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Proceedings From the National Pipeline Safety Forum

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Contents

Background

Much of the nation's pipeline infrastructure was installed many decades ago, and some century-old infrastructure continues to transport energy supplies to residential and commercial customers, particularly in the urban areas across our nation. Older pipeline facilities that were constructed of materials no longer used today (e.g., cast iron, copper, bare steel, and certain kinds of welded pipe) may have degraded over time, and some have been exposed to additional threats, such as excavation damage.

On December 4, 2009, PHMSA issued the Distribution Integrity Management Final Rule, which extends the pipeline integrity management principles that were established for hazardous liquid and natural gas transmission pipelines, to the local natural gas distribution pipeline systems. This regulation, which becomes effective in August of 2011, requires operators of local gas distribution pipelines to evaluate the risks on their pipeline systems to determine their fitness for service and take action to address those risks. For older gas distribution systems, the appropriate mitigation measures could involve major pipe rehabilitation, repair, and replacement programs. At a minimum, these measures are needed to ensure these systems as being fit for service. While these measures may be costly, they are necessary to address the threat to human life, property, and the environment.

In addition to the many pipelines constructed with materials no longer installed today, there are also early vintage steel pipelines in high consequence areas that may pose risks because of inferior materials or manufacturing methods, poor construction practices, lack of maintenance, or inadequate risk assessments performed by operators. The lack of basic information or incomplete records about these systems is also a contributing factor. The U.S. DOT is seeking to ensure these risks are identified, the pipelines are assessed accurately, and preventative steps are taken where they are needed.

As part of Secretary LaHood's "Call to Action" to engage state partners, technical experts, and pipeline operators in identifying pipeline risks and repairing, rehabilitating, and replacing the highest risk infrastructure, DOT and PHMSA convened a Pipeline Safety Forum to engage a working session to meet the goal of raising the bar on pipeline safety.

Forum Objectives

The Forum was organized around three panel discussions intended to prompt discussion related to and culminating in the actions that PHMSA, states, and industry can take to increase pipeline safety. First, discussions were focused on both the known and perceived risks posed by pipelines, including the means by which these risks and threats are identified, measured, and evaluated. The second objective was to discuss the nature, scope,

and extent of the challenges facing the industry and regulators as they decide how best to address and eliminate or mitigate these risks, and prevent future incidents. Financially-driven challenges were addressed along with the purely technical challenges. This included discussions of rate-setting and cost recovery issues; limitations in the tools and technology available to industry; and, limitations within the sources of both the data and information upon which decisions by industry and regulators are made. Also discussed were opportunities for improvement in these areas, not just in terms of more consistent and equitable financial treatments and advancements in the hardware utilized, but also in terms of the knowledge or information gaps that must be closed in order to more effectively address these issues and the risks associated with pipelines.

Finally, all participant groups presented their views regarding what additional actions and steps can and need to be taken to address the issues raised in the first two panels, and to both reduce pipeline risks and prevent the sorts of incidents that prompted this Forum. The issues raised, questions posed, and suggestions offered will be compiled in a report by PHMSA. Working transparently and with their stakeholders, PHMSA's report will identify actions to be taken - and accelerated - by the appropriate parties to improve the safety of the nation's energy pipeline network and achieve the common goal to reduce the risk of harm to people and the environment due to the transportation of hazardous materials by pipelines.

Summary of Proceedings

Under the leadership of Transportation Secretary Ray LaHood, pipeline safety experts from around the country met in Washington, D.C. on Monday April 18, 2011 with the goal of accelerating the rehabilitation, repair, and replacement of critical pipeline infrastructure with known integrity risks. As Secretary LaHood stated in his opening remarks, "Improving safety is the first thing I think about in the morning. It's the thing that keeps me awake at night."

As noted by Cynthia Quarterman, head of DOT's Pipeline and Hazardous Materials Safety Administration, the National Pipeline Safety Forum was called on the heels of a series of high profile pipeline accidents involving each of the three major system types: a large hazardous liquid transmission pipeline spill in Michigan resulting in significant environmental damage; a natural gas transmission pipeline explosion and fire in California resulting in multiple deaths, injuries, and widespread property damage; and a distribution pipeline explosion and fire in Pennsylvania which resulted in multiple deaths.

While investigations are still on-going into the specific causes of these and other recent pipeline accidents, the Forum was called as a proactive step to understand and get in front of the risks exposed by these accidents, and to start the national dialogue necessary to develop a practical blueprint for accelerated action to address these risks.

The Forum featured three separate panel discussions and included thirty different speakers representing a wide variety of stakeholders including both small and large publicly-owned and investor-owned utilities; local, state, and federal regulators; distribution and transmission pipeline operators; research and development organizations; and public safety advocates.

The first panel discussed the state of our national pipeline infrastructure and focused on the known safety and environmental risks posed by pipelines. The second panel discussed the practical challenges facing those responsible for ensuring the safety of the public and the environment and what is being done to meet these challenges. The final panel discussed what more can be done to reduce these risks and achieve the common goal to reduce the risk of harm to people and the environment due to the transportation of hazardous materials by pipelines.

While there was a diverse spectrum of speakers, a few common themes and messages were repeated frequently:

- The current regulatory regime, regulatory approach, regulations, mandated and voluntary initiatives, and industry integrity management programs have resulted in significant safety performance improvements over the last decade. This is not a rationale for maintaining the status quo, but a caution that additional activities need to be made in a way that augments but does not disrupt current efforts that are producing real improvements.
- More specifically, the Integrity Management (IM) Programs, which have been initiated in the transmission pipeline industry over the last decade and will be introduced to the distribution pipeline industry later this year, are an effective foundation for moving forward. The risks from older materials and methods can be appropriately identified and assessed within an operator's IM program and any necessary mitigative actions can be designed to fit the pipeline-specific conditions and operating environment.
- Decisions on the need to repair, rehabilitate, or replace pipeline should not be based on a simple age criteria, but on a broader-based "fitness for service" criteria, which takes into account inspection and testing results, operating history, etc.
- Pipelines are very diverse and there is no simple "silver bullet" or "one-size-fits-all" solution. Distribution pipelines are designed and operate differently than transmission pipelines. Natural gas pipelines are different than hazardous liquid pipelines. There are some very small distribution companies and some mega-corporation transmission operators. Some utilities are publicly owned, some are investor-owned, and the rate-setting processes differ. Flexible solutions must be forthcoming that allow each segment of the industry to design and implement effective solutions that fit their specific situation.

Panel 1: "What Are The Highest Pipeline Risks?"

The question for the first panel discussion addressed was: **"What Are The Highest Pipeline Risks?"**

The panel moderator was the Honorable Deborah Hersman, Chairman of the National Transportation Safety Board. Panel members included:

- Rich Worsinger, Director of Utilities, City of Rocky Mount, NC representing American Public Gas Association (APGA)
- Chuck Dippo, Vice President, Engineering Services, South Jersey Gas representing American Gas Association (AGA)
- Christopher Helms, Executive VP/Group CEO, Nisource representing Interstate Gas Association of America (INGAA)
- Danny McGriff, Georgia State Pipeline Program Manager and Chairman, National Association of Pipeline Safety Representatives (NAPSR)
- Greg Smith, President, Shell Pipeline Company LP representing Association of Oil Pipelines (AOPL) / American Petroleum Institute (API)
- Rick Kessler, Vice President, Pipeline Safety Trust (PST)

This panel provided a useful overview of the national pipeline infrastructure including the types of materials used in different pipelines and how these materials have changed over the years. Some key information provided in this session included:

From Pipeline Operators' Perspective:

- Pipelines are a vital asset to the nation. Pipeline transportation is the safest mode to transport energy. Maintaining reliable, economic and safe service is crucial.
- The safety record of each segment of the industry has improved over recent decades. The number of leaks, serious incidents, and significant incidents is on a downward trend since 1990.
- The improvement in safety is the result of regulations promulgated during this period including operator qualification, public awareness, damage prevention, and transmission integrity management programs. Recently enacted regulations for distribution integrity management and control room management are expected to continue to improve pipeline safety.
- Operators of all four national industry trade associations are and have always been focused on safety. Safety is of key importance and integral to work they perform. They demonstrate this through their mission statements, work on safety and technical standards development, sharing best practices, damage prevention efforts

such as common ground alliance, investment in new technologies, and training of operating personnel.

- INGAA created a team to develop solutions to identify and mitigate risks associated with older pipelines. This includes how to establish the safe operating limits and practices for older pipelines.
- Hazardous liquid operators voluntarily share information between operators through the piping performance tracking system (PPTS) and API Pipeline Information eXchange
- Distribution companies vary greatly in terms of number of customers, the specific characteristics of their systems, their operating environment, the threats and risks to their system, and their rate mechanisms. There are over 1,400 gas distribution operators. There is not a one-size-fits-all solution.
- While the transmission system is comprised of steel, the distribution system contains a mix of materials. Cast iron was the material of choice for distribution piping into the 1940's and still comprises 3% of all distribution pipelines. Cast iron is resistive to corrosion but smaller diameters may break under bending forces. Steel pipe was used from the 1940's – 1970's. Steel is stronger and tolerant of bending but in some soils can corrode if no corrosion controls are used (e.g., coating and cathodic protection). After 1970 steel pipe had to be coated and cathodically protected. There are very few transmission pipelines that are bare steel and 98% of these are cathodically protected. Bare steel comprises about 1% of the distribution system. Steel continues to be used for transmission and distribution pipelines operating at higher pressures. Since the 1970's plastic has been used pervasively in gas distribution. Plastic does not corrode and withstands bending, except for certain types of early vintage plastic, which is more susceptible to cracking under bending stress. The number of miles of cast iron, bare steel, and copper pipelines in service is decreasing each year.
- Integrity management (IM) is a risk analysis and an asset management program that considers many factors in addition to pipe material and age. IM looks at inspection records, maintenance history, the operating environment, and experience with similar pipe. Operators must assess their system specific threats and evaluate risk to determine the actions necessary to ensure that the pipe is fit for service. All threat categories are important and must be assessed.
- Generalizations about an asset cannot be made based solely on its age. Focusing solely on material and age will not find the highest risk pipe. The focus should be on "fitness for service" not "aging pipe".
- Seam failures are a main focus in transmission pipelines. Not one dominant cause of seam failures has been identified but the industry is focusing on more in-depth

assessment and cause-analysis. Industry has a mechanism to address seam issues. Some mechanisms of seam failures are better understood than others. There needs to be continued investigation and improved technology in this area. The second most common causes of incidents for gas transmission pipelines are corrosion and material or weld defects. Significant research and development needs to occur to better assess and locate these types of problems.

- Manufacturing and construction flaws in older pipelines are generally stable unless the operating environment changes.
- Distribution systems by definition operate at less than 20% of their design strength so issues such as seam type and pipe specification are less critical than they are for transmission.
- Excavation damage remains the most prominent risk to gas pipelines and results in the greatest consequences for hazardous liquid pipelines. Public education about 811 is critical to reducing these incident but so too is ending exemptions to One-Call, and the enhanced enforcement of One-Call violators.
- Reducing the number of incidents requires a comprehensive approach and involvement of all stakeholders.
- Research studies and industry standards classify risks to the pipeline into nine categories. No one solution exists to mitigate all risks. The solutions need to be tailored to the specific risks to individual pipeline systems.

State Regulator Perspective:

- Addressing the highest risks to pipelines at a national level is challenging. At a national level the issues are limited to: (1) leak or failure prone pipe; (2) pipeline construction quality; and (3) excavation damage.
- There are three factors to pipeline risk: (1) The risk inherent to the physical properties of the pipe and pipeline environment; (2) The risk due to pipelines with a combination of properties which place them in a higher risk category; and (3) Those pipelines with "financially-driven risk", operators where safety priorities are not permeating throughout the company's operation management, that place them in the highest risk category.
- The financially-driven risk category is difficult to address at the national level because the national codes cannot adequately address a state-specific risk. State-specific regulations target the infrastructure with risk that is specific to that state. For example, some state-level pipeline safety codes include mandatory pipeline replacement programs, more frequent leak surveying, and additional training and qualifications for operating personnel.

- A major cause of deaths and injuries is excavation damage. "811" will make inroads for pipeline safety due to excavation in the vicinity of pipelines.
- New pipelines contain their own set of risks. A survey of inspections nationally was conducted to identify problems with new construction for both transmission and distribution pipelines. The most frequent problems included the quality and training of personnel, non-adherence or absence of proper construction procedures, and the lack of sufficient inspection. PHSMA and NAPSR held two national workshops to communicate these problems with operators.

Public Safety Advocates Perspective:

- Although the number of pipeline accidents has been declining we have recently experienced a series of high-profile, destructive and deadly events. We need to find ways to address them.
- Transmission accidents within an operator's control still make up a significant part of accident causes. In hazardous liquid pipelines they occur more frequently than those caused by excavation damage. Hazardous liquid pipelines still have more incidents than gas transmission pipelines but we do not know why.
- Gas distribution incidents caused by other outside force seem to be on the increase. Vehicles are causing a large number of these incidents.
- The public, regulators and operators need to maintain a constant focus on pipeline safety or there will be undesired consequences.
- The pipeline safety advocate community does not know enough about how states are performing.
- Do operators and regulators have adequate resources to implement safety initiatives? Do public utility commissions (PUCs) and FERC provide operators with adequate returns for safety initiatives?
- Gathering lines in populated areas will need special attention as the technologies to extract natural gas and oil from shale are implemented. There is a need to collect best practices and utilize them in the construction of new facilities.
- The due process amendment added to the Pipeline Safety Reauthorization would be unduly burdensome to regulators and move enforcement back to where it was before 2002.

Question & Answer Session for Panel 1:

1. *Debbie Hersman* – I heard in many of the presentations a discussion about risk and assessing risk and identifying risk. In particular reviewing maintenance and inspection records to identify risk and knowing your infrastructure, identifying risks to assessing, and prioritizing your risk. Unfortunately in the San Bruno accident, we

found that the company's underlying records were not accurate. The records identified the pipe that failed as a seamless pipe but it actually had multiple welds. My question is that if your many efforts to improve safety are predicated on identifying risk and if your baseline understanding of what your infrastructure is not accurate, how confident are you that your risks are being assessed appropriately?

Christopher Helms – Using the holistic approach to pipeline safety, 87% of all transmission pipelines in HCAs have already been assessed and 100% of the assessments are targeted to be complete by 2012. We have current information about the pipe through the integrity assessments. The assessment utilized high resolution in-line inspection tools or other tools reviewed and approved by PHMSA and ASME. The data shows more than corrosion activity; it is identifying previous third party damage and manufacturing defects. Prior to 1970 there were no federal regulations with respect to pipeline record keeping and standards. Many of the pipelines built prior to 1970 were built on consensus engineering standards. The San Bruno incident appropriately put a spotlight on pipeline records. Operators have subsequently expended a large effort to ensure that the records they have today match with the pipeline in the field. IM requires a large amount of data integration. When inspections are performed in the field, a digital record of the work completed, and the condition and characteristics of the pipe is created.

Rick Kessler – Safety regulations require operators to make books and records available. Inspectors do not regulate to the action itself but to the records. If the records are not accurate, you cannot properly regulate. The regulator and the company will make mistakes if they do not have an accurate understanding of the infrastructure. We need to focus on this important issue.

2. *Vikki McReynolds*, Executive Director, Georgia Utility Contractors Association. Represents underground utility contractors.

    a. How many gas operators are members of any local excavation association? Do they reach out and educate those excavators?

    b. How much money do operators spend on education versus the amount they spend on damage collection?

    c. How many lobbyists do operators employ versus the number of personnel who attend excavation meetings?

    d. Do operators make extensive efforts to reach out to those excavators? Can the operators demonstrate how much time you spend on those efforts?

Rich Worsinger – Rocky Mount started a utility construction coordinator group where they reach out to both local contractors and operators of the various underground utilities. They host a monthly meeting and do not have a lobbyist. They

have had success in decreasing the number of damages. Rocky Mount does not fine excavators nor does North Carolina.

Chuck Dippo – New Jersey is the most densely populated state. We have an active Common Ground Alliance chapter. We have found that we have had the most success with excavators at morning meetings. There are enforcement capabilities in New Jersey. Enforcement has been very helpful for us both as an excavator and an operator. Fines start at $3,000 for "no ticket excavation" and increase depending on the severity or the incident. Outreach and enforcement are key factors to reducing excavation damage. The revenue that the board receives from the fines is utilized to improve their education program and on the continuing enforcement program.

3. *Pat Sonti*, Vice President-Projects & Sales, Northeast USA & Energy Maintenance Services (EMS) – Do you see a role for private-public partnership for the development and commercialization of smart remote technologies for integrated comprehensive asset risk management as well as data management? This technology essentially enables 24/7 control room monitoring for the life-cycle of the asset. The technology utilizes remote sensing.

   Rich Worsinger – We, like most operators of smaller systems, do not have a control room. First we need to finish gathering our data and evaluate what we have. New technologies would be looked at after that.

4. *Betty Ann Cane*, Chairwoman of District of Columbia Public Service Commission (DC PSC) – Do people outside of the Commission have the impression that the role of the PSC is solely to deal with rates and not consider safety? Safety is part of our charter.

   Rick Kessler – I realize that commissions are concerned with safety but it seems that their focus is on providing just and reasonable rates. If a board member needs to make a choice on a rate increase, is there an inherent conflict with having to spend more on safety when there are short term pressures or pressures due to law? The question is not intended to ask about the good will of any member but to whether there is an inherent conflict for commissioners to approve spending on safety initiatives which are long term investments due to short term pressures.

   Chuck Dippo – In New Jersey the mission is similar to PSC DC. In the past couple of years, we have received approval for accelerated, incremental, non-revenue producing system replacements as commodity prices have fallen. This has allowed us to accelerate programs that were already in place to replace pipe. We are replacing a large amount of bare steel and cast iron.

   Danny McGriff – Georgia has a mechanism in place in our rate structure for safety related initiatives. The commission never denies these. The mechanism provides a

way to associate the cost of the work with the benefit to safety and ensure that costs are prudent.

5. *Cheryl Roberto*, Commissioner Ohio Public Service Commission – Speakers have mentioned the need for asset management and robust integration of operator's data. What should I be asking about asset management programs? How do I know operators have a good program in place? Is there a standard? What is the yardstick by which we can measure this? (e.g., is quality measured in number of miles or per dollar, is it based on amount of investment put back into the system, is it based on reportable, voluntary disclosure if your employees can report problems?)

   Christopher Helms – We are regulated by PHMSA which means that we have a series of integrated audits that verify our records. We also operate a distribution system in Ohio which is audited by the PUC. Ohio has instituted a surcharge for accelerated replacement. When filing for the surcharge, operators have to demonstrate that they have done that work.

   Debbie Hersman – Does your industry's association self police members who are not meeting safety goals? When International Air Transport Association receives a number of members who cannot successfully complete their audit, they revoked membership. Over thirty members did not pass the audit.

   Christopher Helms – It is not the intent of associations to police the members. We are trying to bring up everyone to the highest level to achieve our goal of zero incidents.

6. *Ricky Harp*, President Richard Harp Excavation Inc., Member of the Georgia Utility Contractors Association and an active member of the National Utility Contractor's Association – Our concern is while we attend many 811 meetings with regulators, we have many construction sites where we operators are unable to locate or properly locate their facilities. What is the root cause of excavation damages? My company recently spent 450 man hours on a job site in Atlanta where the gas operator could not locate their pipelines. How can we not damage the pipeline when the owner cannot tell us where the lines are? People feel the excavator is at fault because they do not know what actually occurred. The root cause is the operator's locating problems. What are we supposed to do when they cannot tell us where the lines are?

   Chuck Dippo – When a utility mismarks or does not mark in New Jersey, they get fined. Your issue goes back to enforcement which must look at the full circle of the issues.

   Ricky Harp – We have the same laws in Georgia as you have in New Jersey and we follow all the rules. All the public hears is that an excavator hit the line.

   Debbie Hersman – We need to collect and analyze more data to determine and quantify the root causes.

7. *Bob Ackley*, owner Gas Safety Inc. (conducts leak surveys through the northeast) – There are only guidelines, no standards for leak management. I see more operators classifying leaks as a "Grade 3". Many of the leaks are on private property. Would operators consider adopting a standard in which owners must be notified when a gas leak occurs on their property, and to inform them that the gas may harm their vegetation, trees, grass, shrubs?

   Rick Kessler – There should be standards so that public, regulators, companies, localities have certainty. It is useless if the discovery of the leak is not followed up by a notification. Environment is a significant problem. The issue merits further consideration.

   Danny McGriff – I had not thought of leaks in this manner. As regulators we inspect the operator's procedures. Good thought.

Panel 2: "What Are The Challenges and How Are We Addressing Them?"

The question for the second panel discussion was: **"What Are The Challenges and How Are We Addressing Them?"** This discussion was divided into two parts, one addressing Financial and Related Issues, and another addressing Technical Issues.

The panel moderator was Colette Honorable, Chairman, Arkansas Public Service Commission and Chairman, NARUS Pipeline Safety Committee.

Financial and Related Issues

Panel members discussing financial and related issues included:

- Sue Fleck, Vice President, Engineering, National Grid representing American Gas Association (AGA)
- Randy Gyory, Interim Executive VP/COO, Philadelphia Gas Works, PA representing American Public Gas Association (APGA)
- Harry Pefanis – President/COO, Plains All American Pipeline LP representing Association of Oil Pipelines (AOPL) / American Petroleum Institute (API)
- Jeff Wright, Director, Office of Energy Projects, Federal Energy Regulatory Commission, Washington, DC

This panel provided an insightful discussion of some of the practical issues that pipeline operators and public utility commissions must deal with in financing pipeline repair, rehabilitation, and replacement. Some key information provided in this session included:

- Industry spends $7 billion annually to improve safety.
- For investor owned utilities (IOUs), the challenge of replacing, rehabilitating and repairing pipelines is "smart modernization". Operators need to determine the right

amount of replacement to reduce the risk and maintain safe and reliable delivery while balancing the financial and other impacts on the customer. Customers bear the financial cost of replacement through increased rates but they also are subject to disruption of service and supply, and the inconvenience of construction in their neighborhoods. The balance is maintained by a process which identifies pipelines which are not fit for service and other factors.

- Funding mechanisms do not promote investment in the development of new technologies to better locate leaks and pipes.
- Rate cases require a large amount of resources some of which come from operations.
- Many states are working on infrastructure recovery but the mechanism can vary from state to state. One state may have an accelerated replacement program, another state may have an incentive for replacement, and a third state may have timely recovery which allows operators to recover costs in the year the pipelines are replaced.
- States continue to evolve in adopting revenue decoupling, a rate mechanism that eliminates the link between a utility's revenues and sales. Revenue decoupling eliminates the disincentive to incur costs for replacement, rehabilitation and repair.
- For most municipal governments, rates are approved by their governing agency. Resources that support other government services such as police and fire safety programs compete for funds with pipe replacement programs.
- Among municipal governments, financial challenges vary based on the diversity of their distribution system and their economies. Older cities may require significant investment for modernizing the infrastructure at the same time that their population may be declining. Newer cities may have expanding population, expanding tax base and have a relatively new infrastructure.
- Transmission integrity costs have been ten times higher than originally anticipated for the hazardous liquid industry. Liquid pipeline tariffs are adjusted annually by FERC based on the producer price index (PPI). The index is a lagging indicator, intended to reflect the historical impact of industry-wide costs in setting future rate changes. The indexing methodology is reviewed every 5 years. It's critical to have a rate methodology that the industry can rely on when making significant investments.
- Hazardous liquid pipelines do not recover safety expenditures through cost of service rate filings.
- FERC does not have a safety mandate but works in partnership with PHMSA through a memorandum of understanding (MOU). FERC notifies PHMSA about upcoming pipeline construction. They work as partners in communicating to the

public. FERC defers to PHSMA for communication to stakeholders about pipeline safety related matters. FERC and PHMSA could review the MOU to look for ways they can find more synergisms in their processes.

Question & Answer Session for Panel 2, Financial Issues:

1. *Jim McCleskey* with the Washington Office for Governor Beverly Perdue of North Carolina – As a result of the recent incidents, have any gaps or overlaps in state and federal government pipeline safety oversight roles been identified which may impact the cause of incidents?

   Colette Honorable – The NTSB investigation is ongoing. We will glean helpful information from their reports as they are published. As a regulator I need to know the realm of my jurisdiction and operate well within that. I have a close relationship with the pipeline safety staff. The answer to your question has yet to be seen.

   Harry Pefanis - Yes, there are gaps in damage prevention laws. Certain states have One-Call exemptions and lack enforcement.

   Jeff Wright – No gaps or overlaps have been identified between FERC and PHMSA. FERC notifies PHMSA of upcoming pipeline projects. There are additional process improvements that can be put in place that allow PHMSA to plan how they direct their resources.

2. *Carl Wood* Director of Regulatory Affairs, Utility Workers Union of America (UWUA) – Mr. Wood noted that the panel did not include a representative of workers in the industry. Do you see any independent and unique role for workers and their organizations, the union, to help address the questions that the Department has put before us? Is there a role for unions and employees in addressing and building a culture of worker safety as well as public safety in the gas industry? Are there independent roles for workers and unions in developing root cause analysis in incidents or near miss events as is done for railway incidents? Understanding the causation of near miss events may serve to head off those issues before they occur. Is there a role for workers and unions to work together with regulators as well as operating management during the investigation of incidents?

   Andrew Drake, Vice President, Spectra Energy – The role of worker involvement is a good point. In the past, we might approach improving pipeline safety solely through technical solutions. Improving safety really comes down to developing a safety culture and values. To reach a safety culture, there needs to be an understanding of how values work and how to propagate them. There are parallels between safety cultures and management systems. Management systems are part of a programmatic description that's contained within industry standards and defined inside safety regulations. How you achieve and sustain a safety culture is very similar to some of the elements that are needed to create sustainable primary

management systems that underpin the risk management programs. This is an area we are trying to grow. We see a clear relationship between training, development, and accountability.

Collette Honorable – Workers definitely have a role to play on the front lines. PHSMA acted very quickly to plan this meeting. I recommend that you attend the next meeting in South Dakota in June.

3. *Name inaudible* - Since there are financially-related issues, what role do you see for pre-finance investment evaluation, analysis and studies prior to the authority for expenditures (AFE)? Does the AFE consider capital and operating expenditures for employee worker and public health, safety, and environment, corrosion, cathodic protection, asset risk management, greenhouse gas reduction, and life-cycle and recurring operating expenses?

   Henry Pefanis – We have a planning and budgeting process which is built from the bottom up. We identify the types of capital and operating expenditures needed to sustain our assets on an annual basis. The process is not based on achieving an economic return.

   Jeff Wright – Based on the requirements in the regulations, operators know what activities they need to include in their operating and capital budgets,

4. *Collette Honorable* –Would you comment on the benefits you see coming from DIMP? What have you gleaned through your experience in preparing for DIMP?

   Sue Fleck – Operators have already started implementing many of the DIMP requirements. We are developing better information about our system. We are doing a better job with how we take that information and use it to evaluate the real risks in our system, prioritize those risks, and develop mitigation actions going forward. Another benefit we are seeing is the transparency of information across the industry. In addition to National Grid's information I will learn how other companies perform tasks. This information makes decisions more robust and improves mitigation plans.

   Andrew Drake – TIMP is almost ten years into the process. Initially we understood the prescriptive requirements but did not appreciate the need to have a program behind implementing them to support what we do today. Early on we did not recognize the importance of data management systems, how to support risk assessments, and achieving the purpose of an IMP, not just a checkbox program. We now know we have to take a much more holistic approach to risk and the supporting structure around it.

Technical Issues

The moderator of the panel that discussed technical issue was Cliff Johnson, President of Pipeline Research Council, International (PRCI). Members of this panel included:

- J. Andrew Drake, Vice President, Spectra Energy representing Interstate Gas Association of America (INGAA)
- Harry Pefanis – President/COO, Plains All American Pipeline LP representing Association of Oil Pipelines (AOPL) / American Petroleum Institute (API)
- Dr. Oliver C. Moghissi, President, NACE International
- Colette Honorable, Chairman, Arkansas Public Service Commission and Chairman, NARUC Pipeline Safety Committee
- Jeff Wright, Director, Office of Energy Projects, Federal Energy Regulatory Commission (FERC), Washington, DC

This panel provided an overview of the technical challenges that confront pipeline operators and the approaches that have been taken to address these challenges. Some key information provided in this session included:

- Effective remedies must embrace the complexity of the issues. The different segments of the pipeline industry have different rate structures, competitive environment, infrastructure composition, and threats which result in different challenges.
- Integrity management poses many technical challenges including:
    - The technical constraints inherent to IM inspection tools, and the tools are not infallible.
    - Operators are finding multiple threats to a pipeline which requires tool runs with different technologies.
    - Some longitudinal weld seam anomalies have eluded detection
    - Vendors require market support to develop new technologies
    - Hydrostatic testing has limitations and can impact otherwise stable anomalies. Hydrostatic testing is less capable of detecting corrosion and only provides a point in time analysis.
    - There are challenges with leak detection. Instrumentation is not sensitive enough to detect all releases.
    - The challenges with integrity management continue to evolve and change.

- The natural gas transmission industry has committed to apply integrity management principles on a system-wide basis. Operators need to develop risk based approach to pipeline assessments outside of HCAs.
- Every segment of the pipeline industry has large annual expenditures for permanent repairs and pipeline replacement. They all have mandatory integrity management programs. Due to the maturity of the IM programs for transmission pipelines, their ability to prevent and detect problems and if necessary repair or replace pipe has improved with risk assessment programs, pipeline testing and advances in technology. The same improvements are expected to come for the distribution segment as they implement DIMP.
- The gas transmission segment has action plans to update isolation valve automation.
- Operators fund research, development and demonstration (RD&D) activities through Pipeline Research Council International (PRCI) and other organizations.
- RD&D organizations such as PRCI partner with government and industry to develop a road map to ensure that issues are being addressed. They look at research that is being performed in other industries to see if there are opportunities for technology transfer.
- The threat posed by corrosion has technical and management challenges.
    - Management lacks the knowledge to optimize corrosion spending. Corrosion employees are not trained to put technical information in a format to demonstrate the financial impact of corrosion expenses.
    - All metallic pipelines have a corrosion risks but the risk is very low because corrosion management is generally effective. Corrosion incidents still occur. This is because there are many pipelines, they are aging, and they have a lot of corrodible area. Corrosion has a random nature. A pipeline does not have a corrosion rate. Corrosion has distributions, averages, and extreme values. For example, we know that internal corrosion is unlikely for systems carrying processed hydrocarbons. On average this is true. That would imply that we never have any internal corrosion failures which we know is not true. If we want to improve, we need more attention on the exceptions. More attention on the average or overly simplified prescriptive solutions such as a one size fits all will be inefficient. We need to look at process and technology if we want to systematically identify and mitigate likely threats. First we need to look at the records and determine what corrosion mechanism might be causing accelerated corrosion.
    - Operators are challenged with determining the root causes of failures. They need to know the specific mechanism that occurred and why that anomaly

was missed. They need to know what the causes are that allowed that location to be missed.

  - Corrosion management needs to make sense on a risk and economic basis. Risk is an inherit part of operating a pipeline. We accept some risk because we enjoy the benefits from it such as heating our homes.

- Time dependent factors are addressed through technical solutions (i.e. internal, external corrosion, seam/weld failures, latent external force damage). Excavation, operator error, equipment failure, natural forces are addressed through improving performance with awareness and education.
- While not technical challenges, operators also face challenges with permitting, coordination with local governments, and encroachment on their pipelines. Measuring the effectiveness of public awareness and or stakeholder outreach is difficult.
- Industry associations have developed forums to share learning experiences, best practices, and training programs for operator employees and their contractors. The industry associations have developed guiding principles and commitment to a safety culture.

Question & Answer Session for Panel 2, Technical Issues

1. *Cliff Johnson* – What can be done to maintain our knowledge base when we lose key personnel from our staff? What do we do to grow that knowledge base?

   Henry Pefanis – As an industry we may partner with universities to initiate training engineering students in pipeline maintenance, corrosion protection, and other aspects of pipeline operations. We have an aging workforce and there is a large knowledge gap between recent graduates and seasoned technical personnel who perform the work today.

   Collette Honorable – The Commission is also challenged with knowledge transfer due to a large number of employees who are retiring and those eligible to retire soon. We are looking at succession plans, education and training. We need to get less experienced personnel involved with outside training so they can learn about the innovative changes that are happening in the field.

2. *Cliff Johnson* - Inaudible question

   Andrew Drake - A large part of the equation is to mitigate and prevent problems prior to inspection. With IM, our findings provide evidence of places where tasks were not effectively performed in the past. We need to evaluate those instances, look at what could have been done to prevent them, and keep this from occurring going forward.

3. Ziad Saad, representing the Canadian Energy Pipeline Association -Andrew Drake said the goal is zero incidents and Oliver said that there is no such thing as zero defects. Oliver Moghissi said that zero risk is not achievable. This seems to be a conflict.

   Andrew Drake – The goal of zero incidents is really about a core value; a way you look at your business; about how you intentionally approach your day. It takes concentration at the moment. Avoiding problems takes discipline, training, continued focus and effort. The challenge is in moving people from a "wanting" state to a state where they intentionally make it happen. They need to stay conscious in the moment.

   Oliver Moghissi – A safety culture is good. I want to point out that although it is an aspirational goal, we have to understand that operating a pipeline involves risk.

4. *Mark McDonald*, President, New England Gas Workers Association – Does the Department have plans for addressing leak management? There is a backlog of 20,000 leaks in Massachusetts. The problem appears to be the numbers. In 2009 there was an explosion where seven reports of leaks were called in. There are too many leaks on the system today whether they are hazardous or non-hazardous. They get worse with time and they should be addressed. Some of the leaks are older than the people working on the pipes. They go back to 1985. Replacement is the solution for tomorrow and the next decade; what is the plan for today?

   Sue Fleck – The existing pipeline regulations address leaks and the hazards that they create for the public. The current guidelines are effective in that operators put together a comprehensive plan to address the most hazardous leaks on the most immediate basis. The less hazardous leaks will be monitored and repaired over time. The best method to insure the integrity of the system is to have an effective replacement program to eliminate those leaks as the system is replaced, as opposed to fixing each joint that is weeping one at a time.

5. *Farron Hollabaugh*, Representing Pipeline Local Union 798, Tulsa, OK – If you need to inspect a longitudinal seam but you do not feel that the smart pig would catch, would you perform a hydrostatic test following the pigging run? If your system cannot accommodate a smart pig, when would you modify it so you can run a smart pig in it?

   Andrew Drake - The product of that decision is the risk assessment. The application of the tool depends on the threats. If you have a threat which one of the tools cannot decipher it is incumbent on you to deploy another tool and to cover that threat. It is not unusual for an operator to deploy both a physical hydrostatic test and to run a pig. It may not be possible to do them at the same time. The different tools may require separate equipment, additional permits, and involve service issues. The tests may be staged in different years or the operator may choose the more rigorous of the

two methods, neither of which may include pigging. Pigging may be more convenient but it may not answer the problems. When the pipe is not piggable, other, often more expensive testing protocols are used. Making a pipe piggable is an expensive capital one-time outlay but the recurring inspections are less expensive.

Oliver Moghissi – What that question addresses is that in integrity verification or assessment every tool has its advantageous and disadvantages. That is just one aspect of an overall integrity management and overall risk management. We should move away from looking at specific tools and give overall guidance on decision making.

Panel 3: "What More Can Be Done?"

The third and final panel of the day addressed the question: **"What More Can Be Done?"** The moderator of this panel was Jeff Wright, Director, Federal Energy Regulatory Commission. Members of this panel included:

- Mike Comstock, Superintendent of Gas Utilities, City of Mesa, AZ
- Scott Cisel, Chairman, President/CEO, Ameren Illinois
- R. Allan Bradley, President/CEO, Questar Pipeline
- Tim Felt, President/CEO, Colonial Pipeline Company, GA
- Jeff Wiese, Associate Administrator for Pipeline Safety, PHMSA
- Randy Knepper, Director, New Hampshire Public Utilities Commission & Secretary, National Association of Pipeline Safety Representatives
- Rick Kessler, Vice President, Pipeline Safety Trust

The purpose of this panel was to move the discussion from understanding the past and the present to a focus on future actions that can expand and accelerate the progress made to date. Some of the key points made during this discussion included:

Pipeline Operators Perspective:

Continue initiatives that are just beginning to take hold or in progress:

- Keep focus on key initiatives that are already underway.
- On the regulatory side, there are a number of significant rules that have just been implemented or are just beginning to take hold. These include:
    - Distribution Integrity Management (DIMP)
    - Elevating Public Awareness
    - Enhancing Control Room Management
    - Initiated ANPRM on the adequacy of natural gas transmission safety regulations

- Continue to issue advisory bulletins as critical information is discovered such as was done in the aftermath of the San Bruno incident; (1) emergency response preparedness, and (2) adequacy of records and the adequacy of risk assessment. The first advisory notice helped underscore the importance of communication with first responders and the second prompted operators to add resources to accelerate the review, identification and digitalization of the pipeline records related to MAOPs.
- Continue initiatives that have been in place a long time and are proving to make inroads to improving pipeline safety:
    - Damage Prevention
    - Research, Development and Deployment
- Existing industry voluntary initiatives that also need to continue include:
    - Best practice programs
    - Conferences and workshops
    - Publications
    - Safety summits
- A "safety culture" is imperative. To develop, a safety culture requires:
    - Commitment of all stakeholders (government, industry, RD&D, emergency responders, others)
    - Partnership – Common Ground Alliance is a model for partnership where underground utilities, excavators, One-Call associations, work together to mitigate excavation damage.
    - Ownership – All stakeholders must feel they own a part of the solution and embrace a safety culture.
    - Accountability for effective oversight, inspection, and thoughtful enforcement by government, legislative, and federal and state regulatory agencies, and industry.
- Each industry trade organization is committed and structured to promote all aspects of pipeline safety. Safety is discussed at board meetings, operations meetings, and each organization has safety committees.
- Trade associations promote safety through education, training, awards, technical committees, standards development, conferences, workshops, webinars, and publications. They all have best practice forums for sharing safety programs.
- America Public Gas Association has created an on-line integrity management plan creation tool, including a risk ranking model which operators of over 1,000 systems

are using. The development team includes state and federal regulators on the advisory group.

- Distribution operators voluntarily participated in DIMP pilot inspections to facilitate PHMSA's creation of inspection forms, guidance, and training material for federal and state inspectors.
- Operators engage in public awareness through sharing of information among emergency responders and the public.

What needs to be done?

- New regulations for:
    a. Mandatory "immediate repairs" for all onshore pipelines, not just those in HCAs;
    b. Leak detection capability evaluations on all regulated non-gathering lines; and
    c. Regularly updating HCA determinations with new census data and other information.
- New technology for better inspection tools and improved data integration.
- Elevate enforcement of 811 – Do not allow exemptions and make fines commensurate with damages. PHMSA should issue its NPRM on damage prevention and reduce funding to states that allow exemptions to damage prevention laws.
- Establish data quality team – Government, industry, public to improve data collection and analysis. The structure could mirror PHMSA's technical advisory committee or the Plastic Pipe Data Collection (PPDC) committee.
- Develop and implement a process to promote the highest levels of safety, reliability and operations excellence
- Sustain funding for research, development and deployment of new and enhanced technology.
- Continue education of all stakeholders on the importance of energy and about the nation's energy realities.
- Educate the public about our energy delivery system, about natural gas pipelines, how they work, why we have them, and their role providing energy to consumers. This started with the Safety Act of 2002 requirement of all operators to have a comprehensive Public Awareness program. Regulators and industry worked together to develop the Public Awareness standard API Recommended Practice 1162 which required operators to provide education on how to identify pipelines, and how to respond to emergencies if they occur.

- Public Awareness continues to be advanced through the Common Ground Alliance (CGA) and through Pipelines and Informed Planning Alliance (PIPA). Also:
    a. Ideas to alert land owners could include informing property purchasers of ROW issues at closing;
    b. Improve outreach to first responders; and
    c. Improve effectiveness of communications and pursue alternative delivery methods.
- We need to embrace the recommended practices built in the PIPA report. The communication can start with industry, employees, contractors, suppliers. It needs to include all levels of government, from federal to state to local. It needs to include emergency responders like fire marshals, and other emergency officials and to educate the public at large, especially those who work, live, or play near pipelines. Local governments have a role to play by limiting development near pipelines. The pipelines were at a distance when they were built but now encroachments heighten risks. We cannot change what was done but we can seek to provide guidance when these development questions present themselves.
- Reauthorize the Pipeline Safety Act with a balanced approach where Congress signals a priority, and regulators prescribe a solution based on sound engineering, data analysis, and input from all stakeholders.
- The transmission industry must continue to invest in technology and develop a comprehensive pipeline safety RD&D strategy. Our efforts are widely distributed across the industry. There should be a better matching of specific research needs with organizations possessing the strongest skill sets for those particular projects.
- What more to do with information sharing and training
    a. More effective knowledge sharing across industry;
    b. Partner with PHMSA on open knowledge sharing with industry – since they see all the operators and investigate the incidents, they can be a tool for sharing information with the other operators;
    c. More timely dissemination of investigation findings – PHMSA and NTSB; and
    d. Commitment to expand on data collection and analysis.
- What to do on inter-agency coordination
    a. FERC should ensure continuation of a simplified compensatory rate structure;
    b. Nationwide corps of engineers permit for pipeline repairs; and

c. Revise MOUs to eliminate conflicting or overlapping jurisdiction (e.g., EPA, BOEMRE and CG).

Regulatory and Public Advocacy Perspective:

- Welcome new people into the dialogue.
- Legislative initiative put forth last year:
  - Value of inspection – increase federal and state inspection efforts.
  - Use enforcement to improve poor performance.
  - Refresh the transmission integrity management rules since the programs have had time to mature.
  - Institute pay as you go provisions for special permits and new construction.
  - Close statutory exemptions in code for pipelines.
  - Move more data into the public domain. A lot has been done on the Federal level but still more to do at the state level.
  - Hazardous liquid ANPRM is closed and being evaluated.
  - Considering an ANPRM for gas transmission asking questions about preventative and mitigative actions, remote control shut off valves, and expansion of HCAs.
  - We have pushed through a series of significant rulemakings in the past few years which are just beginning to take hold. Continue to implement the inspection of these rulemakings, evaluate the data, measure performance, and improve the program through communication and improved training and education efforts.
- PHMSA alerted operators that we expect them to engage in a higher level of cooperation with emergency responders. Emergency responders need to be aware of major transmission lines or hazardous liquid lines in their communities.
- Explore the concept of ways that the federal government could assist states with significant miles of at risk pipe to accelerate their repair, rehabilitation, replacement, or requalification. Some public utilities compete for resources with programs for fire, police, and education.
- Encourage states to use all the tools in their toolbox including enforcement to incentivize pipeline operators to perform. Highlight enforcement around excavation damage prevention. PHMSA will be issuing an NPRM about federal enforcement of excavation damage to energy pipelines in the country. It is a stop gap measure for states without that authority or those who don't use it.

- The industry under invests in technology. We need to find a mechanism to fairly and equitably assess the charges to everyone. There needs to be a better channel to commercialize technology so it can be useful.
- For FERC and states, connect citing and rate setting decisions with safety. PHMSA will provide states with information about the safety performance records of operators if requested.
- Get the recommendations from PIPA into the hands of people who will use it, planning and zoning officials and the public.
- Building a collaborative pipeline for the employees of tomorrow. Entice younger employees into the industry. Let them know there is a great future in this industry.
- Most risk to distribution pipelines is state specific or requires state specific approaches. The pipelines, many of which were installed before 1970, are close to people's homes, businesses, and communities. Customized solutions are needed. Small utilities need to find ways to leverage other municipal construction projects and coordinate with other utilities that the commission regulates.
- From PHMSA, the states could benefit from predictive service life models of pipelines when determining the appropriate rates of replacement. This would provide a check and balance on the information provided by the operator.
- Challenge commissioners to meet regularly with your safety teams and staff. If your structure is hierarchical, flatten it out and bring safety into the forefront. Include the safety teams in the analysis structure and as part of rate cases.
- NAPSR members should use share more information and best practices.
- To assist operators, we need to provide more granularity in the reporting of incident root causes. This allows trends to be analyzed. NAPSR and PHMSA can partner on this effort to see the existing data we have and what it reveals.
- Regulators can challenge operators to ensure that quality assurance is being applied to everyday construction. OQ is not enough, and contractor oversight is critical. In the past we may not have known what our forefathers put in the ground but we should not make the same mistake.

Question & Answer Session for Panel 3:

1. Name of speaker not provided - Propane is commonly used in northern Vermont and northern New England but the discussions today did not include propane pipelines or the propane industry. What are your thoughts about getting the propane industry involved? Would they have different information about pipeline risk than today's panel?

Jeff Wiese– The Southeast and Northeast are very dependent on propane. Propane operators are required to implement an integrity management program for their pipelines. They must identify threats, evaluate risks and implement measures to reduce risks that are specific to liquefied propane gas (LPG). There are several large propane pipelines in this country. We have been working actively with the operators of those pipelines to ensure that they are renovated. Some of these lines are prone to seam issues. There are also thousands of very small propane operators. The National Propane Gas Association (NPGA) is the largest consortium of those folks. We have communicated with them regarding their members' requirement to implement a distribution integrity management program by August 2011. They represent a segment of the industry that should be represented in this forum. I will contact them and extend an invitation to join the dialogue.

Randy Knepper –We inspect forty-five natural gas operators and eight hundred and fifty jurisdictional propane operators. Inspecting the propane operators takes a great deal of time. We find that propane operators are very different from natural gas operators. Their systems are not as complex which makes them easier to inspect. They do not have leak classification system as they repair leaks as they occur. This eliminates the need to monitor leaks. Natural gas systems tend to be larger, more complex, and in urban and suburban environments. Propane systems tend to be in a more rural environment. Their codes are simpler than those for natural gas. For example, they do not calculate the maximum allowable operation pressure (MAOP) of a pipeline but use a prescriptive look up table to identify the type of pipe to install. Plastic pipe may only operate up to 30 psig. The propane sector should be invited as they have a lot to add to the dialogue.

2. *Glenn McMurray*, Normac – There has been a lot said about good information and about root causes. Why do PHMSA's incident reporting forms ask for apparent cause instead of root cause?

   Randy Knepper – A lot more details are required to get to the root cause. In the incident reports, PHMSA is trying to capture a larger expanse in classifying the incident cause category. You have to be careful on how you use the data and the conclusions you draw from it.

   Jeff Wiese – There is a lot to be gained from root cause analysis of incidents. All PHMSA inspectors and most of the senior state inspectors have received training in root cause analysis. Root cause can be very difficult to determine absolutely while apparent cause generally describes the cause. Operators report the apparent cause of thousands of leaks either repaired or eliminated each year. If a serious incident occurs, the root cause is determined.

3. *Lonnie Lister*, Office of Energy Projects, FERC – The focus of this forum has been to describe the highest pipeline risk but what about events which are low frequency but may result in high consequence such as earthquakes? The 49 CFR 193 LNG

Facilities has extensive and detailed requirements for geological analysis, geotechnical surveys, and seismic design requirements. 49 CFR 192 only includes three lines to protect transmission lines from flooding, earthquakes, and other natural forces. Well constructed pipelines are inherently strong when it comes to ground shaking but there are other seismic events such as land sliding and soil liquefaction that can cause multiple breaks along a single line. What is anyone doing about this particular phenomenon? Is DOT looking about upgrading their regulations?

Jeff Wiese– PHMSA has some early analysis on the effects of seismicity on pipelines. I will make sure the information is posted on the website. The study indicated that there are very few pipeline failures due to seismic events although there may be areas such as San Francisco where the frequency and magnitude of the event may change the risk profile. Integrity management requires operators to consider this risk. The FEMA data layers for seismic events are included in PHMSA's geographical information system (GIS) so we understand which pipelines are subject to seismic risk. Inspectors have access to this information for use during an inspection. I believe there is a national exercise this summer that focuses on risk of seismicity to energy pipelines.

4. *Betty Ann Cane*, Chairwoman of District of Columbia Public Service Commission (DC PSC) – My staff wanted me to ask about the predictability of funding for One-Call and State Pipeline Safety Grants but we all know they need to be predictable. We have heard about information, transparency, data sharing, digitalization, and making more data available to all those at the state, federal, and private industry level in order to progress pipeline safety goals. I have not heard about the security necessary to keep the data from getting in to the hands of the wrong people. For your counterparts on the electric distribution and transmission side, there is a very large concern about the cyber security and protection of the data. The challenge is having all the information available and yet protecting it from FOIA requests as it contains information about critical infrastructure and sensitive security information. How do we work with these competing interests and improve safety by sharing information?

   Rick Kessler – States need more federal funds but there needs to be a check to ensure that the funds are being used for the pipeline safety enforcement instead of other government needs.

   In 2001 as a staff member of the Energy Commerce Committee working on the 2002 Pipeline Safety Act we wrestled with data security. Immediately following 9/11 there was a lot of concern and we erred on the side of caution. The events of 9/11 were an uncharted era. Today, after 10 years, there has been no evidence that the information regarding inspections, enforcements, any number of pipeline related

data, or that the pipelines themselves are major terrorist targets. Pipelines are clearly visible from satellite so there is little need to hide this information.

Jeff Wiese – We work to strike a balance between the "right to know" and "need to know". In May of 2001, we posted the national pipeline mapping system (NPMS) and pulled it down on 9/11. For three years we worked with the Transportation Security Administration (TSA), the Department of Homeland Security (DHS), and a wide variety of stakeholders to develop this balance. The result was to provide data in the NPMS at no higher granularity than the county level. We determined that it would be very difficult to aggregate data and use it for targeting purposes. When providing data, the audience needs to be considered. If the audience is emergency responders, information that factors into their response capabilities should not be hidden from them. Information such as the location of a feature on a pipeline which if targeted would cause the worst case discharge would not be made available in the public domain. It is too easily misused.

Conclusion

The Forum was concluded by presentations by two DOT executives:

- Deputy Secretary John Porcari
- Administrator Cynthia Quarterman

Mr. Porcari:

Secretary LaHood laid out the massive challenge to identify and repair/replace pipeline segments that pose the most immediate danger to the safety and well being of the American people. DOT has a number of new efforts to improve pipeline safety including requiring pipeline operators to conduct a full assessment of their lines, advocating for stronger penalties, levying fines against companies that violate safety regulations, and increasing the number of safety inspectors. To support improving pipeline safety, the Obama Administration is requesting a 15% increase in funding.

The forum included representatives from many organizations including research and development groups, the oil and gas pipeline industry, state safety organizations, other federal agencies, public advocacy, technical vendors, and labor, all of whom need to work together to meet this challenge.

Each panel was instructive and productive. The first panel explored the highest risk pipelines, the critical first step in developing a game plan. The second panel considered the challenges that stakeholders face in maintaining and repairing aging lines. The third looked at how pipelines are assessed and risk mitigated. The fourth began to develop a blueprint for accelerated action.

From this forum we need to work together on specific actionable recommendations. The challenge will take a long, sustained, and focused effort but we will get ahead of this growing crisis.

Ms. Quarterman:

Ms. Quarterman expressed appreciation for the willingness of all stakeholders to take on this challenge. PHMSA launched the new Pipeline Safety Awareness website to provide a better view of the integrity of the pipeline infrastructure. All stakeholders, including any who were not panelists, were encouraged to send comments via the website to become part of this conversation and to provide input about ongoing efforts to improve pipeline safety. The website will continue evolving into a transparent tool, which all stakeholders can learn from and continue to share their ideas on how to improve pipeline safety.

Excavation damage is an important issue. Secretary LaHood, Administrator Quarterman, and a number of governors have held a number of events to promote 811 and highlight the importance of safe digging month. The pipeline safety dialogue will continue during their trip to San Bruno and at an international pipeline safety technology workshop later this summer.

PHMSA and the technical advisory committee will use the input from today's forum and input submitted through the website to prepare a report on how to make pipelines safer.

Appendix A: Forum Agenda

National Pipeline Safety Forum
Monday, April 18, 2011
9:00 am – 3:30 pm
U.S. Department of Transportation Headquarters, West Atrium

AGENDA	
9:00 – 9:30 AM	Welcome Bizunesh Scott, Master of Ceremonies Opening Remarks Transportation Secretary Ray LaHood Administrator Cynthia Quarterman Pipeline and Hazardous Materials Safety Administration
9:30 – 11:00 AM	**Panel 1 Discussion – What Are The Highest Pipeline Risks?** Moderator: Honorable Deborah A.P. Hersman, Chairman, National Transportation Safety Board • Rich Worsinger, Director of Utilities, City of Rocky Mount, NC • Chuck Dippo, Vice President, Engineering Services, South Jersey Gas • Christopher Helms, Executive VP/Group CEO, Nisource • Greg Smith, President, Shell Pipeline Company LP • Danny McGriff, Georgia State Pipeline Program Manager and Chairman, National Association of Pipeline Safety Representatives • Rick Kessler, Vice President, Pipeline Safety Trust
11:00 – 11:15 AM	Break

12:30 - 1:00 PM	**Lunch - Served In West Atrium**
1:00 – 2:00 PM	**Panel 2 (continued)** **What Are the Challenges and How Are We Addressing Them?** **Technical Issues** Moderator: Cliff Johnson, President, Pipeline Research Council, International • Sue Fleck, Vice President, Engineering, National Grid • Randy Gyory, Interim Executive VP/COO, Philadelphia Gas Works, PA • J. Andrew Drake, Vice President, Spectra Energy • Harry Pefanis – President/COO, Plains All American Pipeline LP • Dr. Oliver C. Moghissi, President, National Association of Corrosion Engineers, International • Jeff Wright, Director, Office of Energy Projects, Federal Energy Regulatory Commission, Washington, DC • Colette Honorable, Chairman, Arkansas Public Service Commission and Chairman, NARUC Pipeline Safety Committee
2:00 – 3:15 PM	**Panel 3 Discussion – What More Can Be Done?** Moderator: Jeff Wright, Director, Federal Energy Regulatory Commission • Mike Comstock, Superintendent of Gas Utilities, City of Mesa, AZ • Scott Cisel, Chairman, President/CEO, Ameren Illinois • R. Allan Bradley, President/CEO, Questar Pipeline • Tim Felt, President/CEO, Colonial Pipeline Company, GA • Jeff Wiese, Associate Administrator for Pipeline Safety, PHMSA • Randy Knepper, Director, New Hampshire Public Utilities Commission & Secretary, National Association of Pipeline Safety Representatives • Rick Kessler, Vice President, Pipeline Safety Trust
3:15 – 3:30 PM	**Wrap Up and Next Steps** • Deputy Secretary John Porcari • Administrator Cynthia Quarterman

Appendix B: U.S. Department of Transportation Call to Action

U.S. Department of Transportation Call to Action To Improve the Safety of the Nation's Energy Pipeline System

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Executive Summary

Today, more than 2.5 million miles of pipelines are responsible for delivering oil and gas to communities and businesses across the United States. That's enough pipeline to circle the earth approximately 100 times.

Currently, these liquid and gas pipelines are operated by approximately 3,000 companies and fall under the safety regulations of the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA has engineers and inspectors around the country who oversee the safety of these lines and ensure that companies comply with critical safety rules that protect people and the environment from potential dangers. While PHMSA directly regulates most of the hazardous liquid pipelines in the nation, states take over when it comes to intrastate natural gas pipelines. Every state, except Hawaii and Alaska, is responsible for the inspection and enforcement of state pipeline safety laws for the natural gas pipeline systems within their respective state. Some states – about 20 percent - also regulate the hazardous liquid lines within state borders.

In the wake of several recent serious pipeline incidents, U.S. DOT/PHMSA is taking a hard look at the safety of the nation's pipeline system. Over the last three years, annual fatalities have risen from nine in 2008, to 13 in 2009 to 22 in 2010. Like other aspects of America's transportation infrastructure, the pipeline system is aging and needs a comprehensive evaluation of its fitness for service. Investments that are made now will ensure the safety of the American people and the integrity of the pipeline infrastructure for future generations.

For these reasons, Secretary LaHood is issuing a call to action for all pipeline stakeholders, including the pipeline industry, the utility regulators, and our state and federal partners. Secretary LaHood brought together PHMSA Administrator Quarterman and the senior DOT leadership to design a strategy to achieve that goal. The action plan below is the result of those deliberations.

Background

Much of the nation's pipeline infrastructure was installed many decades ago, and some century-old infrastructure continues to transport energy supplies to residential and commercial customers, particularly in the urban areas across our nation. Older pipeline facilities that are constructed of obsolete materials (e.g., cast iron, copper, bare steel, and certain kinds of welded pipe) may have degraded over time, and some have been exposed to additional threats, such as excavation damage.

On December 4, 2009, PHMSA issued the Distribution Integrity Management Final Rule, which extends the pipeline integrity management principles that were established for hazardous liquid and natural gas transmission pipelines, to the local natural gas distribution pipeline systems. This regulation, which becomes effective in August of 2011, requires operators of local gas distribution pipelines to evaluate the risks on their pipeline systems to determine their fitness for service and take action to address those risks. For older gas distribution systems, the appropriate mitigation measures could involve major pipe rehabilitation, repair, and replacement programs. At a minimum, these measures are needed to requalify those systems as being fit for service. While these measures may be costly, they are necessary to address the threat to human life, property, and the environment.

In addition to the many pipelines constructed with obsolete materials, there are also early vintage steel pipelines in high consequence areas that may pose risks because of inferior materials, poor construction practices, lack of maintenance, or inadequate risk assessments performed by operators. The lack of basic information or incomplete records about these systems is also a contributing factor. The U.S. DOT is seeking to make sure these risks are identified, the pipelines are assessed accurately, and preventative steps are taken where they are needed.

Action Plan

The U.S. DOT and PHMSA have developed this action plan to accelerate rehabilitation, repair, and replacement programs for high-risk pipeline infrastructure and to requalify that infrastructure as fit for service. The Department will engage pipeline safety stakeholders in the process to systematically address parts of the pipeline infrastructure that need attention, and ensure that Americans remain confident in the safety of their families, their homes, and their communities. The strategy involves:

- **A CALL TO ACTION** – Secretary LaHood is issuing a "Call to Action" to engage state partners, technical experts, and pipeline operators in identifying pipeline risks and repairing, rehabilitating, and replacing the highest risk infrastructure. Secretary LaHood is also asking Congress to expand PHMSA's ability to oversee pipeline safety.
    - Secretary LaHood and PHMSA Administrator Quarterman have already met with the Federal Energy Regulatory Commission (FERC), the National Association of Regulatory and Utility Commissioners (NARUC), state public utility commissions, and industry leaders to ask all parties to step up efforts to identify high-risk pipelines and ensure that they are repaired or replaced.
    - Secretary LaHood is asking Congress to increase the maximum civil penalties for pipeline violations from $100,000 per day to $250,000 per day, and from $1 million for a series of violations to $2.5 million for a series of violations. He is also asking Congress to help close regulatory loopholes, strengthen risk management

requirements, add more inspectors, and improve data reporting to help identify potential pipeline safety risks early.

- The U.S. DOT and PHMSA are convening a Pipeline Safety Forum in April to engage in a working session around the actions that the Department, states, and industry can take to drive more aggressive actions to raise the bar on pipeline safety. The U.S. DOT and PHMSA will compile a report based on ideas, opportunities and challenges presented at the Forum and take action on solutions.

- **AGGRESSIVE EFFORTS** – The U.S. DOT and PHMSA are calling on pipeline operators and owners to review their pipelines and quickly repair and replace sections in poor condition.
  - PHMSA has asked technical associations and pipeline safety groups to provide best practices and technologies for repair, rehabilitation and replacement programs, and has asked industry groups for commitments to accelerate needed repairs.
  - PHMSA will review all data received from pipeline operators to identify areas with critical needs.
  - PHMSA's Distribution Integrity Management rule will become effective in August, requiring all operators of gas distribution pipelines to evaluate the risks on their pipeline systems and take action to address those risks.
- **TRANSPARENCY** – U.S. DOT and PHMSA will execute this plan in a transparent manner with opportunity for public engagement, including a dedicated website for this initiative, and regular reporting to the public.
  - PHMSA will launch a public website with ongoing pipeline rehabilitation, replacement and repair initiatives.
  - All materials from the Pipeline Safety Forum will be publicly posted to the web, followed by a Draft Report for Notice and Comment. Once public input has been collected, PHMSA will publish a final Pipeline Safety Report to the Nation.

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Appendix C: Forum Panelist Biographies

Moderators

Deborah A. P. Hersman was sworn in as the 12th Chairman of the National Transportation Safety Board on July 28, 2009, following her nomination to the post by President Barack Obama and confirmation by the United States Senate. Her two-year term as Chairman runs until July 2011. She is also serving a second 5-year term as a Board Member, which expires on December 31, 2013.

Chairman Hersman has been a Member of the NTSB since June 21, 2004. Since then, she has chaired a number of public events hosted by the Board. Chairman Hersman holds a commercial drivers license with passenger, school bus, and air brake endorsements. She successfully completed a motorcycle basic rider course and holds a motorcycle endorsement. She is a certified Child Passenger Safety Technician. She has also completed the 40- hour HAZWOPER (Hazardous Waste Operations and Emergency Response Standard) training course.

Before joining the Board, Chairman Hersman was a Senior Professional Staff Member of the U.S. Senate Committee on Commerce, Science and Transportation from 1999 to 2004 where she was responsible for a number of transportation issues, and earlier served as Staff Director and Senior Legislative Aide to Congressman Bob Wise of West Virginia.

During her time at the Senate, she was a key staff member involved in the passage of the Motor Carrier Safety Improvement Act of 1999, which created a new truck and bus safety administration within the Department of Transportation. She also worked extensively to negotiate the passage of the Pipeline Safety Improvement Act of 2002; the Transportation Equity Act of the 21st Century; the Amtrak Reform and Accountability Act and numerous transportation safety and security measures.

Chairman Hersman earned Bachelor of Arts degrees in Political Science and International Studies from Virginia Tech University in Blacksburg, Virginia, and a Master of Science degree in Conflict Analysis and Resolution from George Mason University in Fairfax, Virginia. She is married and is the mother of three sons.

Colette D. Honorable was appointed Chairman of the Arkansas Public Service Commission by Governor Mike Beebe in January 2011. Originally appointed to the Commission in October 2007, she served as interim Chairman from January to August 2008.

Chairman Honorable is Treasurer of the National Association of Regulatory Utility Commissioners (NARUC) and serves on the Gas and Consumer Affairs Committees. In 2010, Honorable was appointed by USDOT Transportation Secretary Ray LaHood to serve on the PHMSA Technical Pipeline Safety Standards Committee. In 2011, President Tony Clark appointed Chairman Honorable to lead the NARUC Pipeline Safety Task Force. She has been invited on a number of occasions to address both national and international

audiences on a wide range of energy issues, including energy efficiency and conservation, renewable energy, smart grid technology and innovation and natural gas issues.

Honorable is a graduate of the University of Memphis (previously Memphis State University) and obtained her Juris Doctor from the University of Arkansas at Little Rock School of Law.

Cliff Johnson is the current President of the Pipeline Research Council International (PRCI). Prior to joining to PRCI, Mr. Johnson spent 13 years at NACE International, where he has held a variety of positions during his career. His most recent position was as NACE's Director of Public Affairs where he led NACE's legislative initiatives. Mr. Johnson earned his Master of Public Affairs from the Lyndon Baines Johnson School of Public Affairs at the University of Texas at Austin, and a Bachelor of Arts in Political Science from Austin College in Sherman, Texas. He currently lives with his wife, Courtney, and 2 daughters, Emma & Vivian, in Katy, Texas.

Jeff Wright is the Director of the Office of Energy Projects and has been a member of the Office of Energy Projects since its inception in 2000. This Office is responsible for the processing of applications for the construction and operation of natural gas pipelines and storage facilities; the siting and safety of liquefied natural gas terminals; and the licensing, safety, and administration of non-federal hydroelectric projects. In addition, this Office administers the supplemental siting authority for interstate electric transmission facilities granted by the Energy Policy Act of 2005.

Mr. Wright joined the Commission in 1979 and served as project manager on many applications to site natural gas pipelines and storage facilities. Subsequently, he became the head of the Energy Infrastructure Policy Group. That group was responsible for analyzing and assessing energy infrastructure in the U.S.

Mr. Wright received a B.A. in economics from the College of William and Mary and a M.B.A. from the University of Maryland. Mr. Wright was born in Alexandria, Virginia, and now lives in Silver Spring, Maryland, with his wife and two daughters.

Panelists

R. Allan Bradley is Executive Vice President for Questar Corporation and President and Chief Executive Officer of Questar Pipeline Company based in Salt lake City, UT. Questar Pipeline Company is a wholly-owned subsidiary of Questar Corporation and operates interstate natural gas pipelines and storage facilities in the western U.S. and provides other midstream energy services in Utah, Wyoming and Colorado. He also serves as Chairman of White River Hub, LLC.

With 35 years of oil and gas industry experience, Mr. Bradley began his career with ExxonMobil Corporation and later held a variety of management positions in domestic and foreign natural gas operations at Texas Eastern Corporation, Coastal Corporation and El Paso Corporation. He joined Questar Corporation in 2005.

Mr. Bradley is Chairman of the INGAA Board of Directors. He also serves on the board of directors and the executive committee of the INGGA Foundation.

A native of Virginia, Mr. Bradley holds an undergraduate degree in management science from Georgia Tech and an MBA from Tulane University. He and his wife, Millie, have two children and split time between homes in Park City, Utah and Dallas, Texas.

Scott Cisel was named Chairman, President and Chief Executive Officer of Ameren Illinois Company (formerly AmerenIP, AmerenCIPS and AmerenCILCO) in January 2007 after serving as their president and chief operating officer since Oct. 2004. The Ameren Illinois Company serves approximately 1.2 million electric customers and 815,000 natural gas customers in 85 of the 102 counties in Illinois. The aggregate annual revenue of the three utilities is about $3.5 billion.

Before those promotions, Cisel was vice president and chief operating officer of AmerenCILCO—a position he assumed with Ameren's 2003 acquisition of CILCORP Incorporated—parent of Central Illinois Light Company. Previously Cisel had been employed by CILCO for twenty-nine years.

Cisel joined Central Illinois Light Company ("CILCO") in 1975 as a meter reader and advanced through various management positions in sales, customer service, regulatory affairs, consumer services and gas and electric operations. He was elected CILCO's Vice President of Sales and Marketing, and Federal and State Governmental and Regulatory and Legislative Affairs and legal services in 1995. He became Senior Vice President of AES CILCO responsible for customer service, legislative and public affairs, gas and electric supply, electric trading, corporate communications, regulatory affairs, non regulated retail marketing and strategic planning in 2001.

Cisel received his bachelor's degree in Business Administration and Economics from Culver-Stockton College and his master's degree from Bradley University. He is a board member of the Illinois Energy Association, Easter Seals of Central Illinois, the OSF

Hospital Community Advisory, Heartland Partnership and the American Gas Association. Cisel is also involved in numerous other civic activities.

Scott has been married to his wife, Susan, for 35 years. They have three grown children; Derek, Abbey and Andrew.

Mike R. Comstock has over 21 years experience in the natural gas industry. He is the Gas System Superintendent for the City of Mesa, Arizona. He is the first Vice-chair of the American Gas Association and is a founding member of the Arizona Utility Group. He was a member of the PHMSA's Operator Qualification Task Force and a member of the Pipeline Employee Performance Group.

Chuck Dippo, PE is the Vice President, Engineering Services & System Integrity, South Jersey Gas, reporting to the Senior Vice President & Chief Operating Officer, responsible for planning and directing all engineering services involving the design and technical specifications of Company facilities. Duties include the oversight and management of engineering design, system planning, construction, codes and standards, corrosion control, gas supply, gas control, system integrity, compliance, transmission pipeline operations and LNG peak shaving activities. Related functional area responsibilities include providing guidance on distribution operations, emergency procedures, strategic planning, infrastructure security and regulatory affairs. Thirty-two (32) years of natural gas industry experience including field operations, and successive progression through various levels of increasing responsible charge

Andrew J. Drake is vice president of transmission services for Spectra Energy Transmission. He is responsible for financial services, right-of-way, compliance and technical services, and he works closely with the business' regional field operations. Drake joined predecessor company Texas Eastern in 1982 as an engineer. He has held positions of increasing responsibility throughout his career, including manager of construction, general manager of technical services, and most recently, vice president of engineering and construction. Drake earned a Bachelor of Science degree in industrial and systems engineering from Ohio State University. He is a registered professional engineer in the state of Texas. Drake has held leadership positions on numerous technical committees and regulatory initiatives within the natural gas industry, including chairing the Gas Industry Integrity Management Initiative that worked with the U.S. Department of Transportation (DOT) to develop the basis for the Gas Integrity Management

Rule. He currently chairs the American Society of Mechanical Engineers' Gas Piping Standards Committee and has been reappointed by the U.S. Transportation Secretary to represent the industry on DOT's Technical Advisory Committee on Pipeline Safety.

Drake and his wife, Jeannie, have one daughter.

Tim Felt is the President and Chief Executive Officer of Colonial Pipeline. Felt provides the top leadership, strategic vision and discipline required of Colonial as "America's Energy Lifeline."

On a day-to-day basis, Felt ensures Colonial meets its commitment to serve customers with safe, reliable and efficient fuel deliveries and to safeguard the public and the environment.

An experienced executive within the pipeline industry, Felt is past chairman and Executive Committee member of the Association of Oil Pipe Lines (AOPL). He is past chairman of the American Petroleum Institute's Pipeline Committee and is a member of the API Board of Directors. He also serves on the NACE Foundation Board of Directors. He just completed a term as Chairman of the Common Ground Alliance and is serving on the Board as a Past Chairman.

Prior to joining Colonial, Felt was president and CEO of Tulsa-based Explorer Pipeline for nine years. While there, he was President of the Board for the Youth Services of Tulsa for two years and served on the board of Tulsa's United Way.

Before Explorer, Felt was Vice President of Mobil Pipeline Company from 1995-2000. During that time, he served as a board member of five joint venture companies, including Colonial Pipeline. His career includes serving as president of Wolverine Pipeline, Collins Pipeline and T&M Terminal Company. His Mobil career began in 1983 and covered various positions and responsibilities.

A native of upstate New York, Felt earned an engineering degree from the U.S. Military Academy at West Point and an MBA from Pepperdine University.

Colonial Pipeline operates the largest-volume refined liquid petroleum products pipeline in the world. Founded in 1962 and privately owned by a consortium of oil and petroleum companies, Colonial's 5,500-plus miles of underground interstate pipeline transports gasoline, kerosene, home heating oil, diesel and national defense fuels from refineries along the Gulf Coast to markets throughout the South and East Coast. More information about Colonial Pipeline is available at www.colpipe.com.

Susan Fleck is Vice President of Standards, Policies and Codes for National Grid, an international energy company based out of London, UK. In her current role, she manages the development and implementation of engineering standards, policies and procedures in the US Gas Distribution organization. She is also responsible for building and maintaining relationships with key external stakeholders and opinion leaders to represent and drive US Gas Distribution's engineering interests at a national level. She also has responsibilities for materials, R&D, PAS55 Certification, rate case strategy and technical communications.

On November 2010, Ms Fleck was appointed to serve on the US Department of Transportation's Technical Pipeline Safety Standards Committee as an industry representative. Recently, she was nominated to the Board of Directors of Interstate Natural Gas Association of America Committee.

Ms. Fleck began her career in the gas industry in 1980 at Columbia Gas Transmission Corporation. She then worked for Brooklyn Union Gas Company and Consolidated Edison Corporation of New York, Inc. before joining Boston Gas Company [a subsidiary of Eastern Enterprises] in 1985. During her tenure at Boston Gas, she worked in a variety of positions in the Engineering, Distribution and Construction Departments. She was named Vice President of Engineering and Gas Control in 1998, and Vice President of Engineering and Environmental Management in 1999. She was elected to the position of Vice President, Gas Operations NYC when KeySpan acquired Eastern Enterprises in 2000 had responsibility for construction, maintenance and customer field services activities. She held that position through the acquisition of KeySpan by National Grid in 2007.

She holds a Bachelor of Science Degree in Civil Engineering from Carnegie-Mellon University and an MBA (Finance) from the Carroll School of Management at Boston College.

Ms. Fleck is a long time member of the American Gas Association, where she is on the Operations Managing Committee. She is a member of the American Society of Civil Engineers. She is Chairperson of the Board of Directors at New Destiny Housing Corporation, a non-profit organization providing housing and services for domestic violence survivors. She is Assistant Secretary to the Board of Directors of Citywide Supportive Housing Corporation and Citywide Supportive Housing HDFC.

Randy Gyory, Interim Executive Vice President & Chief Operating Officer for Philadelphia Gas Works was appointed to his current position in March 2010. He previously held the position of SVP Operations & Customer Affairs since 2007. In his position as COO, Mr. Gyory is responsible for Field Operations, Supply Chain, Customer Affairs, Gas Management, Marketing, Corporate Communications and Corporate Preparedness. Previous held positions include Vice President of Customer Affairs since 2001 and Manager of the Program Management Office. During Mr. Gyory's tenure as manager, he led a team of functional and business analysts in correcting and improving billing system software issues associated with the transition from their legacy billing system to a client server system. Mr. Gyory's call center management team turned around a call center operation that was under-achieving, effectively reversing an order by the PUC to outsource operations to obtain minimum acceptable standards. PGW's collection rate improved to average over 96% the last five years (98% in 2010) as compared to the historic collection rate of 92% for the previous ten years.

In his thirty-one years of experience at PGW, Mr. Gyory has spent the majority of his career in the Distribution Department where he held several positions in Maintenance, Construction and Engineering. Mr. Gyory received a BS degree in civil engineering from the University of Pittsburgh.

Christopher Helms is Executive Vice President and Group CEO, NiSource Gas Transmission & Storage. He is responsible for executing an aggressive growth strategy for

NiSource's interstate natural gas pipeline and storage companies and midstream assets. Helms oversees all commercial, regulatory, operations and project development functions of Columbia Gas Transmission Corp., Columbia Gulf Transmission Co., Crossroads Pipeline Co. and NiSource Midstream Services LLC.

Together, NiSource's gas transmission and storage companies operate a 15,000-mile network of natural gas pipelines, 37 storage fields and serve some of the nation's largest and fastest-growing energy markets in the Northeast, Midwest and Mid-Atlantic regions. Helms has held a variety of leadership roles in the energy sector, including president and chief executive officer of CMS Panhandle Companies, president of Centennial Pipeline Company LLC, and executive vice president of CMS Gas Transmission Corp. Prior to joining NiSource in April 2005, Helms's firm, Helms & Company LP, provided consulting services to private equity firms seeking investment opportunities in the energy industry.

He currently serves as a director of the Interstate Natural Gas Association of America (INGAA) and is a member of INGAA's Executive Committee. In January 2011, he was named chairman of the organization's newly formed Pipeline Safety Task Force. Helms is a past chairman of the Southern Gas Association (SGA) and also has served as vice president of the Groupe International des Importateurs de Gaz Naturel Liquefie (GIIGNL). He is a member of the state bar associations of Texas, Louisiana and Florida, and is a past member of the College of the State Bar of Texas (1993).

Helms earned bachelor's degrees in political science and journalism from Southern Illinois University and a juris doctor degree from Tulane University School of Law. Helms is based at NiSource's office in Houston, Texas.

Rick Kessler currently serves as President of Dow Lohnes Government Strategies, a lobbying group in Washington DC and Vice President, Pipeline Safety Trust. Most recently Mr. Kessler served as Director of New Jersey Governor Jon S. Corzine's (D) Washington, DC office. Mr. Kessler is best known as the longtime chief of staff to House Energy and Commerce Committee Chairman John D. Dingell (D, MI) and as a professional staffer handling energy and environmental issues on the Energy and Commerce Committee, where he was the primary staffer to all the Democratic Committee Members on issues such as cogeneration, renewables, efficiency, hydro-power, public lands, oil, gas, coal, pipeline safety and energy-related research, remediation and tax policy. While serving as Chairman Dingell's chief of staff, he also was responsible for all political, legislative, policy, press and administrative matters. Previously Mr. Kessler was the Associate Director of Government Affairs for Princeton University, worked as a top aide to Energy and Commerce Health Subcommittee Chairman Frank Pallone, Jr. (D, NJ), held legislative positions with Senator Frank R. Lautenberg (D, NJ) and former Representative William J. Hughes (D, NJ). Mr. Kessler is a graduate of Kenyon College and Rutgers University and also attended the University of Surrey in Guildford, UK.

Randy Knepper has been the Director of the New Hampshire Public Utilities Commission's Safety Division since 2005. His duties include oversight of the Commission's pipeline safety program consisting of natural gas operators, liquefied natural gas operators, liquid petroleum operators, master meter operators and landfill gas pipeline operators. Mr. Knepper role includes administrative oversight with enforcement authority of the New Hampshire Underground Damage Prevention Program. Within New Hampshire, he serves as subject matter expert for the energy sector as part of the New Hampshire Emergency Operations Plan. .In addition, his appointments include positions within the New Hampshire Advisory Committee for Emergency Preparedness and Security and the New Hampshire Site Evaluation Committee. He is a member of the Managing Underground Safety Training (MUST) and a board member of the New Hampshire Public Works Training Council

Nationally, Mr. Knepper serves as Chair of the National Association of Regulatory Utility Commissioners (NARUC) Pipeline Safety Committee, as National Secretary for the National Association of Pipeline Safety Representatives (NAPSR) and is a member of the Common Ground Alliance (CGA) Technology Committee.

Danny McGriff is Chairman of the National Association of Pipeline Safety Representatives (NAPSR). He began his career with the Georgia Public Service Commission on June 1, 1980. As Director of the Pipeline Safety Office, he directs and coordinates the daily activities for two departments: Pipeline Safety Section and the Georgia Utility Facilities Protection Act ("GUFPA") Section. In addition to Mr. McGriff's duties and expertise, he worked with the Legislative Committee and developed the GUFPA that became law on July 1, 2000 charging the Georgia Public Service Commission with enforcement.

Mr. McGriff has received high marks for being instrumental in developing and managing an effective damage prevention program for the state that covers all buried utility facilities. Through his efforts, Georgia is recognized at the federal level as having one of the top five damage prevention programs in the United States.

Dr. Oliver C. Moghissi is President of NACE International, a technical society with more than 26,000 members supporting the mission of protecting people, assets, and the environment from the effects of corrosion. A significant emphasis of the association is pipeline corrosion management. Oliver is also Director of the Det Norske Veritas (DNV) Materials & Corrosion Technology Center in Columbus, Ohio. His personal experience is focused on developing and applying technology to optimize corrosion management programs, especially for oil & gas production and transportation facilities.

Harry Pefanis is President and Chief Operating Officer of Plains All American GP LLC, the general partner and controlling entity of Plains All American Pipeline, L.P., a master limited partnership listed on the New York Stock Exchange under the symbol "PAA". Mr. Pefanis has held the position of President of PAA and its predecessors since 1988. Since

entering into the crude oil marketing and transportation business in 1992, PAA has grown into one of the largest crude oil transportation companies in the United States.

Mr. Pefanis joined Plains Resources (which formerly owned 100% of PAA's GP interest) in 1983. He has been with PAA and its predecessor organizations since 1983. From 1988 through May 2001 Mr. Pefanis served in dual management roles for Plains Resources and PAA. Prior to joining Plains Resources in 1983, Mr. Pefanis was an auditor for the national accounting firm of Price Waterhouse & Co.

Mr. Pefanis has a BBA in accounting from the University of Oklahoma. He is a director of the API and is currently Chair of the API Pipeline Committee. Mr. Pefanis is also a director of PNGS GP LLC, which is the general partner of PAA Natural Gas Storage, LP, and a director of Settoon Towing.

Greg Smith was appointed as president of Shell Pipeline Company L.P. in November of 2010. Prior to this appointment, he was the Gulf of Mexico Regional Operations Manager for Shell Pipeline Co. In January 2011, he also assumed the role of General Manager Gulf Of Mexico Operations. In this role, he has day-to-day operations accountability for Shell's 3500 miles of crude oil, chemical and product pipelines located offshore Gulf of Mexico and along the Texas/Louisiana Gulf Coast.

Greg Smith started his career with Shell Pipeline in 1983 and has held a number of assignments within Shell primarily in engineering and operations. These roles include Manager of GOM Business Development, Control Center Manager, and Manager of Distribution Operations Support and Engineering. He has served on the API Cybernetics Committee and the Performance Excellence Committee.

A native of central Ohio, He earned a Bachelor of Science Degree in Electrical Engineering from The Ohio State University. He and his wife, Brenda, have three children.

Jeff Wiese is the Associate Administrator for Pipeline Safety and served in this position on an acting basis between July and January 2007 and served as Acting Deputy Associate Administrator from August to December 2006. During that time he lead implementation of the newly enacted Pipeline, Inspection, Protection, Safety and Enforcement Act (PIPES) Act of 2006, including creation and rollout of the agency's enforcement transparency website.

Jeff served the agency as its Director for Program Development within the Office of Pipeline Safety for nearly ten years, during a period of rapid growth and transformation in the pipeline safety program. In that role he directed major new policy initiatives, including design, development, and deployment of Integrity Management oversight and improved pipeline public awareness programs. Jeff was instrumental in building the agency's original "enterprise" – the Common Ground Alliance for preventing underground utility damage. He brings the same

enterprise leadership to other program priorities, including research and development, emergency response preparedness, and strengthening state partnerships.

Prior to joining DOT, Jeff worked for fifteen years in the offshore oil and gas program of the Minerals Management Service (MMS) within the U.S. Department of Interior. Over the course of his MMS career, Jeff directed several programs, including the offshore safety management program, and served for five years as Chief of Staff for Offshore Operations.

Mr. Wiese has an M.A. from the University of Rhode Island with interdisciplinary focus on science, policy, and economics and a B.S. in General Science from Grinnell College. He has a son and daughter and lives in Reston, VA.

Richard (Rich) H. Worsinger, PE serves as the Director of Utilities for the City of Rocky Mount, North Carolina where he is responsible for the City's electric and natural gas utilities serving 27,000 electric and 17,000 natural gas customers with a combined annual budget of over $120 M. He has 25 plus years of experience in the utility industry.

Prior to coming to Rocky Mount in 2001, Rich spent most of his career employed by Public Service Electric and Gas Company; an investor owned electric and gas utility serving over 2 million customers in New Jersey. During this time Rich held various engineering and management positions in both the electric and gas departments.

Rich currently serves on the Board of Directors for the American Public Gas Association and the American Public Gas Association Security and Integrity Foundation. He is a gas industry representative to the Department of Transportation Pipeline and Hazardous Materials Safety Administration Technical Pipeline Safety Standards Committee. He is also currently chair of APGA's Regulatory Committee, a former chair of APGA's Operations and Safety Committee, Treasurer for the Carolina's Public Gas Association, an alternate Commissioner for the North Carolina Eastern Municipal Power Agency's Board of Commissioners and is a past President of the North Carolina Association for Municipal Electric Systems.

Rich was born and raised in Philadelphia, PA, has Bachelor of Science in Electric Engineering from Drexel University in Philadelphia, and is a Licensed Professional Engineer in NC.

Rich has been married for over 25 years to his wife Nancy who is an Instructor at Nash Community College in the Allied Health Department. They have a son, Chris who is attending East Carolina University and daughter, Libby who is attending University of North Carolina at Chapel Hill.

Appendix D: List of Attendees

NAME	TITLE	COMPANY
Aaron Cutler	Deputy Policy Director and Counsel	House Committee on Energy and Commerce
Adam J. Yu	Senior Analyst	U.S. Government Accountability Office
Alan Burks	President	Enterprise for Education, Inc.
Alex Oehler	Manager, Federal Government Affairs	NiSource Inc.
Ali Quraishi	Director, Engineering Services	American Gas Association
Allison Iversen	PSIO Coordinator	State of Alaska, Department of Natural Resources
Alysa Reich	Senior Manager, Public Relations	NACE International
Amy S. Plaster	Executive Director, Federal Governmental Affairs	CMS Energy
Andrew J. Black	President and CEO	Association of Oil Pipe Lines (AOPL)
Andrew Kendrick	Principal	Kendrick Consulting LLC
Andrew Kohout	Engineer	Federal Energy Regulatory Commission
Angela Wagner	Project Manager	Stantec Consulting Services Inc.
Art Meyer	Senior Vice President	Enbridge
Arti Bhatia	Sr Mgr, Pipeline Integrity & Corridor Management	Alliance Pipeline Limited
Barbara Gardner	Technical Writer	Black Hills Energy
Benjamin Roode	Staff Writer	National Society of Professional Engineers
Bernie Klose	Industrial Safety Manager	National Coatings Inc
Betty Ann Kane	Chairman	DC Public Service Commission
Bill Keffer	Attorney	William R. Keffer, P.C.
BiteraLamer	pbs	BiteraLamer

NAME	TITLE	COMPANY
Bob Gardner	Director, Operations Services	Alabama Gas Corporation
Bob Trainor	Chief, Pipeline and Hazardous Materials Division	National Transportation Safety Board
Brenda Kenny	President & CEO	Canadian Energy Pipeline Association
Bret Lane	Vice President - Field Services	Southern California Gas Company
Brett A. Snyder	Partner	Dewey & LeBoeuf LLP
Brian Ballinger	Director	State of Michigan - Michigan Public Service Commission
Brian Sitterly	Integrity & Regulatory Services Manager	Shell Pipeline Company LP
Bruce Paskett	Principal Compliance Engineer	NW Natural
Bryan Louque	Accident Investigator	PHMSA
Brydon Ross	Director of Government Relations	Association of Oil Pipe Lines
C A Pioli	Director	Jacobs Consultancy
Carl Weimer	Executive Director	Pipeline Safety Trust
Carl Wood	Director of Regulatory Affairs	Utility Workers Union of America, AFL-CIO
Catherine Landry	Director of Communications	INGAA
Chad Zamarin	Vice President-Engineering	NiSource Gas Transmission & Storage (INGAA Member)
Charles Cole	Sr. Vice President, Customer Operations	We Energies
Charles Gray	Executive Director	NARUC
Cheryl Whetsel	Technical Advisory Committee Manager	Pipeline and Hazardous Materials Safety Administration
Chris Mason	Senior Engineer	Williams Gas Pipeline

NAME	TITLE	COMPANY
Chris Mele	Legislative Director - Energy	National Association of Regulatory Utility Commissioners (NARUC)
Chris Parker	Director	Utah Division of Public Utilities
Christina Sames	Vice President	American Gas Association
Christopher A. Helms	Executive Vice President & Group CEO	NiSource Gas Transmission & Storage (INGAA Member)
Chuck Dippo	Vice President, Engineering Services and System In	South Jersey Gas Company
Claude Trahan	Senior Vice President - Gas Operations	Con Edison
Cliff Johnson	President	Pipeline Research Council International
Colby Itkowitz	Reporter	Allentown Morning Call
Colette D. Honorable	Chairman	Arkansas Public Service Commission
Corey Thatcher		Indiana Utilities Corporation
Craig A. Lynch	Vice President Energy Delivery	New Jersey Natural Gas
Craig Hoeferlin	Assistant Vice President, Engineering & Field Serv	Laclede Gas Company
Craig Pierson	V.P, Operations	Marathon Pipe Line Company
Dana Sanzo	Survival Factors Investigator	National Transportation Safety Board
Daniel B. Martin	Senior Vice President, Pipeline Safety	El Paso Pipeline Group (INGAA Member)
Daniel Dana	Manager Compliance	Vectren Energy Delivery
Danny McGriff	NAPSR Chairman and FPU Director	Georgia Public Service Commission
Daphne D'Zurko	Executive Director	Northeast Gas Association
Darin Burk	Pipeline Safety Program Manager	Illinois Commerce Commission

NAME	TITLE	COMPANY
Dave McCurdy	President & CEO	American Gas Association
David B. Meadows	Sr. Project Engineer	STV, Inc.
David Chislea	Manager, Gas Operations Section	Michigan Public Service Commission
David Flores	Deputy Director of Pipeline Safety	Railroad Commission of Texas
David Hooper	Senior Attorney	Government Accountability Office
David W. Danner	Executive Director	Washington Utilities & Transportation Commission
David Wint	Manager, Global Services Development	T.D. Williamson, Inc.
Deanna Centurion	Principal	Cyera Strategies
Denise Hamsher	Director Planning	Enbridge Energy Company, Inc.
Dennis Hinnah	Deputy Director	PHMSA
Don Kopczynski	Vice President, Operations	Avista Corporation
Donald Santa	President & CEO	INGAA
Donald Vinci	VP, Gas Distribution Business	Entergy Services Inc.
Donise Cameron	Manager Federal Affairs	PSEG
Doreen Hope	Regional Manager	Washington Gas
Doug Stearns	General Manager	Whitetail Natural Gas Services
Douglas M Schneider	Pipeline Integrity Manager	Southern California Gas/San Diego Gas and Electric Company
Douglas Staebler	VP - Engineering, Operations and Construction	Washington Gas
Dr. Jey K. Jeyapalan, P.E.	Owner	Civic Enterprises, LLC
Eben Wyman	Vice President, Government Relations	NUCA

NAME	TITLE	COMPANY
Eddie Johnston	Managing Director, Delivery Sector	Gas Technology Institute
Edward J. Graham	President & CEO	South Jersey Gas
Eric Hall	Director Operations	Dominion East Ohio Gas Co.
Eric S. Kessler	Vice President	The Pipeline Safety Trust
Eric Tomasi	Environmental Engineer	Federal Energy Regulatory Commission
Erin Ryan	Legislative Counsel	Congresswoman Jackie Speier
Farron Hollabaugh	Director of Training	Pipeliners Local Union 798
Frank Milfeit	Director Operations & Engineering	Peoples Natural Gas
Frederick G. Jauss IV	Attorney	Dorsey & Whitney LLP
Garrett Golding	Professional Staff Member	House Energy and Commerce Committee
Garrick J. Rochow	Vice President of Energy Delivery	Consumers Energy
Gary L. Sypolt	CEO	Dominion (INGAA Member)
Gavin Nicoletta	Chief, Safety	New York State Department of Public Service
George Mosinskis	Executive Director	NAPSR
Glenn McMurray	President	NORMAC - Norton McMurray Manufacturing
Gordon Pennoyer	Manager, Public and Government Affairs	Enbridge
Hans Mertens	Director of Engineering Services	VT DPS
Harry Pefanis	President & C.O.O.	Plains All American
Hart Gilchrist	Manager, Operations Services	Intermountain Gas Company
Helena Seelinger	Sr. Director, Public Affairs & Standards	NACE International

NAME	TITLE	COMPANY
J. Andrew Drake	Vice President, Transmission Services	Spectra Energy (INGAA Member)
James C. Harrison	President	Utility Workers Union of America - Local 223
James Mergist	Assistant Director, Pipeline Division	Louisiana Department of Natural Resources
James S McCleskey	Director, NC Washington Office	State of North Carolina Office of the Governor
James W. Milner	Vice President, Pipeline Integrity & Safety	Enbridge Gas Distribution Inc.
Jason N. Montoya	Pipeline Safety Bureau Chief	New Mexico Public Regulation Commission
Jeff Hardgrave	Vice President - Operations	Atmos Energy Corporation
Jeff Wright	Director, Office of Energy Projects	Federal Energy Regulatory Commission
Jeffrey DuBois	Sr. Vice President & COO	South Jersey Gas Company
Jennifer O'Shea	Managing Director, Communications	American Gas Association
Jim Curry	Attorney	Van Ness Feldman, PC
Joe O'Neill	Program Manager	MITRE
John Clementson	Assistant Chief Engineer	Public Service Commission of Maryland
John Erickson	Vice President, Operations	American Public Gas Association
John Funderburk	Executive Vice President - Sales & Marketing	Paradigm Alliance
John Rothermel	Vice President	MATCOR, Inc.
John Walsh	President & CEO	UGI Corporation
John Williams	Director, Service Monitoring and Enforcement	Public Utilities Commission of Ohio

NAME	TITLE	COMPANY
Johnathan A Rickman	Reporter	IHS The Energy Daily
Johnny Lopez	Safety Specialist	Williams Gas Pipeline
Juan Serina	VP Product Management	Energy Solutions International
Karl Baker	Public Utilities Supervisor of Technical Analysis	Connecticut Department of Public Utility Control
Keith Tiggelaar	Director of Regulatory Affairs	Williston Basin Interstate Pipeline company
Kirk Johnson	Vice President Gas Engineering and Operations	Pacific Gas & Electric
Kyle Rogers	Vice President	American Gas Association
L.E. Koehler	Superintendent	City of Rensselaer
Larry Shelton	Manager, Asset Integrity	Sunoco Logistics, L.P.
Lawrence Acker	Of Counsel	Dewey & LeBoeuf
Lee G. Hobbs	President	TransCanada US Pipeline Central (INGAA Member)
Leo Haynos	Chief of Gas Operations & Pipeline Safety	Kansas Corporation Commission
Lisa Long	Safety Engineer	US DOL - OSHA
Lonnie Lister	Program Manager	Federal Energy Regulatory Commission
Lori Ehrlich	State Representative Massachusetts	Representative Lori Ehrlich
Lori Traweek	Snr Vice President & COO	American Gas Association
Luke Selking	Leader Integrity Management & Pipeline Safety	Northern Indiana Public Service Company
Lula Mae Ford	Commissioner	Illinois Commerce Commission
Marc Andrukiewicz	VP-Operations	Yankee Gas Services Company

NAME	TITLE	COMPANY
Mark Bridgers	Principal	Continuum Advisory Group
Mark Lauber	Superintendent of Maintenance Engineering	Laclede Gas Company
Mark McDonald	President	New England Gas Workers Association (NEGWA)
Mark Nolan	Principal Engineer	Xcel Energy/Public Service Co. of Colorado
Mark W. Howard	SPCC Tech Lead	USEPA
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