelines carrying hazardous liquids or gas have the lowest incident rate of other transportation modes. For oil and gas pipelines from 2010 to 2015, GAO's assessment of PHMSA incident data attaches the highest single cause as corrosion (22%), followed by "equipment failure" (21%), "natural or outside force" (16%) and "excavation damage" (14%). PHMSA tracks causal data somewhat differently, however, grouping "equipment failure" and "material/weld failures" together in a single category, which is reported by operators to be the largest cause of significant incidents in the past 5 years. By comparison, the GAO Report links corrosion (22%) with "material, pipe or weld failure" (12%), although it is a very different failure mechanism from corrosion, to be the estimated cause of nearly one-third of all oil and gas significant incidents.

GAO's analysis of significant pipeline incident data does not provide the historical context that over the past two decades, the leading cause of pipeline incidents has shifted from outside force/third party damage to corrosion and more recently to equipment failure. This gradual change in the leading cause of incidents has been a result of a concerted effort by both PHMSA and the pipeline industry, and has been associated with an overall ***reduction*** in the number of significant pipeline incidents. Twenty years ago, third party strikes were the leading cause of pipeline incidents, but they were reduced by enactment of the nationwide "811 Call Before You Dig" program. Corrosion (alone) then became the leading cause of incidents, but the number of those events was reduced through increased focus on system integrity and the use of in line inspection tools to identify anomalies. At present, PHMSA data and industry experience show that the leading cause of incidents is equipment failure generally (including material and weld failure).

The GAO Report notes that PHMSA does not have enough resources or inspectors to inspect all or even a majority of the nation's 2.7 million mile pipeline system annually. PHMSA inspects

about 20% of the U.S. pipeline network (largely consisting of interstate pipelines), while State pipeline safety agencies inspect the remaining 80% (primarily consisting of regulated intrastate pipelines). PHMSA uses a risk based approach to prioritize inspections and to determine inspection cycles for higher risk pipeline facilities, called a Risk Ranking Index Model (RRIM), and the Agency provides guidance to its state partners on how to use a risk based approach to prioritize their inspections.

PHMSA started using this model in 2011 which focuses on certain threat factors, including: ineffective coating, bare pipe mileage, pipeline unit miles, pre-1970 ERW pipe mileage, enforcement, construction or acquisition notifications, commodity type, and significant incidents. In preparing and using the RRIM model, however, the GAO Report notes that PHMSA did not document its rationale for the selection of those threat factors or their associated weights and risk tiers, including how (if at all) the Agency used data as part of its risk approach. Further, the Agency does not maintain a process to assess the effectiveness of its risk index and validate its inspection priorities.

The Report concludes with two recommendations for PHMSA to implement: (1) document the decisions and assumptions underlying its RRIM risk index, including the data and information analyzed; and (2) establish (and document) a process that uses data to periodically review and assess the effectiveness of the model in prioritizing pipelines for inspection. These recommendations are consistent with initiatives that PHMSA has started in 2016, by establishing an Office of Planning and Analytics and proposing to revise its data collection activities. DOT concurred with the GAO recommendations and will submit a formal detailed response in 60 days.

Notably, the Agency requires that *operators* thoroughly document their integrity risk ranking analysis and assumptions and track and report metrics to measure effectiveness of that analysis (among other programs), but GAO's Report observes that PHMSA itself is not performing those key tasks in setting its inspection priorities. Operators expend significant resources and time coordinating with the Agency during integrated audits, which can last months. Both the Agency and the industry would be well served if PHMSA's inspection priorities were based on a more accurate risk index that is routinely validated to measure its effectiveness.