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**Subcommittee on Railroads, Pipelines, and Hazardous
Materials**

Thank you for the opportunity to comment today. My name is Richard B. Kuprewicz and I am president of Accufacts Inc., a consulting firm based at 8151 164th Avenue, NE, Redmond, WA 98052. I specialize in all aspects of hydrocarbon-based pipelines. I have over forty-five years of investigative experience and am a chemical engineer with additional skills in process safety management, developed from many years of operational and engineering experience. I have consulted for various local, state, and federal agencies, NGOs, the public, and pipeline industry members on pipeline regulation, operation, and design, with particular emphasis on operation in unusually sensitive areas of high population density or environmental sensitivity.

I have authored numerous papers on pipeline safety with the most recent a March 22, 2019 paper for West Whiteland Township, PA identifying possible liquid intrastate transmission pipeline safety regulations for that state. That recent paper takes on special significance as it relates to a series of highly volatile liquid transmission pipelines called Mariner East, designed to move liquid ethane, propane, and butane across the state, through many highly populated and sensitive areas. My provided CV should easily demonstrate my qualification to testify today on additional pipeline safety needs.

Since my time is limited today, I will focus on six major pipeline regulatory issues that I believe should be addressed by Congress in any PHMSA reauthorization effort:

1) Congress should eliminate the unique requirement that PHMSA show that for any proposed new pipeline safety regulation the safety benefits outweigh the costs.

Pipeline events are usually low probability, very high consequence events that are not adequately or appropriately captured using cost/benefit analysis. I have observed that such an unwarranted hurdle requirement seriously delays the implementation of many important and prudent pipeline safety regulations. Recent pipeline failures have demonstrated how quickly the consequence of pipeline failure can easily exceed multiple billions of dollars. Much needed improvements in pipeline safety regulation are being delayed or prevented, and Congress should remove this obstructive approach from PHMSA's safety rulemaking obligations.

2) Additional Liquid and Gas Transmission Integrity Management Regulation improvements are needed.

Initial performance-based transmission pipeline safety regulations for liquid and gas transmission pipelines promulgated in the early 2000's (known as TIMP 1) are not working as intended. My experience investigating too many recent liquid and gas pipeline ruptures in high consequence areas, indicates that TIMP 1 for liquid or gas transmission pipelines needs serious improvement. After a considerable number of years of effort, PHMSA developed, along with industry, state regulators, and various public parties, suggested transmission integrity management improvements often identified as TIMP 2 for liquid and gas

transmission pipelines. These suggested improved regulations have been stalled for the last couple of years. Integrity management safety approaches are just not that complicated. In 2016, I provided written public comments on the TIMP 2 PHMSA proposed rules, part of the larger rule makings on hazardous liquid and gas transmission pipelines that started back in 2010 and 2011,¹

I see the need for more prescriptive minimum pipeline safety regulations in several important TIMP regulatory areas as follows:

- a. the general location of HCAs should be conveyed to the public,
- b. require improved threat and anomaly reporting performance metrics to assist in transparency and to monitor TIMP performance and effectiveness,
- c. clarify in regulation the current strengths and weakness of the four allowed assessment methods codified in regulation for pipeline threats, which consists of:
 - i. internal inspection tool or tools (usually ILI),
 - ii. pressure test (i.e., hydrotesting),
 - iii. external corrosion direct assessment for liquid, direct assessment for external, internal, or stress corrosion cracking for gas pipelines,
 - iv. other technology that can provide an equivalent understanding of the condition.

¹ Richard B. Kuprewicz, "Pipeline Safety Comments on the Notice of Proposed Rulemaking Liquid Pipeline Integrity Management ("IM"), Docket No. PHMSA-2010-229 ("NPRM")," January 7, 2016, and "Comments on the Notice of Proposed Rulemaking Pipeline Safety: Safety of Gas Transmission and Gathering Pipelines, Docket No. PHMSA-2011-0023 ("NPRM")," July 7, 2016.

- d. add “shall” wording to establish minimum management of change (“MOC”) process requirements, an important component of TIMP.

Given too many pipeline ruptures where the operator claimed failure to know their pipeline was in a high consequence area (“HCA”), regulators and the public clearly have a right to know and verify what an operator is identifying as an HCA (they really aren’t that difficult to determine and are not secret). If this important first step in TIMP isn’t correct, there are most likely other shortcomings in a company’s TIMP approach.

PHMSA also needs to take advantage of new software technology to require that operators report the location of important required anomalies needing mitigation, using pipeline mapping technology that can quickly help to identify pipeline systemic threats, well before they go to rupture failure, a primary object of TIMP.

The broad misinformation by many in the industry (either due to lack of experience or intentional deception) concerning the strengths and weaknesses of each of the four assessment methods listed in TIMP regulations needs to be addressed by identifying the assessment method’s ability to handle the wide spectrum of threats that may be on a pipeline segment. No one assessment method can handle the wide spectrum of threats that might be on a pipeline segment. For example, I have investigated too many transmission pipeline ruptures that occurred following ILI inspections, that on further investigation are

proving to be downright embarrassing to the pipeline operators as well as disastrous and expensive.

Recent pipeline tragedies have also clearly confirmed that too many pipeline organizations are failing to incorporate important checks and balances to assure any change in process or equipment has been prudently engineered and evaluated before becoming operational. Management of Change (MOC) prescriptive steps should be added into law driven by the use of a “shall” requirement. MOC should not rely on industry practices or creative interpretation of such practices.

Note that I am not advising abandoning all performance-based approaches. For example, the distribution integrity management program (or “DIMP”) regulations require the reporting of important performance metrics that assist independent analysis and transparency for regulators and the public. DIMP reporting is vastly superior to current TAMP 1 regulation reporting requirements in assisting in performance measurement and monitoring. Many gas distribution companies and some state regulators have recognized the benefits of DIMP tracking utilizing newer advanced leak mapping technology which exceeds annual reporting requirements to PHMSA and to states that are not utilizing such software tools in data analysis that improves regulatory efficiency. While not required in federal pipeline safety regulation, advanced software leak mapping technology is definitely helping analyze and identify possible distribution pipeline systemic

integrity hot spots, or threats, that need more timely attention. PHMSA needs to advance TIMP by requiring such mapping by anomaly type and condition.

3) Current area classification regulations for gas transmission pipeline safety regulations should not be changed or weakened.

Given the current weaknesses and incomplete state of TIMP regulations, demonstrated by the pipeline ruptures in HCAS under TIMP 1, I cannot recommend nor suggest weakening current safety factors established by existing area classification regulations for gas transmission pipelines. Suggestions to weaken or remove area classification requirements have wisely met with much resistance from the public and state regulators. I advise that no change be made in area classification regulations until:

- a. new TIMP 2 regulations have been properly incorporated into regulation,
- b. these new regulations take effect, and
- c. such new regulations demonstrate a track record that they are working, which will take some time.

Weakening of gas area classification rules and their associated required additional safety margins is imprudent and premature, especially given the current failings associated with TIMP 1 regulations.

4) Gas gathering minimum pipeline safety regulation needs serious improvement.

Given the rapid growth in gas gathering pipeline mileage across America from shale gas development, and recent gathering pipeline rupture failures, minimum federal pipeline regulations are clearly not working in this area, and improvements are warranted. I recommend that regulatory efforts focus on:

- a. simplifying and clarifying the definition of a gas gathering pipeline, and
- b. requiring all gathering lines to meet minimum standards meant to protect the public such as One Call participation, line markers, operational and emergency response plans, hazardous leak repairs, incident investigation, etc.
- c. following similar integrity management processes related to TIMP 2 PHMSA developed improvements.

Gas gathering pipeline rupture failure dynamics and actual impact areas are the same as that of gas transmission pipelines. The public should thus also be made aware of gas gathering infrastructure in their area, protected by basic common sense standards that already apply to similar risk transmission pipelines, and inclusion of Integrity management (IM) efforts to avoid rupture.

5) Release detection regulation should focus on two efforts: 1) remote rapid rupture release identification, and 2) leak releases which require different technical approaches than that for ruptures.

I have observed that probably no other subject has generated more confusion, frustration, and concern across all parties, than the subject of remote release detection for pipelines. Remote release detection is a reasonable idea and it is

going to take some effort as it is a severe technical challenge in many systems to make such systems reliable. Development of such technology, whether for rupture or leak detection, is advanced by prudent pipeline safety regulations that encourage the application and development of such efforts. Such regulation is similar to efforts encouraging initial pipeline ILI use and advancement, which started some forty years ago.

Because of factors such as pipeline inventory and thermodynamics, pressure drop is not a timely nor reliable method of release detection in an operating pipeline, even for pipeline ruptures, the high rate releases from large pipeline openings caused by pipe fracture mechanics. I thus recommend in the area of release detection that regulation focus on two approaches: 1) rapid remote detection and alarm for pipeline ruptures based on properly determined transient flow dynamics, and 2) on leak detection for lower rate releases that also are not going to be captured by pressure loss. Leaks may not be as dangerous as ruptures, but nevertheless can be dangerous or damaging to the environment. PHMSA needs to pursue the different technical approaches needed for the remote identification of ruptures and leaks.

6) Regulations for the placement of remote operated mainline valving for liquid and gas pipelines are badly needed.

Many parties fail to understand the complications associated with developing regulations for mainline valving on pipelines. I recommend that mainline valve regulation advancements focus on both timely action and response for both liquid

and gas pipelines, as such valves play an important safety role in the event of pipeline rupture.

Conclusions

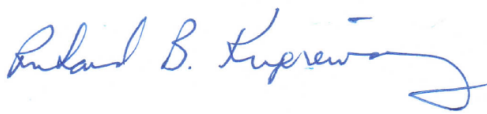
Congress needs to remove the unique cost/benefit analysis hurdle imposed on PHMSA preventing this agency from quickly promulgating sound pipeline safety regulation. PHMSA also needs to advance the TIMP 2 regulations in which years of technical effort, analysis, and discussion have already been invested. TIMP 2 regulatory changes represent reasonable compromise that will improve the performance and effectiveness of pipeline safety regulations for both transmission and gas gathering. The test for such possible regulations will lie in whether proposed rulemaking in these areas remains simple and easy to understand, as well as enforceable. We are talking in most cases about steel tubes, so technically, safety rulemaking should also be fairly simple and concise. If the regulations are becoming too long or complex, I highly recommend that the regulatory effort needs to be reevaluated as other agendas may be afoot. TIMP safety process are just not that complicated.

Let's also not lose sight of the fact that PHMSA has done good work in other technical areas, such as the research related to crack threat assessments from vintage Low Frequency Electric Resistance Welded, or LF-ERW pipe. PHMSA's research efforts in vintage ERW crack research and assessment helped to publicly identify proper assessment/engineering approaches that should be used to avoid

pipeline rupture from this category of threats with a long history of failure as ruptures. PHMSA's efforts in this area have helped spread the word on what, until this research effort was completed, was a pipeline risk clearly understood by only a handful of subject matter experts in this pipeline field.

PHMSA's promulgation of DIMP regulations is an excellent example of marrying prescriptive with performance metrics. that have improved distribution pipeline safety. Advancements in computer software mapping/reporting technology not readably available during original passage of DIMP regulation, now permit efficiency in evaluating pipeline systems in an attempt to improve pipeline safety via certain gas leak performance measures. Such mapping approaches are now at the level where it should be included in TIMP 2 as well as DIMP pipeline safety regulations.

Thank you for your time today.



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