October 26, 2012

VIA ELECTRONIC DELIVERY

(https://primis.phmsa.dot.gov/meetings/DocHome.mtg?Doc=8)

Re: Natural Gas – PHMSA's Leak Detection Study – DTPH56-11-D-000001

Comments from the Interstate Natural Gas Association of America on Draft Research Report

Dear Sir or Madam:

The Interstate Natural Gas Association of America (INGAA)[1] appreciates the opportunity to comment on draft research report DTPH56-11-D-000001 (Draft Report). INGAA believes it is critically important that PHMSA have comprehensive and quality information being used in its deliberations. As such, INGAA is committed to constantly improve the information quality that it supplies to PHMSA and review the quality of the information provided by others. INGAA has directly commented on this subject of Leak Detection at the PHMSA public meeting on March 27, 2012 and has supplied additional comments to the public docket on this subject on April 30, 2012.

To an extent, developing comments on the Draft Report was hampered by the amount of time allowed.[2] Within the time given, INGAA compiled various comments from its membership and assembled them here in an effort to offer articulate, professional, technical criticism of the report's assumptions, methodologies, accuracy, use of data and conclusions.

INGAA limits its review to the portions of the Draft Report that apply to the natural gas transmission pipeline system. Our reviewers have not attempted to address any issues with characterization and analysis of subject as it pertains to hazardous liquid pipelines and gas distribution**.**

Background

For the past several years, the INGAA and its members have been developing and following a systematic process, known generally as Integrity Management Continuous Improvement (IMCI), to improve the integrity of the interstate natural gas transmission system. The overall goal of the IMCI process is zero incidents. To achieve that goal, INGAA and its members have instituted a system for reassessing individual processes, ranking them in priority, and applying management system methodologies to improve performance.

---

1 INGAA is a non-profit trade association that represents the interstate natural gas transmission pipeline industry. INGAA's members, which represent approximately two-thirds of the pipelines and over 65 percent of the mileage comprising the U.S. natural gas transmission pipeline system, are subject to comprehensive safety regulation by the Pipeline and Hazardous Materials Safety Administration (PHMSA).

2 The draft report was made available and presented via a webinar on October 4, 2012, with comments due October 26, 2012.

Under IMCI, INGAA reassessed the processes and practices members have implemented in response to ASME B31.8S, the PHMSA integrity management regulations that were modeled after that standard, the legacy PHMSA pipeline safety regulations that have been in effect since 1970, and the results of those implementations.

Two areas of effort are particularly related to this research report. The primary goal is to assess the risk of failure to manage the integrity of the pipeline before there is an unintentional release of natural gas, Integrity Management Program (IMP). The second goal is to help manage the consequences of an unintentional release through Incident Management Mitigation (IMM). INGAA has directly commented on this subject of Leak Detection at the PHMSA public meeting on March 27, 2012 and has supplied additional comments to the public docket on this subject on April 30, 2012.

Comments

1. Incomplete Understanding of the Various Energy Segments including Natural Gas Transmission Pipelines

The Draft Report does not adequately describe the variety of configurations, modes of operation, risks and consequences of these separate segments of the energy pipeline infrastructure. This distinction is very important from the standpoint of public safety and environmental impact. The problem is accentuated by the authors' assumptions to address ruptures and leaks as a composite; that is, to consider them as equal. (Page 3-15).

2. Incomplete Understanding of the Probabilities and Consequences of Incidents on Natural Gas Transmission Pipelines

On natural gas transmission pipelines, the identification, mitigation and consequences of ruptures are distinctly different than leaks. This lack of distinction in this report (Page 3-16) results in a comparative analysis of the transportation modes that does not account for the different risk and consequences of the incidents.

3. Incomplete Analysis of the Existing PHMSA Data on Natural Gas Transmission Pipelines

The Draft Report is one of the first publicly available reports that utilize the improved information provided by the 2010-12 PHMSA incident and annual reports. While the lack of long term trending is missing in this report because of this explicit choice to use the 2010 to 2012 timeframe, the richness of the dataset permits a more robust statistical analysis.

Unfortunately, the authors have not taken full advantage of that information. In some cases, the authors utilized single variable analysis to describe behavior that is clearly a function of many variables. Data are available in the dataset to conduct multivariable analysis. The response times to an incident are clearly a function of the type of release (leak vs. rupture) and the presence of operating personnel on the site when it occurs. In choosing to do a simplified analysis, and failing to fully utilize the more robust data results in possibly inaccurate or unnecessarily conservative conclusions and recommendations.

4. Flawed Statistical Analysis of Natural Gas Transmission Pipelines

Major statistical errors have occurred in the report. The authors have utilized average as a statistical measure in some of the analysis where the data is definitely skewed (e.g. 3-75); i.e., non-normal distribution. The statistical analysis technique recommended by experts for skewed data is use of median rather than average. INGAA recommends the authors reassess their statistical analysis techniques throughout the report to reflect appropriate statistical analysis.

5. Flawed Technical Assumptions Concerning Natural Gas Transmission Pipelines

The authors have also made some flawed simplified assumptions that are critical to the success of this analysis. For example, a blanket assumption is made that 75% of the costs of an incident can be saved by the implementation of the leak detection system. This is a broad application of such a factor across a complicated set of scenarios (gas/liquid; transmission/distribution; leak/rupture). This appears conflict with the conclusions of the companion study on valves.

6. Ignoring Leak/Rupture Detection Methodology for Natural Gas Transmission Pipelines

While the authors have clearly identified the varied sources of leak detection (thanks to the richness of the dataset in the incident report), they have chosen to ignore those other sources and have concentrated on SCADA and CPM based systems.

The Draft Report does not analyze the alternative processes for leak and rupture detection (*e.g.*, operator personnel, public recognition; aerial and foot patrol) along with present and future technical improvements of those processes. This report confirms that leaks and ruptures were most likely to be reported by the public and then the emergency responders, followed by operator air or foot patrols and least likely by the control room CPM & SCADA. Figure 3.26 shows that equipment at 15% is least likely to report a leak while the various groupings of people are almost 80%. CPM = 15%, versus 1st party = 9%, 2nd party = 28%, 3rd party = 30%, perpetrator = 15%, other 7%.

This variety of detection sources and the synergy of these is a key focus of the INGAA IMM approach to improve the response time to an incident. A significant number of incidents utilize these other detection sources and in the gas transmission pipeline incidents are very important in rupture detection. A more sophisticated analysis by the authors of the variables involved in detection would clarify this value.

7. Incomplete Analysis of Leak/Rupture Detection Technology Solutions

This report confirms the gas transmission industry's experience that CPM and SCADA aid in detection, but are remain insensitive or unreliable to be the essential solution to the detection of leaks and ruptures. The Pipeline Research Council International is continuing to conduct evaluations of leak detection systems and new information will be available in 2014.

The companion PHMSA draft research report on valves again confirms the limited public safety value of leak detection system for major ruptures on natural gas transmission pipelines.

Additional information and insight was available to the authors via the PHMSA public meeting and docket, but this information was not referenced in this report. The utilization of that information would have helped in the direction of the different sections.

The combination of these shortcomings threatens the viability of many of the conclusions of this report. Unfortunately, corrections of these flaws require a reassessment of the techniques used in this report, a reanalysis of the statistics and a redrafting of the conclusions.

8. Incomplete Coverage of Leak/Rupture Detection Technology Solutions for Natural Gas Transmission Pipelines

This report confirms the gas transmission industry's experience that CPM and SCADA aid in detection, but are remain insensitive or unreliable to be the essential solution to the detection of leaks and ruptures. The Pipeline Research Council International is continuing to conduct evaluations of leak detection systems and new information will be available in 2014.

The companion PHMSA draft research report on valves again confirms the limited public safety value of leak/rupture detection system for major ruptures on natural gas transmission pipelines.

However, INGAA's IMM initiative focuses on improving the consistency of the response time of all rupture detection systems and coordination of subsequent mitigation efforts (*i.e*. public, operators and emergency responders).

9. Incorrect Statements from Information Sources

The authors state that the current regulations in CFR 195 for leak detection would be equally applicable to natural gas pipeline systems. SCADA identify leaks/ruptures in 15% of the natural gas transmission incidents {Page 2-8) vs. 28% for Hazardous Liquids (Page 2-7). Even with this analysis (that does not differentiate the consequences of natural gas transmission pipelines) the authors contradict themselves (Page 2-20).

The authors reference a German Standard (TRFL) regarding leak detection. It was the only Standard that specifically included gases. All of the other Standards currently refer to liquids. He stated that it covers pipelines transporting liquids (flammable and /or water contaminating) and most pipelines transporting gas. He did not specifically state that "gas" means natural gas. However, the German TRFL does not apply to transportation of natural gas for public consumption.

The case studies utilized information from the PHMSA database, but the nuance of the events was not verified by the pipeline companies involved in the incidents. Listed below are some examples of information that was misinterpreted:

- **Case Study 2** (TGP Ohio): The shutdown time of 9:55 represents the closing of the last valve to isolate the one valve section that failed (valve 205 to 206). The actual shutdown was when the 204 valve was isolated at 8:59, which shut down two valve sections. This would mean an elapsed time of 11 minutes. Additionally, when personnel arrived at the 205 valve there was not enough pressure to use the operator and the valve had to be manually operated. The reported distance to

the two houses that were damaged was from the CAO and is not correct. The actual distances are approximately 200 ft and 540 ft.

- **Case Study 7** (NGPL Texas): The pipeline facility name is OE#1 not OE#2. The information from the CAO has some errors. The location of the failure is 1 mile west of station 154 not at the station. The line was returned to service at a reduced operating pressure on 6/28/12.

- **Case Study 8** (TGP La): The time to shut down does not reflect the time when the valves were closed. The valves were closed within 37 minutes of the first notification at 3:27.

10. Flawed Cost Assumptions for Natural Gas Transmission Pipelines

Natural gas transmission pipeline systems are considerably more complex piping systems than hazardous liquid pipelines (e.g. multiple inputs, multiple outputs, looped and parallel pipelines, interconnections between parallel lines, and a compressible fluid. The authors numbers, based upon a specific number of dollars per foot or per installation, do not take into account the complexity that would be required on natural gas transmission pipeline For example a recent replacement of a SCADA system was estimated at $12 M without in-house labor factored in. That estimate is substantially different than the $1 K that the author is depicting for leak detection system. Again it appears that the authors' experiences with leak detection systems on natural gas transmission pipelines are limited.

11. Confusion in the Structure and Content of Document

The report, as structured, has comingled hazardous liquid pipeline, natural gas transmission and gas distribution discussions in one document is inappropriate and may cause confusion to readers. In some cases in this draft, the author has inadvertently utilized descriptions and jargon of one part of the industry for another part (e.g. pump vs. compress). It appears that the authors may not be intimately familiar with leak detection systems on natural gas transmission pipelines by the use of vocabulary and references used throughout the document.

Conclusion

While INGAA would have appreciated more time to examine and critique the Draft Report, we realize that the effort to address some of the major issues will be widespread and will require an extensive effort by the authors. We think it is expeditious that these issues be exposed quickly and that the paper be redrafted by the authors based on the reanalysis of these issues and be resubmitted to PHMSA and the public for review. Additionally, we strongly urge that in future study updates that the researchers acknowledge and use the full breadth of information available from the public and industry sources, and if there are questions on the accuracy of such information, then additional clarifications be requested.

Respectfully submitted,

/s/
Dan Regan
Regulatory Attorney
Terry D. Boss
Senior Vice President of
Environment, Safety and Operations
Interstate Natural Gas Association of America
20 F Street, N.W., Suite 450
Washington, DC 20001
(202) 216-5900