May 8, 2013

The Honorable Cynthia L. Quarterman
Administrator
US Pipeline and Hazardous Material Safety Administration
Washington, DC 20590

RE: Docket No. PHMSA–2012–0021
Pipeline Safety: Public Comment on Leak and Valve Studies mandated by the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011

Dear Administrator Quarterman:

As PHMSA pursues its duties under the latest amendments to the federal pipeline safety statutes, it is critical that policy deliberations and possible rulemakings rest on comprehensive, high-quality, and accurate information and analysis. Unfortunately, the valve and leak reports that were recently submitted to Congress do not meet this standard fully.

The leak and valve reports were prepared in response to sections 4 and 8 of the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 (PSA):

PSA Section 4: Automatic and Remotely Controlled Valves

Section 4 directs the Secretary of Transportation to issue regulations, if appropriate, to require the use of automatic shut-off valves (ASVs) or remote controlled shut-off valves (RSVs), or equivalent technology, where economically, technically, and operationally feasible on transmission pipeline facilities constructed or entirely replaced after the date on which the Secretary issues the final rule containing such requirement. PHMSA commissioned Oak Ridge National Laboratory (Oak Ridge) to perform a report PHMSA could use to assess what valve regulations, if any, should be issued under section 4.

Section 4 also requires the Comptroller General of the United States (in effect, the Government Accountability Office or GAO) to conduct a report on the ability of transmission pipeline facility operators to respond to a hazardous liquid or gas release from a pipeline segment located in a high consequence area. In conducting the report, GAO was required to consider the swiftness of leak detection and pipeline shutdown capabilities, the location of the nearest response personnel, and the costs, risks, and benefits of installing ASVs and RSVs.

On October 26, 2012, INGAA and AGA filed separate comments on the draft versions of these reports. Our respective comments identified numerous flaws, and while some were corrected many were not. As a result, the reports that went to Congress contain misconceptions and inaccuracies that, if relied upon, could lead to policy decisions and regulations that not only would not improve pipeline safety, but actually could degrade safety by diverting resources better spent elsewhere. INGAA and AGA therefore write to reiterate, summarize and emphasize the unaddressed problems they identified earlier.

PSA Section 8: Leak Detection Systems

Section 8 required the Secretary to report to Congress on the leak detection systems (LDSs) utilized by operators of hazardous *liquid* pipeline facilities and transportation-related flowlines. The report was to include:

- An analysis of the technical limitations of current leak detection systems, including the ability of the systems to detect ruptures and small leaks that are ongoing or intermittent, and what can be done to foster development of better technologies; and

- An analysis of the practicability of establishing technically, operationally, and economically feasible standards for the capability of such systems to detect leaks, and the safety benefits and adverse consequences of requiring operators to use leak detection systems.

PHMSA commissioned Kiefner and Associates (Kiefner) to prepare the section 8 leak report.

On October 4, 2012, PHMSA released drafts of the Oak Ridge and Kiefner reports for public comment. In the limited, three week comment period, INGAA and AGA identified numerous flaws in both draft reports and provided extensive remarks, including suggested corrections. INGAA also commented on ASVs and RSVs, as well as LDSs, at PHMSA's March 27, 2012, workshop and in additional, docketed comments filed April 30, 2012.

Observations and Conclusions from the Oak Ridge and GAO Valve Reports

The revised Oak Ridge report still employs flawed bases that overstate the benefits of installing valves, leading to false conclusions favoring installation. Although some of these and other flaws were corrected in the final reports, several critical fallacies and inaccuracies went unaddressed. As discussed in more technical detail in Attachment 1, the Oak Ridge analysis requires a list of extremely precise incident responses — from firefighters, gas control room operators, 911 dispatch, and pipeline field personnel — to make installing and using RCVs and ASVs effective. Given the realities of on-the-ground incident management, the precision of Oak Ridge's baseline response scenario is not fully representative.

Flaws in Oak Ridge's methodology systematically overstated the benefits that were used in Oak Ridge's cost-benefit analysis. In contrast, GAO's incident report, *Better Data and Guidance Needed to Improve Pipeline Operator Incident Response*, issued on January 23, 2013, provides support for a performance-based approach to incident response. The GAO report outlines several approaches that operators currently use to improve incident response, and recognizes the challenges and potential shortfalls of indiscriminate valve automation. The determination for valve automation needs to be conducted on a case-by-case basis, recognizing that the advantages and disadvantages of installing an automated valve are highly dependent on each system's complexity and each individual valve location. The GAO analysis, which considers the proximity of operating personnel to valve locations in evaluating response time, and strikes a balance between automation of valves and use of operating personnel to ensure timely valve closure, is more technically sound.

Observations and Conclusions from the Kiefner Leak Detection Report

Congress stipulated that the Secretary should produce a report on the leak detection systems utilized by operators of hazardous liquid pipeline facilities and transportation-related flowlines. These pipelines stretch 171,000 miles and serve customers numbering in the thousands. The Kiefner report is far broader and more complex, examining not only the LDSs used by hazardous liquid pipelines, but also the LDSs used by gas transmission and gas distribution pipelines, which span 2.4 million miles and serve more than 70 million customers.

Kiefner finds on page 2-2 that the pipeline industry considers LDSs differently, depending on whether the pipeline is used for hazardous liquid transportation, natural gas transmission or natural gas distribution. Yet Kiefner concludes that "leak detection regulations in 49 CFR 195 – especially expressions of principles and procedures – apply in large part equally well to gas pipelines."

This conclusion is simply incorrect. The physical properties of hazardous liquids and natural gas, and the operational conditions under which they are transported (and, for natural gas, distributed) vary so greatly that there is little or no technical justification to compare the LDSs of different pipeline sectors. It is not merely that the hazardous liquids pipelines, natural gas transmission pipelines, and natural gas distribution pipelines consider LDSs differently; these systems are completely different in fact. At a minimum, the Kiefner report's comparisons of the LDSs deployed for hazardous liquid, natural gas transmission and natural gas distribution are confusing and of minimal technical value.

Further, page 2-9 of the Kiefner report further states:

> Practically all internal LDS technologies applicable to liquids pipelines apply equally well to gas pipelines also. Because of the much greater compressibility of gas, however, their practical implementation is usually far more complex and delicate.

In addition to assuming, again, that the LDSs used by hazardous liquids pipelines work for natural gas transmission and distribution, this statement negates the differences between linear transmission pipelines (*i.e.*, the facilities operated by INGAA members) and distribution lines that are networked and interconnected (*i.e.*, the facilities operated by AGA members). The two delivery systems function at widely different pressure ranges, pipe diameters and distances, and these fundamental differences are disregarded throughout the report.

Conclusion

To deliberate further on the important technical issues involving automated and remote valves and leak detection systems, Congress must receive the best available information possible, and any new PHMSA requirements in these areas must be based on accurate and comprehensive analysis. The Oak Ridge valve report and Kiefner leak report remain flawed, and the INGAA and AGA comments identifying these flaws remain valid. A detailed analysis of the flaws in the reports is contained in Attachment 1.

The GAO report, *Better Data and Guidance Needed to Improve Pipeline Operator Incident Response*, presents performance-based safety options for using RCVs and ASVs that are consistent with successful industry practices. This approach is consistent with the risk-based approach PHMSA currently applies to valves through 49 CFR 192.935(c). The GAO report evaluates actual practices and does not rely on theoretical analyses.

The stated objective of the Kiefner leak detection report was to compare the LDSs of hazardous liquid, natural gas transmission, and natural gas distribution pipelines. The report concludes that the same LDS technologies can be applied by all three types of pipelines, yet it is clear from the report itself that the three pipelines sectors are so different that their LDSs cannot be compared. Because of this fundamental flaw the Kiefner report offers little technical value.

INGAA and AGA would welcome additional reports, research, and discussion on strategies and technologies to ensure legislative, regulatory and industry efforts are truly focused on the best possible approaches to improving pipeline safety.

In the interest of transparency, and to maintain as complete a record as possible, copies of this letter are being filed in the docket PHMSA assigned when the Oak Ridge and Kiefner studies were opened for public comment (PHMSA–2012–0021).

Respectfully Submitted,

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cc: Docket No. PHMSA–2012–0021
VIA REGULATIONS.GOV

Attachment 1

Critical Flaws: Oak Ridge Valve Report

There are numerous flaws that remain in the Oak Ridge valve report. The primary critical ones center on the overstated benefits of adding ASVs/RSVs and the impact of a pipeline rupture:

<u>Benefits of Adding ASVs/RSVs</u>

- The report states that block valve closure swiftness has no effect on reducing building and personal property damage costs, and concludes that "without fire fighter intervention, there is no quantifiable benefit in terms of costs avoidance for damage to buildings and personal property attributed to swiftly closing block valves located upstream and downstream of guillotine-type breaks in natural gas pipelines." If block valve closure has no effect on reducing building and personal property costs, it should be assumed that ASV and RSV closures would also have no effect on reducing building and personal property costs. Yet, Oak Ridge seems to be assessing reduced building and personal property costs as benefits of applying ASVs and RSVs. The flawed bases systematically overstate the benefits of adding these valves, yielding cost-benefit conclusions that call for ASVs and RSVs to be installed where they are not warranted.

- The stated benefits of installing ASVs and RSVs are based on optimistic assumptions. For instance, the times assumed in the report for a controller to detect a rupture and initiate an isolation action do not take into account certain circumstances associated with a pipeline or a rupture, such as where the rupture occurs along the system . As each pipeline system is unique, and each failure has its own characteristics, assuming a single value for response time thus oversimplifies Oak Ridge's analysis. The times given in the report's examples may be achievable in a simple system with few delivery or receipt points, but with a complex system servicing production or market areas with numerous interconnects and parallel pipelines, the elapsed time requirements are understated. For example, the report's ten minute detection time for a 42-inch diameter line is possibly achievable on a single line segment with few receipts or deliveries, but for complex systems the time will be longer. Similarly, for a 12-inch diameter system, a five-minute detection time is optimistic. The 12-inch system is often found in market areas serving numerous end users and detection can be at least as complex if not more. It depends upon a number of factors, including the number of receipts in production areas, the number of deliveries in market areas, and any collocation with other lines (including where cross-over lines are in use to balance pressures and maximize flows).

- Oak Ridge also applied optimistic timeframes for first responders to arrive on scene. Although Oak Ridge relied on response time data gathered by the Department of Homeland Security, it does not seem feasible for a first responder unit to:

    - take a call;
    - define the location or nearest cross streets;
    - contact fire fighters in the unit;
    - identify first responders; and

- have first responders:
  - disengage from what they were doing (as 80% of fire departments are voluntary forces);
  - move to their vehicle;
  - drive to the location;
  - don personnel protective clothing, gloves and equipment, and
  - assess the scene

— all within ten minutes.

Impact of Pipeline Rupture

- In evaluating the impact of a rupture, Oak Ridge used a 1.5 X multiple of the Potential Impact Radius (PIR). The PIR concept was developed by industry at the beginning of the integrity management rulemaking process in the early 2000s. A single, "one-size fits all" approach is inappropriate in this instance. PHMSA and the industry developed the PIR to serve as a means to prioritize efforts to protect people. Use of a multiple of the PIR for quantifying the potential impacts of an incident is overly simplistic. As Oak Ridge's own analysis of the scene in San Bruno showed, the extent of damage was more than 1.5 X PIR. Clearly a key lesson learned from the incident in San Bruno was that incident response must account for the potential spread of fire.

- INGAA's performance-based Incident Mitigation Management (IMM) approach stresses increased situational awareness and system evaluation when failures occur. Using these tools, the IMM approach can identify areas where operators can work to reduce detection and valve closure times. For example, INGAA's IMM process incorporates the lessons learned from the incident in San Bruno by considering site-specific factors such as terrain and the presence of heavily forested areas and other potential fuel sources. The IMM approach analyzes the potential spread of fire more effectively than Oak Ridge's application of a single equation. By placing additional attention on locations with persons of limited mobility such as nursing homes, hospitals, and schools, the IMM approach is also more comprehensive than the Oak Ridge approach with regard to protecting people.

- In March, 2011 AGA prepared a white paper, "Automatic Shut-off Valves (ASV) and Remote Control Valves (RCVs) On Natural Gas Transmission Pipelines", to provide information related to the relative benefits, challenges, issues, feasibility, costs and performance expectations associated with the installation of ASVs and RCVs. The white paper notes that "*there are potential benefits associated with the use of ASVs and RCVs. Operators should note that the presence of an ASV or RCV on a transmission pipeline will not prevent an incident from occurring and may not lessen any related injury to persons or damage to property.*" Also, last fall AGA conducted proceedings to receive technical papers regarding the criteria for installing ASVs and RSVs, including the potential impact of a rupture. AGA assembled the presented materials into a report issued October 2012, *Design Guidelines for Installation of Automatic Shut-off Valve (ASV) and Remote Control Valve (RCV) Systems in Gas Transmission Pipelines*.

- INGAA and AGA member companies take incident response very seriously and understand the need for adequate accident preparedness and planning. INGAA and AGA have been working hard with first responders from across the country to define ways to improve incident response. The efforts at the local level will enable its members to proactively identify sites where plans and actions can be implemented to mitigate the consequences of a pipeline rupture *before* and if it occurs.

Critical Flaws: Kiefner Leak Detection Report

Numerous flaws remain in the published Kiefner leak detection report. The critical ones are outlined below:

- The Kiefner report does not address one of the mandatory and critical questions Congress specified in section 8: What can be done to foster the development of better leak detection technologies?

- The report does not appear to recognize the fundamental operational differences between natural gas and hazardous liquid pipelines, when using terms such as pumping when referring to transporting gas or referencing "spills" when referring to natural gas incidents.

- Section 4 of the report describes technologies and their capabilities without references, *e.g.*, the performance ratings or specifications in the first and second paragraphs on page 4-40. Kiefner states that a specific technology "is" currently applied in the pipeline industry but does not specify the extent of application, and that a technology "can be" applied but without providing any support. PHMSA and an operator interested in better understanding a technology would be better served by having references.

- As INGAA suggested, Kiefner uses median values for some distributional characteristics. But at several points the report fails to do so even though a median would be far more representative of typical outcomes. A key example is response times, where Kiefner used an average even though average response time is skewed by larger values. Using averages improperly characterizes industry performance.

- The section of the report entitled "Major Technology Gaps" does not identify gaps or suggest ways of addressing them, as Congress clearly intended. Kiefner instead identifies challenges and difficulties in operating a leak detection system.

- Kiefner uses leak detection costs that do not reflect INGAA's comments on the draft. For example, the final report shows SCADA costs in the hundreds of thousands of dollars. While it is unclear what the basis is for these cost estimates, they likely do not reflect *total* installed costs, which should be the basis for a robust cost benefit analysis. To illustrate the magnitude of this difference, INGAA provided an example where a recent replacement of a supervisory control and data acquisition (SCADA) system cost $12 million.

- The sample set of five distribution operators interviewed for the report is an unrepresentative fraction of the actual operator numbers in the industry (5 out of ~1500). In addition, Kiefner chose operators that would be considering transmission and distribution systems together, rather than solely local distribution companies.

- The foundation of leak detection in the gas distribution industry is based upon adding odorant to the natural gas, as required by 49 CFR 192.625. Yet neither "odorant" nor "odorization" appears anywhere in the report. AGA has several publications on leak detection in the distribution industry and these sector-specific publications are of more value in assessing LDSs in gas distribution than the gas distribution portions of the multi-sector Kiefner report.

- INGAA and AGA provided information in its comments to correct factual errors in case reports presented in the draft report. The authors did not contact INGAA, AGA or the operators to follow up on these comments. The errors remain uncorrected.
- The report does not explicitly discuss the practicability of establishing technically, operationally, and economically feasible standards.