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Actions Taken and Actions Needed To Improve Pipeline Safety

Statement of
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Mr. Chairman, Mr. Vice Chairman, and Members of the Committee:

We appreciate the opportunity to testify today on the actions the Office of Pipeline Safety (OPS) has taken to improve pipeline safety and the actions that still need to be done.

OPS is responsible for overseeing the safety of the Nation's pipeline system, an elaborate network of more than 2 million miles of pipeline moving millions of gallons of hazardous liquids and more than 55 billion cubic feet of natural gas daily. The pipeline system is composed of predominantly three segments—natural gas transmission pipelines, natural gas distribution pipelines, and hazardous liquid pipelines—and has about 2,200[1] natural gas pipeline operators and 220 hazardous liquid pipeline operators. Pipelines are a relatively safe way to transport energy resources and other products, but they are subject to forces of nature, human action, and material defects that can cause potentially catastrophic accidents.

Following the deadly pipeline explosion and fire in Bellingham, Washington, in June 1999, Senator Patty Murray requested the Office of Inspector General to review the activities of OPS. Also, a few months following the Bellingham accident, the United States Attorney's Office, Western District of Washington, requested that we, in a joint effort with the Environmental Protection Agency's Criminal Investigation Division, assist in an investigation to determine whether violations of Federal law occurred in connection with the accident.

In the largest criminal and civil settlement ever obtained in a pipeline rupture case, two pipeline companies were ordered to pay $21 million in criminal penalties and $15 million in civil penalties. In addition, the companies were ordered to implement pipeline integrity/spill mitigation programs valued in the aggregate at $77 million. The charges, the first ever brought under the Hazardous Liquid Pipeline Safety Act of 1979, as amended, included three criminal counts for violating this act, which sets minimum safety standards for training employees who operate interstate pipelines that carry hazardous liquids.

In response to Senator Murray's request, we reported in March 2000[2] that weaknesses existed in OPS's pipeline safety program and made recommendations designed to correct these weaknesses. These recommendations were later mandated in the Pipeline Safety Improvement Act of 2002 (2002 Act). This Act required us to review OPS's progress in implementing our recommendations. Our testimony today is based largely on the results of this second review.[3]

[1] Of the 2,200 operators of natural gas pipelines, there are approximately 1,300 operators of natural gas distribution pipelines and 880 operators of natural gas transmission pipelines.

[2] OIG Report Number RT-2000-069, "Pipeline Safety Program," March 13, 2000.

[3] OIG Report Number SC-2004-064, "Actions Taken and Needed for Improving Pipeline Safety," June 14, 2004.

Historically, OPS was slow to implement critical pipeline safety initiatives, congressionally mandated or otherwise, and to improve its oversight of the pipeline industry. The lack of responsiveness prompted Congress to repeatedly mandate basic elements of a pipeline safety program, such as requirements to inspect pipelines periodically and to use smart pigs[4] to inspect pipelines.

OPS is making considerable progress in implementing the recommendations in our March 2000 report by clearing out most, but not all, of the congressional mandates enacted in 1992 and 1996. It has also closed out nearly all the long-overdue National Transportation Safety Board (NTSB) safety recommendations we identified. In addition, OPS was removed from NTSB's most-wanted list of safety improvements in 2002. Even though OPS has issued many important rules for improving pipeline safety, the most important rules, relating to Integrity Management Programs (IMP)[5] will not be fully implemented for up to 8 years. This is a key issue as the IMP is the backbone of OPS's risk-based approach to overseeing pipeline safety.

It is against this backdrop that I would like to discuss five major points regarding pipeline safety: (1) mapping the pipeline system; (2) monitoring the evolving nature of IMP implementation; (3) monitoring operators' corrective actions for remediating pipeline integrity threats; (4) closing the safety gap on natural gas distribution pipelines; and (5) developing an approach to overseeing pipeline security.

- **Mapping the Pipeline System -** The first step to an effective oversight program is to identify where the assets to be overseen are located. In the past year, OPS completed the development of its national pipeline mapping system (NPMS), an initiative the pipeline industry was reluctant to support, so Congress mandated it in the 2002 Act. The NPMS is now fully operational and has mapped 100 percent of the hazardous liquid (approximately 160,000 miles of pipeline) and natural gas transmission (more than 326,000 miles) pipeline systems operating in the United States. Congress exempted natural gas distribution pipelines from the mapping mandate, so currently OPS does not have mapping data on the approximately 1.8 million miles of this type of pipeline.
- **Monitoring the Evolving Nature of IMP Implementation -** The next step is threefold: (1) operators assessing their pipelines for any potential integrity threat and

[4] A "smart pig" is an instrumented internal inspection device that traverses a pipeline to detect potentially dangerous defects, such as corrosion.

[5] The Integrity Management Program is a documented set of policies, processes, and procedures that includes, at a minimum, the following elements: (1) a process for determining which pipeline segments could affect a high-consequence area, (2) a baseline assessment plan, (3) a process for continual integrity assessment and evaluation, (4) an analytical process that integrates all available information about pipeline integrity and the consequences of a failure, (5) repair criteria to address issues identified by the integrity assessment and data analysis, (6) features identified through internal inspection, (7) a process to identify and evaluate preventive and mitigative measures to protect high-consequence areas, (8) methods to measure the integrity management program's effectiveness, and (9) a process for review of integrity assessment results and data analysis by a qualified individual.

correcting any threats that are identified, (2) OPS assessing whether the implementation of the operators' IMPs were adequate, and (3) OPS continuing to support research and development projects to improve pipeline inspection technology.

- As mandated by Congress, OPS issued regulations requiring pipeline operators of hazardous liquid and natural gas transmission pipelines to develop and implement IMPs. IMPs are in the early stages of implementation, and operators are not required to have all baseline integrity inspections completed of hazardous liquid pipelines until 2009 and of natural gas transmission pipelines until 2012. OPS required hazardous liquid pipeline operators—the first segment of the industry required to implement the IMP—to first complete baseline integrity inspections of pipeline miles in high-consequence areas, such as residential communities and business districts. These pipelines present the highest risk of fatalities, injuries, and property damage should an accident occur.

  About 135,000 miles of hazardous liquid and more than 326,000 miles of natural gas transmission pipeline still need baseline integrity inspections. Nevertheless, there are early signs that the baseline integrity inspections are working well for operators of hazardous liquid pipelines, and *there was clearly a need for such inspections*. According to OPS, in the pipelines inspected so far, more than 20,000 integrity threats have been identified and remediated. A key point to remember, though, is these threats were identified in less than 16 percent (about 25,000 miles) of hazardous liquid pipeline miles requiring baseline integrity inspections.

- OPS will be monitoring the implementation of the IMP by more than 1,100 hazardous liquid and natural gas transmission pipeline operators. This is in addition to OPS's ongoing oversight activities, such as inspecting new pipeline construction and investigating pipeline accidents. As of April 30, 2004, the 63 largest operators of hazardous liquid pipelines have undergone initial IMP reviews by OPS inspection teams, leaving 157 hazardous liquid and 884 natural gas transmission pipeline operators still needing an initial IMP review by an OPS inspection team. Monitoring the implementation of pipeline operators' IMPs will be an ongoing process for years.

- In addition, OPS must continue to support research and development projects to improve pipeline assessment technology. The majority of operators are using smart pigs to assess pipelines under their IMPs, but smart pigs are not a silver bullet that can identify all pipeline integrity threats. Smart pigs currently in use can successfully detect and measure corrosion, dents, and wrinkles but are less reliable in detecting other types of mechanical damage. As a result, certain integrity threats still go undetected after a baseline integrity inspection, and pipeline accidents may occur. Also, the smart pig technologies currently available cannot be used in natural gas distribution pipelines because the majority of

distribution piping is too small in diameter (1 to 6 inches) and has multiple bends and material types intersecting over very short distances.

- **Monitoring Operators' Corrective Actions for Remediating Pipeline Integrity Threats -** Once a threat is identified, OPS will need to follow up to ensure that the operators take timely and appropriate corrective action. Of the more than 20,000 threats have been repaired to date, more than 1,200 required immediate repair, 760 threats required repairs within 60 days, and 2,400 threats required repairs within 180 days. More than 16,300 threats fall into the category of "other repairs," for which remediation activities are not considered time-sensitive.

  In understanding the operators' actions to remediate many of these threats, IMP inspectors need a working knowledge of the operators' pigging operations and of the interpretation of inspections' results. At the time we issued our March 2000 report, OPS did not train its inspectors on the use of smart pig technologies and the interpretation of the result of the inspections. Since that time, OPS now provides a course to IMP inspectors where they gain the knowledge and skills required to conduct meaningful safety evaluations of operator pigging program inspections and of pigging data for hazardous liquid and natural gas transmission pipelines.

  OPS's remediation criteria encompass a broad range of actions, which include mitigative measures (such as reducing the pipeline pressure flow), as well as repairs that an operator can take to resolve an integrity threat. But the process is not as simple as identifying the problem and determining how best to fix it. For some repairs, Federal and state environmental review and permitting processes have delayed preventive measures from occurring, as was demonstrated by the recent pipeline rupture in northern California. A hazardous liquid pipeline ruptured and released about 85,000 gallons of diesel fuel, affecting 20 to 30 acres of marshland.

  The deteriorating condition of this pipeline was well documented by the operator, who initiated action to relocate the pipeline in 2001. However, it took nearly 3 years and more than 40 permits before the operator was given approval to relocate the pipeline. It was too late to prevent this spill, but fortunately in this case there was no loss of human life.

  An Interagency Task Force was set up to monitor and assist agencies in their efforts to expedite their review of permits. However, the Task Force has yet to implement its Memorandum of Understanding (MOU) that would expedite the environmental review and permitting processes so that pipeline repairs can be made before a serious consequence occurs. If there are any further delays in implementing the MOU, then it may be necessary for Congress to take action.

- **Closing the Safety Gap on Natural Gas Distribution Pipelines -** The natural gas distribution system makes up over 85 percent (1.8 million miles) of the 2.1 million miles of natural gas pipelines in the United States. Distribution is the final step in delivering natural gas to end users such as homes and businesses. While hazardous

liquid and natural gas transmission pipeline operators are moving forward with IMPs, natural gas *distribution* pipeline operators[6] are not required to have an IMP. According to industry officials, the initial reason why natural gas distribution pipelines were not required to have an IMP is that the majority of distribution pipelines cannot be inspected using smart pigs.

The IMP is a risk-management tool designed to improve safety, environmental protection, and reliability of pipeline operations. That natural gas distribution pipelines cannot be internally inspected using smart pigs is not by itself a sufficient reason for not requiring operators of natural gas distribution pipelines to have IMPs. Other elements of the IMP can be readily applied to this segment of the industry, including but not limited to (1) a process for continual integrity assessment and evaluation, and (2) repair criteria to address issues identified by the integrity assessment and data analysis.

Our concern is that the Department's strategic safety goal is to reduce the number of transportation-related fatalities and injuries, but natural gas distribution pipelines are not achieving this goal. Over the last 10 years, natural gas distribution pipelines have experienced over *4 times* the number of fatalities (174 fatalities) and more than *3.5 times* the number of injuries (662 injuries) than the combined totals of 43 fatalities and 178 injuries for hazardous liquid and natural gas transmission pipelines.

To address this issue, the American Gas Foundation, with OPS support, is sponsoring a study to assess the Nation's gas distribution infrastructure that will evaluate safety performance, current operating and regulatory practices, and emerging technologies.

- **Developing an Approach To Overseeing Pipeline Security -** It is not only important that we ensure the safety of the Nation's pipeline system, we must also ensure the security of the system. OPS took the lead to help reduce the risk of terrorist activity against the Nation's pipeline infrastructure following the events of September 11, 2001, but OPS now states it plays a secondary or support role to the Department of Homeland Security's (DHS) Transportation Security Administration (TSA).

  The current Presidential Directive[7] that addresses this issue is at too high a level of generality to provide clear guidance on each Agency's [DOT, DHS, and the Department of Energy (DOE)] responsibility in regards to pipeline security. The delineation of roles and responsibilities between DOT, DHS, and DOE needs to be spelled out in an MOU at the operational level so that we can better monitor the security of the Nation's pipelines without impeding the supply of energy.

[6] There are some operators of natural gas transmission pipelines that are also operators of natural gas distribution pipelines. IMP requirements do not apply to their distribution pipelines.

[7] Homeland Security Presidential Directive/HSPD-7, "Critical Infrastructure Identification, Prioritization, and Protection," issued December 2003.

Mapping the Pipeline System

To provide effective oversight of the Nation's pipeline system, OPS must first know where the pipelines are located, the size and material type of the pipe, and the types of products being delivered. The Nation's pipeline system is an elaborate network of over 2 million miles of pipe moving millions of gallons of hazardous liquids and more than 55 billion cubic feet of natural gas daily. The pipeline system is composed of predominantly three segments—natural gas transmission pipelines, natural gas distribution pipelines, and hazardous liquid transmission pipelines—run by about 2,200 natural gas distribution and transmission pipeline operators and 220 operators of hazardous liquid pipelines (as seen in Table 1). Of the 2,200 operators of natural gas pipelines, there are approximately 1,300 operators of natural gas distribution pipelines and 880 operators of natural gas transmission pipelines. There are approximately 90 Federal and 400 state inspectors responsible for overseeing the operators' compliance with pipeline safety regulations.

Table 1. Pipeline System Facts and Description

System Segment	Facts	Segment Description
Natural Gas Transmission Pipelines	326,595 Miles	Lines used to gather and transmit natural gas from wellhead to distribution systems
Natural Gas Distribution Pipelines	1.8 Million Miles	Mostly local distribution lines transporting natural gas from transmission lines to residential, commercial, and industrial customers
Hazardous Liquid Transmission Pipelines	160,000 Miles	Lines primarily transporting products such as crude oil, diesel fuel, gasoline, and jet fuel
System Operators	**Facts**	**Operators Description**
Natural Gas Transmission Operators	880	Large, medium, and small operators of natural gas transmission pipelines
Natural Gas Distribution Operators	1,300	Large, medium, and small operators of natural gas distribution pipelines
Hazardous Liquid Operators	220	Approximately 70 large operators and 150 small operators

Originally, industry was reluctant to map the Nation's pipeline system, so Congress responded by requiring, in the 2002 Act, the mapping of hazardous liquid and natural gas transmission pipelines. In the past year, OPS completed the development of the national pipeline mapping system (NPMS). The NPMS is now fully operational and has mapped 100 percent of the hazardous liquid (approximately 160,000 miles of pipeline) and natural gas transmission (more than 326,000 miles) pipeline systems operating in the United States. Congress excepted natural gas distribution pipelines from the mapping mandate, so OPS does not have mapping data on these pipelines.

As a result of OPS and industry's mapping efforts, Government agencies and industry have access to reasonably accurate pipeline data for hazardous liquid and natural gas transmission pipelines in the event of emergency or potentially hazardous situation. The public also has access to contact information about pipeline operators within specified geographic areas.

Monitoring the Evolving Nature of IMP Implementation

Hazardous liquid and natural gas transmission pipeline operators are in the early stages of implementing their IMPs. Safety baseline integrity inspections are just now being established systemwide—starting with hazardous liquid pipelines—so there are no comparable benchmarks. Nevertheless, as they begin implementing their IMPs, there is not yet enough evidence available to evaluate the IMP's effectiveness in strengthening pipeline safety. However, there are early signs that the baseline integrity inspections are working well for operators of hazardous liquid pipelines, and there was *clearly a need for such inspections.*

OPS is also in the early stages of overseeing the implementation of the operators' IMPs, starting with IMP assessments of operators of hazardous liquid pipelines. In doing so, OPS is challenged with monitoring the implementation of the IMPs of more than 1,100 hazardous liquid and natural gas transmission pipeline operators and assisting in

the development of technologies to meet the requirements of the IMP for all sizes and shapes of pipelines and different threat detections.

Early Stages of Implementing Pipeline Operators' IMPs

The operators' implementation of their IMPs is a lengthy process. Even though the IMP rules have been issued in their final form, they will not be fully implemented for up to 8 years. For example, as part of the rules requiring IMPs for operators of natural gas transmission pipelines, operators are required to begin baseline integrity inspections no later than June 17, 2004, with inspections completed no later than December 17, 2012.

As operators begin implementing their IMPs, there are early signs that the baseline integrity inspections are working well for operators of hazardous liquid pipelines and that there was clearly a need for such inspections. So far, according to OPS, results from the operators' baseline integrity inspections in predominantly high-consequence areas show that more than 20,000 integrity threats were identified and remediated. These threats may not have been discovered during the operators' routine inspections. One of the most serious threats discovered was a case of corrosion where greater than 80 percent of the pipeline wall thickness had been lost. It has since been repaired. A lesser threat discovered was minor corrosion along a longitudinal seam.

A key point to remember about the early baseline integrity inspection results for operators of hazardous liquid pipelines is that these 20,000 threats were discovered and remediated in less than 16 percent (about 25,000 miles) of pipeline miles needing inspection. About 135,000 miles of hazard liquid pipeline still needs baseline integrity inspections.

Although 20,000 threats were discovered in the first 25,000 miles, we cannot statistically project the number of threats that could be expected in the remaining 135,000 miles that still need baseline integrity inspections. We also cannot project the number of threats that could be expected in the more than 326,000 miles of natural gas transmission pipelines that have yet to receive baseline integrity inspections. Also, baseline integrity

inspections will not be completed for several years and certain threats may be very time-sensitive, especially those to do with severe internal corrosion.

OPS required hazardous liquid pipeline operators—the first segment of the industry required to implement the IMP—to first complete baseline integrity inspections of pipeline miles in high-consequence areas, as these areas are populated, unusually sensitive to environmental damage, or commercially navigable waterways. These pipelines present the highest risk of fatalities, injuries, and property damage should an accident occur.

According to the American Petroleum Institute, nationwide there are approximately 160,000 miles of hazardous liquid pipelines, of which 51,400 miles are located in high-consequence areas. As required by the IMP rule, 25,700 of the 51,400 miles (50 percent) should receive baseline inspections by September 30, 2004. OPS estimates, of the nearly 327,000 miles of natural gas transmission pipelines, 24,970 miles are located in high consequence areas. But pipelines in high-consequence areas represent only about 16 percent of the total miles (76,370 of 487,000 total miles) for both hazardous liquid and natural gas transmission pipelines[8] and accidents that occur in non-high-consequence areas can have catastrophic consequences, such as the deadly pipeline rupture, explosion, and fire near Carlsbad, New Mexico.

On August 19, 2000, a 30-inch-diameter natural gas transmission pipeline ruptured adjacent to the Pecos River near Carlsbad. The released gas ignited and burned for 55 minutes. Twelve members of a family who were camping under a concrete-decked steel bridge that supported the pipeline across the river were killed and their three vehicles destroyed. Two nearby steel suspension bridges for gas pipelines crossing the river were extensively damaged.

[8] The percentage of total miles in high consequence areas for hazardous liquid and natural gas transmission pipelines are early estimates and may change with the beginning of the pipeline operators' baseline integrity inspections.

During the investigation, NTSB investigators found the rupture was a result of severe internal corrosion that caused a reduction in pipe wall thickness to the point that the remaining metal could no longer contain the pressure within the pipe. The significance of this finding cannot be overstated, as corrosion is the second leading cause of pipeline accidents, and pipeline operators will need to forge ahead on their baseline integrity inspections.

Monitoring the Implementation of Pipeline Operators' IMPs

OPS must now begin assessing whether the implementation of more than 1,100 hazardous liquid and natural gas transmission pipeline operators' IMPs were adequate. OPS must also perform ongoing oversight activities, such as inspecting new pipeline construction, monitoring research and development projects, and investigating pipeline accidents. To do so, OPS believes it will need to augment its own resources with those of the states to efficiently and effectively oversee the operators' IMPs.

OPS is actively overseeing IMP implementation through its assessments of hazardous liquid pipeline operators' IMP plans. As of April 30, 2004, the 63 largest operators of hazardous liquid pipelines have undergone the initial IMP assessments. That leaves 157 more operators of hazardous liquid pipelines and 884 operators of natural gas transmission pipelines who will need initial IMP assessments.

Monitoring the implementation of pipeline operators' IMPs will be an ongoing process. OPS IMP inspection teams, made up of Federal and state inspectors, spent approximately 2 weeks at each operator's headquarters reviewing results of integrity inspection and actions taken to address integrity threats, as well as overall IMP development and effectiveness. With about 1,041 pipeline operators who have not yet had an initial IMP assessment (at 2 weeks for each assessment), compounded by the fact that pipelines operators have up to 8 years to complete their baseline integrity inspections, the *overall* effectiveness of operators' IMPs in strengthening pipeline safety will not be known for years.

Advancing Threat Detection Technologies Is Fundamental to the Success of Integrity Inspections

As part of OPS's IMP rule, operators of hazardous liquid and natural gas transmission pipelines are required to inspect the integrity of their pipelines using smart pigs or an alternate equally effective method such as direct assessment. To date, OPS's integrity management assessments indicate that operators of hazardous liquids pipelines used smart pigs about 70 percent of the time to conduct their baseline integrity inspections and strongly favored the use of smart pigs over alternative inspection methods available under the IMP. Although there have been significant advances in smart pig technology, the current technology still cannot identify all pipeline integrity threats. Smart pigs currently in use can successfully detect and measure corrosion, dents, and wrinkles but are less reliable in detecting other types of mechanical damage. As a result, certain integrity threats go undetected and pipeline accidents may occur.

For example, on July 30, 2003, an 8-inch diameter hazardous liquid pipeline ruptured near a residential area under development in Tucson, Arizona, releasing more than 10,000 gallons of gasoline and shutting down the supply of gasoline to the greater metropolitan Phoenix area for 2 days. Whether this rupture could have been prevented is still not known because the cause of the rupture, stress crack corrosion,[9] rarely causes failure in hazardous liquid pipelines. Also, currently there are no tools or mechanisms small enough to fit in 8-inch diameter piping in order to identify the threat of stress crack corrosion.

OPS's research and development (R&D) program is aimed at enhancing the safety and reducing the potential environmental effects of transporting natural gas and hazardous liquids through pipelines. Specifically, the program seeks to advance the most promising technological solutions to problems that imperil pipeline safety, such as damage to pipelines from excavation or corrosion. OPS sponsors R&D projects that focus on

[9] Stress crack corrosion (SCC), also known as environmentally assisted cracking, is a relatively new phenomenon. Instead of pits, SCC manifests itself as cracks that are minute in length and depth. Over time, individual cracks coalesce with other cracks and become longer.

providing near-term solutions that will increase the safety, cleanliness, and reliability of the Nation's pipeline system.

OPS's R&D funding has more than tripled, from $2.7 million in FY 2001 to $8.7 million in FY 2003. Nearly $4 million of the $8.7 million is funding projects to improve the technologies used to inspect the integrity of pipeline systems in support of the IMP. OPS currently has 22 active projects that explore a variety of ways to improve smart pig technologies, develop alternative inspection and detection technologies for pipelines that cannot accommodate smart pigs, and improve pipeline material performance. For example, OPS has a project underway that will improve the capabilities of smart pigs to better detect and measure both corrosion and mechanical damage. The expected project outcome is a smart pig that is simpler to build and use.

The R&D challenge OPS now faces is seeing these projects through to completion, without undue delay and expense, to ensure that viable, reliable, cost-effective technologies become readily available to meet the demands of increased usage required under the IMP.

Monitoring Remediation of Pipeline Integrity Threats

Much of the Nation's existing pipeline infrastructure is over 50 years old. When pipeline integrity threats are identified, repairs may require Federal and state environmental reviews and permitting before the operator can proceed. However, OPS regulations identify repair criteria for the types of threats that must be repaired within specified time limits. At times, the environmental review and permitting processes become an obstacle that can delay the operators' remediation efforts.

When it passed the Pipeline Safety Improvement Act of 2002, Congress recognized that timely repair of pipeline integrity threats was essential to the well-being of human health, public safety, and the environment. Therefore, Congress directed the President to establish an interagency committee to develop and ensure the implementation of a coordinated environmental review and permitting process. This process should allow

pipeline operators to commence and complete all activities necessary to carry out pipeline repairs within any time periods specified under OPS's regulations.

Certain Pipeline Repairs Must Be Completed Within Specified Time Limits

OPS regulations identify remediation criteria for the types of threats that must be repaired within specified time limits, the length of which reflects the probability of failure. For hazardous liquid pipelines, the three categories of repair are defined as immediate repair, 60 days to repair, and 180 days to repair. For example, a top dent with any indication of metal loss requires *immediate* response and action, whereas a bottom dent with any indication of metal loss requires a response and action *within 60 days*. Other types of threats include remediation activities that are not considered time-sensitive. Using the criteria, pipeline operators must characterize the type of repair required, evaluate the risk of failure, and make the repair within the defined time limit.

Of the more than 20,000 threats that have been identified and remediated to date, more than 1,200 required immediate repair, 760 required repairs within 60 days, and 2,400 required repairs within 180 days. More than 16,300 threats fall into the category of other remediation activities that are not considered time-sensitive. OPS's remediation criteria encompass a broad range of actions, which include mitigative measures (such as reducing the pipeline pressure flow), as well as repairs that an operator can make to resolve an integrity threat. For immediate repairs, an operator must temporarily reduce operating pressure or shut down the pipeline until the operator completes the repair of the threat.

The challenges inspectors face during a review of an operator's baseline integrity inspection results are to determine whether OPS's repair criteria were properly used to characterize the type of repair required for each threat identified and whether the operator's threat remediation plans are adequate to repair or mitigate the threat. More importantly, however, is that OPS will need to follow up to ensure that the operator has properly executed its remediation actions within the defined time limit.

Improvements Are Needed in Coordinating Federal and State Environmental Reviews and Permitting Processes

The transmission of energy through the Nation's pipeline system in a safe and environmentally sound manner is essential to the well-being of human health, public safety, and the environment. One way to do this is to develop and ensure implementation of a coordinated Federal and state environmental review and permitting process that will enable pipeline operators to complete pipeline repairs quickly. There will be mounting pressures to accelerate the environmental review and permitting processes, given the high number of threats found during the early stages of pipeline operators' baseline integrity inspections that must be repaired within specified time limits.

The recent pipeline rupture in northern California demonstrates the perils of not being able to promptly repair pipeline threats. In April 2004, a hazardous liquid pipeline ruptured in the Suisun Marsh south of Sacramento, California, releasing about 85,000 gallons of diesel fuel into 20 to 30 acres of marshland. Muskrats, beaver, and water fowl were affected by the spill. Fortunately, there were no human fatalities or injuries as a result of the rupture.

The deteriorating condition of the pipeline that ruptured was well documented by the pipeline operator, who had reduced pipeline operating pressure to lessen the risk of a rupture and keep the flow of energy to users in Sacramento and Chico, California, and Reno, Nevada. The pipeline operator wanted to relocate the pipeline away from the Suisun Marsh and initiated actions to do so in 2001. However, the environmental review and permitting processes took far too long: nearly 3 years and more than 40 permits in total. There is little doubt that the rupture would not have occurred had the permit process been quicker.

The importance of accelerating the permit process, when necessary, cannot be overstated. As we have noted, results from the hazardous liquid pipeline operators' baseline integrity inspections in high-consequence areas show that more than 20,000 integrity threats were identified for remediation. More than 1,200 threats required immediate repairs,

760 threats required repairs within 60 days, and 2,400 threats required repairs within 180 days. As operators continue with their baseline integrity inspections, the implications are that the number of integrity threats will continue to rise. According to OPS, repairs for other known pipeline threats are being delayed because of the environmental review and permitting processes, and they are best taken care of sooner rather than later, so as to prevent another incident like the Suisun March rupture.

When it passed the 2002 Act, Congress recognized the need to expedite the environmental review and permitting process. Section 16 of the 2002 Act directed the President to establish an interagency committee that would implement a coordinated environmental review and permitting process so that pipeline repairs could be made within the time periods specified by IMP regulations.

Committee activities were to include:

- An evaluation of Federal permitting requirements.
- Identification of best management practices to be used by industry.
- The development of an MOU by December 17, 2003, (1 year after the enactment of the 2002 Act) to provide for a coordinated and expedited pipeline permit process that would result in no more than minimal adverse effects on the environment.

The 2002 Act also requires the committee to consult with state and local environmental, pipeline safety, and emergency response officials, and requires the Secretary of Transportation to designate on ombudsman to assist in expediting the pipeline process and resolving disagreements over pipeline repairs between Federal, state, and local permitting agencies and the pipeline operator.

To implement Section 16, the President issued an Executive Order in May 2003, establishing the Interagency Task Force and directed it to implement the committee activities. The Chairman of the Council on Environmental Quality chairs the Interagency

Task Force, whose membership includes representatives from the Departments of Agriculture, Commerce, Defense, Energy, the Interior, and Transportation; the Environmental Protection Agency; the Federal Regulatory Commission; and the Advisory Council on Historic Preservation.

Although an MOU has been drafted, it has not been finalized as of June 11, 2004. According to OPS, not all members of the Interagency Task Force have agreed to the provisions of the MOU, while other members believe that there are provisions in the Clean Air Act, Clean Water Act, the Endangered Species Act that prohibit them from taking any action to expedite the permitting process. Until the MOU is finalized, an evaluation of Federal permitting requirements and identification of best management practices to be used by industry will be further delayed.

These issues need to be resolved by the Interagency Task Force. While the problem may not be easily resolved, Federal agencies must work together to accelerate the environmental review and permitting process to avoid failures like the Suisun Marsh rupture or even worse. If the Interagency Task Force set up to monitor and assist agencies in their efforts to expedite their review of permits cannot develop a method for expediting the environmental review and permit process so that pipeline repairs can be made before a serious consequence occurs, then it may be necessary for Congress to take action.

Closing the Safety Gap on Natural Gas Distribution Pipelines

The 2002 Act requires that the operators of natural gas pipeline facilities implement IMPs. However, the IMP requirement applies only to natural gas transmission pipelines and not to natural gas distribution pipelines.

As part of the IMP, operators of hazardous liquid and natural gas transmission pipelines are required to inspect the integrity of their pipelines using one or more of the following

inspection methods: smart pigs, pressure testing, or direct assessment.[10] According to officials of the American Gas Association, the initial reason why IMPs were not required for natural gas distribution pipelines is that distribution pipelines cannot be inspected using smart pigs. The smart pig technologies currently available cannot be used in natural gas distribution pipelines because the majority of distribution piping is too small in diameter (1 to 6 inches) and has multiple bends and material types intersecting over very short distances.

The IMP is a risk-management tool designed to improve safety, environmental protection, and reliability of pipeline operations. That natural gas distribution pipelines cannot be internally inspected using smart pigs is not by itself a sufficient reason for not requiring operators of natural gas distribution pipelines to have IMPs. Other elements of the IMP can be readily applied to this segment of the industry, including but not limited to (1) a process for continual integrity assessment and evaluation, (2) an analytical process that integrates all available information about pipeline integrity and the consequences of failure, and (3) repair criteria to address issues identified by the integrity assessment and data analysis.

Natural Gas Distribution Pipeline Safety Concerns

Our concern is that the Department's strategic safety goal is to reduce the number of transportation-related fatalities and injuries, but natural gas distribution pipelines are not achieving this goal. In the 10-year period from 1994 through 2003, OPS's data show accidents in natural gas distribution pipelines have caused more than *4 times* the number of fatalities (174 fatalities) and more than *3.5 times* the number of injuries (662 injuries) when compared to a combined total of 43 fatalities and 178 injuries associated with hazardous liquid and gas transmission pipeline accidents combined.

Accidents involving natural gas distribution pipelines can be as catastrophic as accidents involving hazardous liquids or natural gas transmission pipelines. For example, on

[10] Operators can choose another technology that demonstrates an equivalent understanding of the integrity of the pipeline but only after notifying OPS before the inspection begins.

December 11, 1998, in downtown St. Cloud, Minnesota, a communications crew ruptured an underground natural gas distribution pipeline, causing an explosion that killed 4 people, seriously injured 1, and injured 10 others. Six buildings were destroyed. In another example, in July 2002, a gas explosion in a multiple-family dwelling in Hopkinton, Massachusetts, killed 2 children and injured 14 others.

In the past 3 years, the number of fatalities and injuries from accidents involving natural gas distribution pipelines has increased while the number of fatalities and injuries from accidents involving hazardous liquid and natural gas transmission pipelines has held steady or declined. OPS's data show that fatalities and injuries from accidents involving natural gas distribution pipelines increased from 5 fatalities and 46 injuries in 2001 to 11 fatalities and 58 injuries in 2003. For the same period, fatalities and injuries from accidents involving hazardous liquid and natural gas transmission pipelines decreased from 2 fatalities and 15 injuries in 2001 to 1 fatality and 13 injuries in 2003.

Although OPS has moved forward with initiatives[11] to enhance the safety of natural gas distribution pipelines, OPS needs to ensure that the pace of its efforts moves quickly enough, given the upward trend in fatalities and injuries involving these pipelines and the projected increase in distribution pipelines to meet the increasing demand for natural gas.

OPS should require operators of natural gas distribution pipelines to implement some form of pipeline integrity management or enhanced safety program with the same or similar integrity management elements, except pigging, as the hazardous liquid and natural gas transmission pipelines. This would be consistent with OPS's risk-based approach to overseeing pipeline safety by using IMPs to reduce the risk of accidents that may cause injuries or fatalities to people living or working near natural gas distribution pipelines, as well as to reduce property damage.

[11] With OPS support, the American Gas Foundation is sponsoring a study to assess the Nation's gas distribution infrastructure that will evaluate safety performance, current operating and regulatory practices, and emerging technologies.

Developing an Approach To Overseeing Pipeline Security

The focus of our recently completed review was pipeline safety. However, given the importance of protecting the Nation's infrastructure of pipeline systems, we also reviewed OPS's involvement in the security of the pipeline systems.

OPS's Security Efforts Following September 11, 2001

Following the events of September 11, 2001, OPS moved forward on several fronts to help reduce the risk of terrorist activity against the Nation's pipeline infrastructure, such as opening the lines of communication among Federal and state agencies responsible for protecting the Nation's critical infrastructure, including pipelines; conducting pipeline vulnerability assessments and identifying critical pipeline systems; developing security standards and guidance for security programs; and working with Government and industry to help ensure rapid response and recovery of the pipeline system in the event of a terrorist attack.

To protect the Nation's pipeline infrastructure, OPS issued new security guidance to pipeline operators nationwide in September 2002. In the guidance, OPS requested that all operators develop security plans to prevent unauthorized access to pipelines and identify critical facilities that are vulnerable to a terrorist attack. OPS also asked operators to submit a certification letter stating that the security plan had been implemented and that critical facilities had been identified. During 2003, OPS in conjunction with the DHS's TSA started reviewing operator security plans. The plans reviewed have been judged responsive to the OPS guidance.

Unlike its pipeline safety program, OPS's security guidance is not mandatory: industry's participation in a security program is strictly voluntary and cannot be enforced unless a regulation is issued to require industry compliance. In fact, it is still unclear what agency or agencies will have responsibility for pipeline security rulemaking, oversight, and enforcement. Although OPS took the lead to help reduce the risk of terrorist activity against the Nation's pipeline infrastructure following the events of September 11, 2001,

OPS has stated it now plays a secondary, or support, role to TSA, the agency with primary responsibility for ensuring the security of the Nation's transportation system, including pipelines.

Recent Initiatives Clarifying Security Responsibilities

Certain steps have been taken to establish what agency or agencies would be responsible for ensuring the security of the Nation's critical infrastructure, including pipelines. For example, in December 2003, Homeland Security Presidential Directive/HSPD-7 (HSPD-7):

- Assigned the DHS the responsibility for coordinating the overall national effort to enhance the protection of the Nation's critical infrastructure and key resources.

- Assigned DOE the responsibility for ensuring the security of the Nation's energy, including the production, refining, storage, and distribution of oil and gas.

- Directed DOT and DHS to collaborate on all matters relating to transportation security and transportation infrastructure protection and to regulating the transportation of hazardous materials by all modes, including pipelines.

Although HSPD-7 directs DOT and DHS to collaborate in regulating the transportation of hazardous materials by all modes, including pipelines, it is not clear from an operational perspective what "to collaborate" encompasses, and it is also not clear what OPS's relationship will be with DOE. The delineation of roles and responsibilities between DOT and DHS needs to spelled out by executing an MOU or a Memorandum of Agreement. OPS also needs to seek clarification on the delineation of roles and responsibilities between itself and DOE.

Mr. Chairman, this concludes my statement. I will be pleased to answer any questions that you might have.