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Testimony of Richard B. Kuprewicz

President, Accufacts Inc.

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Commerce, Science, and Transportation

Field hearing on the natural gas pipeline failures in
Lawrence, Andover and North Andover MA

Thank you for the opportunity to comment today on another pipeline event that could have been prevented. 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 trained as a chemical engineer with additional knowledge in process safety management, developed from many years of operational 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 serve as a representative of the public advising the Pipeline and Hazardous Materials Safety Administration, or PHMSA, on such areas as liquid and gas transmission integrity management, or TIMP, regulation development in the early 2000's following terrible pipeline tragedies. As a representative of the public I was also involved in the many years of natural gas distribution regulatory advancement wisely driven by the Congressional Pipeline Inspection, Protection, Enforcement, And Safety Act of 2006 (PIPES Act of 2006) that mandated the gas distribution integrity management program, or DIMP, effort in federal rulemaking. After many years of effort, DIMP regulation became effective in August 2011, though prudent natural gas distribution operators were implementing these critical safety process approaches well before this

deadline. At the end of 2017, reports to PHMSA indicated that there are over 1,300 gas distribution operators in the U.S. encompassing a wide range of complexity. I believe most, if not all, gas distribution systems are intrastate pipeline systems operating within a state. The U.S. gas distribution system utilizes over 2.2 million miles of pipeline consisting of networks of mains and service lines, and composed of a wide variety of pipe materials and connections. Much of these materials and connections are sensitive to threats that are age related, such as cast iron and older vintage plastics, and mechanical connections. It is my observation that many gas distribution operators understand the importance and intent of DIMP, while others, sadly, still don't.

Since promulgation of these important TIMP and DIMP regulatory steps in minimum pipeline safety regulation, I have investigated far too many pipeline disasters, which speaks volumes for the need for further pipeline safety regulatory "clarification" and/or improvement. Concerning the failures (and I refer to multiple failures based on my experience and recent observations) the situation affecting the Merrimack Valley in Massachusetts (Lawrence event) on September 13, 2018, while rare for gas distribution operations, raises many questions about the adequacy or clarity of minimum pipeline safety regulations and safety process approaches. My comments are not intended to impede or influence the NTSB investigation concerning the Merrimack Valley failures. In my more than forty-five years of observation, I have nothing but respect for the NTSB pipeline investigation process. To finalize an NTSB report on a specific

pipeline incident can take some time, given the need to be thorough, but I have nothing but confidence in this government body. It is a government organization that, well, just works.

I will focus my brief comments and recommendations this morning concerning natural gas distribution system regulations on two important areas that I believe warrant regulatory advancement via prescriptive and clear regulation. Prescriptive regulation can be more efficient and effective than performance based regulations, such as TIMP, which has experienced, at best, mixed success. Prescriptive based safety regulations set basic obligations and tend to be clearer and less prone to misinterpretation by using "shall" requirements, for example, that should leave no doubt as to important minimum safety requirements.

I see the need for regulatory improvement in the area of gas distribution: 1) Setting prescriptive minimum requirements in the area of Management of Change, or MOC protocols in this critically important area, and 2) Improving the way DIMP approaches the area of evaluating and risk ranking, mandating the use of computer leak mapping, taking advantage of recent computer/software mapping strides made in this technical area.

Recommendation 1: Add prescriptive requirements for Management of Change in regulation

In the important area of Management of Change, or MOC, the gas industry mainly relies on the American Society of Mechanical Engineers ("ASME") standard, ASME B31.8S-2004, "Managing System Integrity of Gas Pipelines," revised in 2004 that supplements ASME B31.8. Parts of both of these industry practices are incorporated by reference in federal pipeline safety regulation (49CFR§195.7). Given the importance of MOC in pipeline safety, I recommend this process should be prescribed by clear wording in pipeline minimum safety regulation. While I have great respect for many industry practices, their development does not necessarily undergo the more public review and scrutiny and possible challenge that pipe safety regulation undergoes when reaching the higher obligation of promulgation into law.

Incorporation of the exact wording of MOC protocols into federal pipeline safety regulation also makes such regulation accessible to not only the industry, but importantly, also to the public that could be impacted in the event of a pipeline failure. Many referenced industry documents in federal pipeline safety regulations are still not readily available to the public, or can only be obtained at great expense or effort. Congress made an attempt in the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011 to rectify this difficulty for the public in gaining access to important referenced pipeline safety documents, but this well-meaning effort was circumvented by subsequent lobbying efforts

to restrict such easier public access. Given the complexity of changes within many gas distribution system operations, **Congress should require that pipeline safety regulation prescriptively incorporate critical minimum steps required for all Management of Change procedures that will cover both equipment and procedure changes**.

Recommendation 2: Require the Use of Leak Mapping in DIMP

While DIMP regulation is heavily and appropriately reliant on metrics that can be measured, reported, and tracked, there nevertheless can be weakness where a creative pipeline operator can tamper with the evaluation of important metrics required to be reported annually to PHMSA and to many state pipeline regulatory agencies. This is especially true in the area in DIMP regulation calling for operators to "Evaluate and rank risk." Risk ranking can generate a wide range of outcomes developed from the same data. During the evolution of DIMP regulation, considerable discussion occurred related to displaying hazardous leak data by graphic mapping using computers and advancing mapping software in the late 2000s. The mapping approach did not make it into the final DIMP regulation because an argument was presented at that time that many operators, especially the smaller operators, did not have access to computers, and simpler to use developing mapping software was still evolving.

I have seen many gas distribution operators who now recognize the importance, efficiency, and safety benefits of computer leak mapping by grade, by cause, and by

pipe type (mains or service lines) in quickly assisting in the evaluation of leak risks on their gas distribution systems. Such graphic color coded computer mapping greatly aids the rapid analysis of large volumes of data to assist in quickly recognizing and identifying systemic geographic "hot spots" that might warrant further attention and resources to prudently control risk on their systems. On more than one occasion, I have recommended that such simple computer mapping be utilized to aid pipeline operators and state regulators in justifying additional funds for further pipe replacement to efficiently improve gas distribution system safety. Such leak mapping also helps to identify areas of a gas distribution system where one-call may not be effective.

Such computer and software advances have, I believe, reached the proficiency where a gas pipeline operator, even a small operator, should be easily able to incorporate such leak mapping/tracking advances into their operation. Quite simply, in the important area of leak evaluation and risk ranking, if a gas distribution operation cannot incorporate such a technically advanced and relatively inexpensive computer tool into helping to improve pipeline safety, they should not be in the gas distribution business. **Congress should direct development of simple regulations to require the use of computer leak mapping and reporting technologies into gas distribution pipeline safety to assist in evaluating and ranking risk.**