December 30, 2016

Christopher A. Hart
National Transportation Safety Board
490 L’Enfant Plaza, SW
Washington, DC 20594

Dear Chairman Hart,

In response to the safety study on Integrity Management of Gas Transmission Pipelines in High Consequence Areas, the National Transportation Safety Board (NTSB) issued a series of recommendations, four of which were directed to the American Gas Association (AGA) and Interstate Natural Gas Association of America (INGAA). Two of these recommendations directed AGA and INGAA to work with each other “to develop and implement a strategy for increasing the use of in-line inspection tools as appropriate, with an emphasis on intrastate pipelines.” (P-15-24 and P-15-26)

AGA and INGAA agree on the importance of our roles as trade associations in promoting the use of In-Line Inspection (ILI) tools in the interests of elevating safety in the natural gas industry. Thus, we have developed and implemented a comprehensive strategy for encouraging the continuous advancement of the use of ILI tools for intrastate transmission lines. The strategy focuses on leveraging the associations’ membership networks to facilitate dialogue on three areas critical to increasing the use of ILI tools under pipeline integrity management:

1. Highlighting New Tools and Technologies  
2. Addressing Significant Challenges that Deter the Use of ILI  
3. Increasing Awareness of and Confidence Around Expanding the Use of ILI Tools and Technologies

The Associations have worked diligently to feature presentations and information-sharing on these topics through industry conferences, workshops, and committee meetings. Significant advancements have been made in increasing the use of ILI tools on intrastate transmission pipelines, and the associations expect these advancements to continue as the AGA and INGAA strategy continues to be implemented.

The following memorandum describes the comprehensive strategy and the actions of AGA and INGAA to assist in increased usage of in-line inspection tools with an emphasis on intrastate pipelines. Based on these actions, we request that the NTSB designate recommendation P-15-24 and P-15-26 as “Closed-Acceptable Response”. Please let us know if you have any questions. We are available to meet with you to discuss the subject matter of this written response.

Sincerely,

Dave McCurdy  
President and CEO  
American Gas Association

Donald F. Santa, Jr.  
President and CEO  
Interstate Natural Gas Association of America

Attachments
cc: The Honorable T. Bella Dinh-Zarr  
cc: The Honorable Robert L. Sumwalt  
cc: The Honorable Earl F. Weener, PhD  
cc: Robert Hall
The American Gas Association, founded in 1918, represents more than 200 local energy companies that deliver clean natural gas throughout the United States. There are more than 72 million residential, commercial and industrial natural gas customers in the U.S., of which 95 percent — just over 69 million customers — receive their gas from AGA members. AGA is an advocate for natural gas utility companies and their customers and provides a broad range of programs and services for member natural gas pipelines, marketers, gatherers, international natural gas companies and industry associates. Today, natural gas meets more than one-fourth of the United States’ energy needs.

INGAA is a trade association comprised of 25 members, representing the vast majority of the interstate natural gas transmission pipeline companies in the U.S. and comparable companies in Canada. INGAA’s members operate approximately 200,000 miles of pipelines, and serve as an indispensable link between natural gas producers and consumers.

There are more than 106,000 miles of intrastate transmission pipelines in the U.S., of which 64 percent - over 67,000 miles is operated by AGA and INGAA members. The industry continues to support more effective and efficient ways to assess the integrity of these and other pipelines. Technology is continuously advancing and changing how pipelines are inspected. The industry is deeply committed to pipeline safety and spends $22 billion annually to help enhance the safety of natural gas transmission and distribution systems.

AGA and INGAA are also deeply committed to improving natural gas pipeline safety and working collaboratively with the NTSB and other stakeholders to develop solutions that provide meaningful advancements in pipeline safety. In the past, this constructive relationship has resulted in numerous industry initiatives that have made significant contributions to pipeline safety and have helped to achieve the excellent safety record of the nation’s natural gas pipeline system. AGA and INGAA appreciate the opportunity to continue this relationship with the NTSB, and are pleased to provide this response to the NTSB’s recommendations directing AGA and INGAA to work with each other “to develop and implement a strategy for increasing the use of in-line inspection tools as appropriate, with an emphasis on intrastate pipelines.” (P-15-24 and P-15-26)

In response to the NTSB’s recommendations, AGA surveyed its members in early 2016. AGA’s goal through the survey was to obtain operator insight on industry activities and future strategies to increase the use of ILI. The responses represented 38 companies operating onshore transmission pipelines, which represent 48 states excluding Alaska and Hawaii.

The survey was broken into two parts:

- General section asking respondents for information about their operations, such as mileage of intrastate and past experiences with ILI tools.
- A section gathering information on how much planning, action, and collaboration has been done on the use of ILI and what could be done further.

The intelligence gained from the survey has enhanced the associations’ ongoing efforts and refined our strategy for encouraging the continuous advancement of the use of ILI tools for intrastate transmission lines. This strategy focuses on leveraging the associations’ membership networks to facilitate dialogue on three areas critical to increasing the use of ILI tools under pipeline integrity management:

\[1\] Survey questions can be viewed in Appendix A.
1. Highlighting New Tools and Technologies
2. Addressing Significant Obstacles that Deter the Use of ILI
3. Increasing Awareness of and Confidence Around Expanding the Use of ILI Tools and Technologies

**Highlighting New Tools and Technologies**

In 2012, in response to a related NTSB recommendation, AGA and INGAA submitted a comprehensive and substantive report that discussed capabilities of ILI technology at that time. The report also highlighted our expectations for ILI advancements. We are pleased that many of the expected advancements have already come to fruition. Since 2012, the industry has experienced numerous advancements surrounding both robotic and free swimming ILI platforms. These advancements include the commercialization of multiple tool sizes, which allows for the in-line inspection of more single diameter pipe, tools that can be utilized in low flow pipelines, and advancements in tools to navigate pipelines that have multiple diameters. These advancements greatly increase the scope of pipelines that may be capable of accommodating ILI tools. In addition, providers of ILI technology have combined sensors, which are now capable of detecting a broader range of defects than before.

Our 2012 response discussed the configuration of a natural gas transmission system and how the design, operating pressures, and location of the pipe segment can all contribute to restricting the operator’s ability to utilize traditional ILI tools to assess its integrity. Since 2012, the industry has worked to make advancements in addressing each of these configuration barriers.

**a) Pipe Diameter** – Pipe diameters vary significantly across the industry, based on design and market factors. Prior to 2012, the commercial availability to inspect the full range of single pipe diameters was a substantial barrier to ILI tool utilization. Free swimming and robotic tool providers have addressed multiple single diameter size pipes and state their tools can now “cover the entire range of pipeline sizes in North America”.

In addition to single diameter pipelines, many intrastate pipelines are multi-diameter pipelines where ILI tools need the ability to either expand or reduce in size during an inspection. Multi-diameter pipelines have been partially addressed by ILI providers for certain pipe diameter ranges and the capabilities have also increased for the range of pipe diameters.

**b) Flow of Natural Gas** - The flow of natural gas is used when operating free swimming ILI tools through the pipeline. The flow must be strong enough to provide motive power to safely move the ILI tool through the pipeline. Since 2012, commercial providers have developed tools that reduce the flow requirements needed to operate a free swimming ILI tool.

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2 NTSB recommendation (P-11-32)
3 *Report to the NTSB on Historical and Future Development of Advanced In-Line Inspection Platforms for Use in Gas Transmission Pipelines.*
5 ROSEN Group, September 2016, ROSEN ILI TECHNOLOGIES IN MULTI-DIAMETER
6 TD Williamson & Williams, Small Diameter Multi Data Set Inspection in Low Flow Low Pressure Environments, PPIM 2015
c) Sensor Capability - Since 2012, providers of both robotic and free swimming tools have been adding new sensors that are intended to expand anomaly detection capabilities. Different anomalies require different sensors. For example, finding internal corrosion on a pipeline requires a different sensor than finding pipe deformation. ILI tools are now being constructed with multiple sensors that are intended to allow for finding a range of anomalies, as opposed to a tool with a single sensor capable of identifying only a single anomaly type.

Support of the research and development (R&D) community is critical to the advancement of technology. AGA and INGAA have and will continue to support the R&D community, as part of our strategy for encouraging the continuous advancement of ILI tools and the use of these tools. Our efforts include maintaining active membership in industry and government forums, offering our events for the promotion and advancement of R&D, hosting an annual research coordination forum, encouraging our members to participate in R&D consortia, and encouraging state commissions to support R&D funding.

AGA and INGAA maintain active memberships in the Department of Transportation’s Pipeline & Hazardous Materials Safety Administration (PHMSA) steering committee for their bi-annual R&D Forum. The R&D Forum is used to help PHMSA strategize where to direct allocated R&D dollars. Steering committee activities include enlisting transmission, distribution and underground storage operator leaders to discuss common challenges, providing working group leadership, and promoting the event to ensure the Forum is well attended by operating members of the industry who can discuss the needs for R&D. PHMSA’s 2016 R&D Forum had record attendance.

In 2016, AGA offered PHMSA’s Competitive Academic Agreement Program (CAAP) members an opportunity to present at our annual operations conference. CAAP utilizes university professors and students to perform R&D projects. At AGA’s 2016 annual conference, CAAP professors and students discussed projects that directly relate to advancements for industry pipeline integrity programs. One such presentation was from Arizona State University professor Yongming Liu. Dr. Liu showcased a 2015 project that focused on how acoustic and electromagnetic sensors can obtain probabilistic strength and toughness of pipelines. AGA and INGAA will continue to support programs that focus on pipeline integrity issues and we will continue to offer a forum where R&D work can be displayed and discussed.

Finally, AGA holds an annual research coordination meeting. Our January 2017 will be attended by representatives from Pipeline Research Council International, Inc. (PRCI), NYSEARCH, Gas Technology Institute (GTI) Operations Technology Development (OTD), INGAA, the American Petroleum Institute, and others. We will discuss current research projects and work to identify coordination and alignment among each organization’s projects. In addition to project alignment, AGA and INGAA staff will learn about future R&D projects. The staff will take this knowledge and promote the efforts of R&D to our members. Some results from our 2016 meeting included AGA staff inviting R&D attendees to present at our 2016 operations conference and to our technical committee groups focused on transmission integrity.

INGAA directly, as well as through the INGAA Foundation, has sponsored numerous studies, workgroups and workshops such as an ILI workshop in 2015 focused on identifying material strength, identifying and characterizing cracks, data integration, methane control and non-traditional ILI methods among other

8 https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=627
topics. An ILI workgroup has been established (2016) and helped to develop detailed responses to PHMSA’s Notice of Proposed Rulemaking (NPRM) on the Safety of Gas Transmission and Gathering Line. These comments included a discussion regarding ILI technology capabilities. A representative from the ILI workgroup will act as an advisory committee for the PHMSA Voluntary Information Sharing workgroup (AGA will also have a representative on this workgroup). In addition, INGAA and the INGAA Foundation have completed a number of studies, such as the “Statistical Evaluation of Charpy Toughness Levels for Gas Transmission Pipelines” (2016) conducted by Structural Integrity Associates, Inc., which have been performed specifically to address capability advancements in ILI technology.

**Addressing Significant Challenges that Deter the Use of ILI**

The second focus of AGA and INGAA’s continued strategy is to identify existing challenges that significantly limit the use of ILI tools on intrastate pipelines, and encourage stakeholders to overcome these challenges. This entails identifying navigation obstacles that limit the use of ILI tools to provide vendors an opportunity to develop solutions to resolve these obstacles. We encourage solutions to reflect the industry’s commitment of safe and reliable natural gas delivery for our customers. Maintaining a reliable flow of natural gas to our customers without interruption is a deliverable the industry will continue to pursue alongside the development of ILI advancements. In addition, AGA and INGAA continuously advocate for federal regulations that encourage the advancement of ILI technologies. Finally, AGA works closely with the National Association of Regulated Utility Commissioners (NARUC) on educating state public utility commissioners on the safety benefits associated with pipeline retrofitting projects that may eliminate challenges to the use of ILI technology.

- **Navigation Obstacles:**

  Recognizing that the obstacle of multiple single pipeline diameters is no longer a significant barrier to ILI, the AGA survey also sought to understand what operators consider to be the most significant physical obstacle in 2016 for using ILI tools. Operators responded that the most significant barrier in the utilization of ILI is the inability to insert free swimming tools at the start of the inspection pipeline segment and receive or retrieve the tool at the end of the segment. Each time an operator inspects a pipeline with a free swimming ILI tool, there must be a launching station and a receiving station.

  Installation of launching and receiving stations requires planned engineering design. Typically, the launcher and receiver stations are 2-4 times larger in diameter than the pipeline for which they are designed. Installation of permanent launcher and receiver stations is a pipe retrofitting activity that requires planning, permitting, and construction. Many operators are retrofitting existing pipelines to install launching and receiving stations to increase the miles of pipelines that can be in-line inspected.

  The AGA survey found that many operators have a plan to reduce the obstacle of access to the pipeline within the next decade. Aggregating survey results found that within the next decade an estimated 26% of intrastate pipelines will be retrofitted to accommodate the current accessibility barrier. This retrofitting activity will bring current free swimming ILI capable pipe to an estimated 64%. The increase is expected to be achieved by retrofitting activity alone and does not consider plans for full pipeline replacement. AGA and INGAA plan to enhance our member’s success by offering more opportunities for member collaboration, such as workshops as mentioned in our increasing awareness section below.
• **Advocating for a Regulatory Process That Promotes ILI Technologies and the Acceptance of New Technologies:**

The construction and operation of intrastate transmission pipelines is generally regulated by the pipeline safety office in the state where the pipeline operates. State regulations must be as stringent as the minimum federal regulations codified by PHMSA and are often more stringent. Regulations that require onerous review and approval, such as waiver applications and the special permit process, for the use of new inspection technologies may deter operators from exploring innovative technological solutions and hamper innovation. AGA and INGAA advocate for a regulatory process that allows and encourages research organizations, service providers, and operators to lead the advancements pertaining to the utilization of new technologies.

In addition, the continuous development and acceptance of new tools and technologies is critical for advancing pipeline safety. The acceptance of new tools and technologies by PHMSA and state regulators has historically been a challenge. AGA and INGAA will continue to advocate for faster acceptance of new technologies that can advance pipeline safety.

• **Advocating for Effective Funding Mechanisms:**

Seventy percent of operating transmission pipelines were constructed well before the development of ILI technology. Retrofitting pipelines can be a significant expense, for which cost-recovery is needed. There is no “one size fits all” approach for recovery of these types of costs; however, there has been progress in providing for this type of cost recovery in multiple states, including Colorado, Indiana, Michigan and Oregon.

An intrastate transmission pipeline is regulated by the state public utility commission (PUC) for rate recovery. Decision by State PUCs impact the rate of investment for retrofitting transmission pipelines. AGA has worked closely with NARUC to provide awareness of multiple funding mechanisms that allow operators to take actions, like retrofitting, in a way that does not negatively impact customers. Putting the right funding mechanisms in place can significantly help expedite retrofit or replacement of intrastate pipelines that will accommodate ILI usage. AGA’s state affairs group will continue to track and educate operators on funding mechanisms.

### Increasing Awareness of and Confidence Around Expanding the Use of ILI Tools and Technologies

AGA and INGAA recognize that industry forums help to educate stakeholders on the use and capabilities of ILI tools. As such, the associations provide numerous opportunities on a continuous basis for operators and vendors to attend forums where they can share their experiences with ILI tools, learn about advancements in the industry, and discuss challenges and obstacles to using ILI tools.

In addition, AGA and INGAA staff attend outside forums to promote these messages and to identify opportunities that nonmembers may not be aware of. These forums include workshops held by a variety of industry stakeholders; public events held by government agencies; R&D forums hosted by

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9 There are two exceptions: Hawaii and Alaska. PHMSA serves as the regulator for intrastate transmission pipelines in those states.

10 Appendix B is a sample communication from AGA’s state affairs group.
PHMSA, DOE, and state gas associations; seminars hosted by vendors and consultants; and meetings with standards-setting organizations. All forums are attended by a variety of industry stakeholders where AGA and INGAA can publicize our efforts and opportunities to advance ILI capabilities. Examples of these opportunities include forums on consensus standards, such as ASME B31.8S: Managing System Integrity of Gas Pipelines and API STD 1163: In-line Inspection Systems Qualification Standard. Workshops also focus on lessons learned stemming from incidents on pipeline systems, which can result in changes to ILI technology usage or procedures to address risks exposed by near misses and incidents.

AGA and INGAA also have a variety of technical committees which include industry, manufacturers, and service provider representatives. They produce deliverables such as technical publications, white papers, surveys, and assist with standard development through national standard organizations. Through committee membership, industry engineers and operations personnel broaden their competence by meeting contemporaries and sharing state-of-the-art-engineering information.

In 2012, AGA created the Transmission Pipeline Operations Committee, which meets twice each year. The purpose of the committee is for AGA members to share knowledge and experiences specifically related to transmission pipeline operations, inspections, and integrity management. The use of ILI technology plays a critical role in these discussions. Members of the committee are leaders of their organizations integrity management program and are integral to decision making on expanding the use of ILI tools on their pipelines. INGAA’s Pipeline Safety Committee has similar objectives.

AGA has also promoted the use of ILI technology through multiple transmission pipeline-focused workshops. Workshops offer the opportunity for attendees to hear multiple perspectives on a given issue. AGA invites non-members to our workshops and in our 2015 workshop, we had the NTSB as guest speakers. The NTSB spoke about the Transmission Integrity Management Safety Study. Other non-members that participated in the workshop included PHMSA, service providers, research organizations and state representatives.

In 2015, the INGAA Foundation hosted a new technology workshop that covered ILI technology, risk modeling and methane reduction strategies. The workshop provided pipelines and vendors with information on the technologies and processes available to solve integrity issues. The agendas of both the committee meetings and workshops include presentations from ILI service providers highlighting advancements in technology and capability, as well as presentations from operators showcasing lessons-learned from making pipelines able to accommodate ILI tools and utilizing ILI. These venues allow operators to learn more about new and developing technologies, while also learning from other operators how they can effectively deploy existing commercial technology.

Analysis of the AGA survey’s collaboration section highlights opportunity for future workshop agendas. Ninety-four percent of respondents indicated that their companies attended a forum focused on transmission integrity and 88 percent of the respondents stated that their company has participated in one or more of AGA’s transmission integrity workshops. Respondents estimated that annually there is a collective industry effort of over 7,000 man hours dedicated to participating in integrity management forums. Given the magnitude of respondent involvement in integrity management forums and that ILI

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1 Workshop agenda can be viewed in Appendix C and Appendix D

12 Question 48 of the survey asks respondents, “If yes to number 47, estimate the number of collective hours your company spends per year participating in integrity management forums. (Rule of thumb, a 1-day workshop for 1 employee is equal to 8 hours)”.
technology is a prominent topic at these forums, we believe the survey feedback confirms the importance of our past forums and will help AGA and INGAA plan for future collaboration forums.

The survey results included multiple findings that will assist in refining our strategy to increase ILI on intrastate pipelines. We received valuable information from respondents regarding what additional forums could help their company become more prepared in using ILI technology. Survey respondents stated that the below list of topics is needed:

1. Lessons learned forum (Note: AGA and INGAA frequently hold these forums)
2. Technology forum with emphasis on low flow (Note: AGA and INGAA have had presentations focused on this topic)
3. Retrofitting Pipelines (Note: AGA and INGAA have had presentations focused on this topic)
4. Training for ILI that includes inspections and pipeline design (Note: AGA and INGAA have had presentations that have touched upon this topic)

From these responses, AGA and INGAA has added activities that will increase awareness and confidence of ILI. In particular, AGA is hosting a Transmission Integrity Workshop in Pittsburgh, PA June 13-14, 2017, where we plan to focus on the needs identified in this survey. We will have operators share their lessons learned, providers of low flow technology share their capabilities, and we will focus a portion of the workshop on retro-fitting pipelines to assist in making them capable of accommodating in line inspection tools.

To address the need for training, we will also promote the AGA Workforce Development Compendium13. This compendium lists many third party programs offered by trade associations, educational institutions, and other non-profit organizations that are available through AGA membership. The document is organized into three primary categories: 1. Career Awareness 2. Employee Training 3. Professional Development.

“Career Awareness” and “Professional Development” serve to provide operators with a means to augment their applicant pools and develop future leaders, respectively. The “Employee Training” category provides a non-comprehensive list of training programs in a variety of operational subcategories—one of which is “Integrity Management.” This subcategory contains several in person courses, certifications, reference materials, and online seminars pertaining to In-Line inspection. Generally speaking, the goals of these programs are to augment an engineer’s knowledge of In-Line inspection procedures, In-Line inspection technology capabilities, and its role in an operator’s overall integrity management program.

Organizations offering these ILI programs include the Southern Gas Association (SGA), the National Association of Corrosion Engineers (NACE), the American Society of Mechanical Engineers (ASME), and GTI. AGA does not specifically endorse any of these individual ILI programs listed in the compendium. The document simply serves to increase membership’s awareness of third-party programs that are available. AGA plans to update the Workforce Development Compendium on an annual basis and is continuously and actively seeking additional resources to add to the document.

AGA and INGAA offer an open-ended invitation to the NTSB to attend future AGA and INGAA forums. As industry associations, we provide forums for collaboration, networking, and sharing of practices. Our role in the industry offers a focus on continuous improvement for the overall safety of the nation.

13 The ILI training portion of the AGA Workforce Development Compendium is included in our response.
AGA and INGAA believe that our collective efforts have led to better ILI technologies, increased the amount of pipe that can be inspected by traditional free swimming and robotic ILI tools, and have increased awareness and the use of ILI. We also have a comprehensive strategy for continuing these efforts and increasing the use of ILI among intrastate transmission pipelines. Therefore, we request this recommendations P-15-24 and P-15-26 be moved to a Closed —Acceptable status.