

ACTIONS TAKEN AND NEEDED FOR IMPROVING PIPELINE SAFETY

Research and Special Programs Administration

Report Number: SC-2004-064

Date Issued: June 14, 2004



Memorandum

U.S. Department of
Transportation
Office of the Secretary
of Transportation
Office of Inspector General

Subject: **ACTION:** Audit Report on Actions Taken and
Needed for Pipeline Safety
Research and Special Programs Administration
SC-2004-064

Date: June 14, 2004

From: Alexis M. Stefani 
Principal Assistant Inspector General
for Auditing and Evaluation

Reply to
Attn. of: JA-60

To: Deputy Administrator
Research and Special Programs Administration

This report presents the results of our review of the Research and Special Programs Administration (RSPA) Office of Pipeline Safety's (OPS) progress in implementing the recommendations in the Office of Inspector General's March 2000 report,¹ which were later mandated in the Pipeline Safety Improvement Act of 2002. That Act requires the Inspector General to report periodically to Congress on OPS's progress in implementing the recommendations and to identify options for OPS to consider in expediting implementation of the recommendations. The full report follows this memorandum.

Our objective was to assess OPS's progress in implementing the Office of Inspector General recommendations for improving pipeline safety to determine whether actions taken were sufficient to correct the weaknesses found in OPS's pipeline safety program. Specifically, we assessed whether OPS has (1) fulfilled pipeline safety mandates from legislation enacted in 1992 and 1996, (2) expanded research and development to improve technologies used in pipeline inspections, (3) provided specialized training to pipeline inspectors on technologies used in and reports generated from pipeline inspections, (4) corrected shortcomings in pipeline data collection and analysis, and (5) established timetables to implement open National Transportation Safety Board (NTSB) pipeline safety recommendations. Given the importance of protecting the Nation's infrastructure of pipeline systems, we also reviewed OPS's involvement in the security of pipeline systems.

¹ OIG Report Number RT-2000-069, "Pipeline Safety Program," March 13, 2000.

A draft of this report was provided to RSPA on May 4, 2004. In its comments, RSPA agreed in general with our recommendations and stated that work is underway to address all outstanding issues identified in the draft report. For six of seven recommendations, we consider RSPA comments to be positive and constructive, and RSPA actions taken and planned for the recommendations are reasonable. Specifically, RSPA agreed to ensure that OPS:

- Completes its actions on the remaining six mandates from legislation enacted in 1992 and 1996 by December 2004.
- Completes its internet-based system for monitoring its research and development projects' costs, schedules, and performance by October 2004.
- Finalizes and implements "best practices" for its internal review process, including procedures to review data quality and to ensure that the operators are providing current, complete, and accurate accident information by March 2005.
- Completes its actions to close out the remaining five NTSB recommendations identified in this report by December 2005.
- Uses both the Department of Transportation (DOT) and RSPA policies and procedures for addressing NTSB recommendations. According to OPS, it is currently doing so.
- Clarifies its security roles and responsibilities with the Department of Energy by November 2004.

However, for one recommendation RSPA comments were not fully responsive, and we are requesting some additional information.

We recommended that RSPA ensure that OPS 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 as the hazardous liquid and natural gas transmission pipelines. In its response, RSPA stated that industry, state, and Federal regulators are now working to develop natural gas distribution integrity management programs (IMPs), and that a public workshop to discuss IMP concepts is planned for December 2004.

Other than indicating that it is working with the states and industry to develop an IMP for natural gas distribution pipelines and plans to hold a public workshop to discuss IMP concepts in December 2004, RSPA did not indicate when they expect to require an IMP for natural gas distribution pipelines. We are requesting RSPA to clarify this within the next 30 days.

We are withdrawing our recommendation that RSPA ensure that OPS petition the DOT, through RSPA, to execute a Memorandum of Agreement or Memorandum of Understanding (MOU) with Department of Homeland Security (DHS), formalizing the security roles and responsibilities of OPS and DHS's Transportation Security Administration. Since we made this recommendation, DOT's Deputy Secretary has made it clear that an MOU is needed, and we understand that the Deputy Secretary has communicated this to DHS. Hopefully an MOU between DOT and DHS can be consummated by September 1, 2004. DOT should keep the appropriate Congressional committees apprised of its progress in consummating an MOU with DHS.

In commenting on the findings in the draft report, there was one issue that RSPA believed needed to be clarified. In the draft report, we stated that natural gas distribution pipelines were excepted from integrity management safety mandates that govern hazardous liquid and natural gas transmission pipelines.

According to RSPA:

The statement was misleading in that it implies that OPS has taken action to "except" gas distribution pipelines from the integrity management programs. The fact is, Federal law only mandated that transmission pipelines be assessed, so the Office of Pipeline Safety (OPS) only addressed transmission pipelines first.

We never intended to imply that OPS had excepted natural gas distribution from the IMPs and are aware that the Pipeline Safety Improvement Act of 2002 mandated IMPs only for operators of natural gas transmission pipelines. Section 14 of the 2002 Act required each operator of a gas pipeline facility² subject to 49 United States Code Section 60109 to adopt and implement an IMP. However, natural gas distribution pipelines are *excepted* from Section 60109 requirements. We have revised our report to clarify that operators of natural gas distribution pipelines are not required to implement IMPs.

In accordance with DOT Order 8000.1C, we request that you clarify your response and provide specific corrective action dates for the recommendation discussed above. We would appreciate receiving your written comments within 30 days. The other recommendations are considered resolved subject to the follow-up provisions of Department of Transportation Order 8000.1C.

We appreciate the courtesies and cooperation of representatives from OPS and the pipeline industry during this audit. If you have any questions concerning this

² A gas pipeline facility is defined as new and existing pipeline, right-of-way, and any equipment, facility, or building used in the *transportation of gas* or in the treatment of gas during the course of transportation. Transportation of gas is defined as the "gathering, transmission, or *distribution* of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce [italics added]."

report, please call me at (202) 366-1992 or Robin K. Hunt, Deputy Assistant Inspector General for Hazardous Materials, Security and Special Programs, at (415) 744-3090.

Attachment

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cc: Associate Administrator for Pipeline Safety

Executive Summary

Actions Taken and Needed For Improving Pipeline Safety

Research and Special Programs Administration

Report No. SC-2004-064

June 14, 2004

OBJECTIVE

Our objective was to assess the Office of Pipeline Safety's (OPS) progress in implementing the Office of Inspector General (OIG) recommendations for improving pipeline safety to determine whether actions taken were sufficient to correct the weaknesses found in OPS's pipeline safety program. Specifically, we assessed whether OPS has (1) fulfilled pipeline safety mandates from legislation enacted in 1992 and 1996, (2) expanded research and development to improve technologies used in pipeline inspections, (3) provided specialized training to pipeline inspectors on technologies used in and reports generated from pipeline inspections, (4) corrected shortcomings in pipeline data collection and analysis, and (5) established timetables to implement open National Transportation Safety Board (NTSB) pipeline safety recommendations. Given the importance of protecting the Nation's infrastructure of pipeline systems, we also reviewed OPS's involvement in the security of pipeline systems.³

BACKGROUND

OPS is responsible for overseeing the safety of the Nation's pipeline system, an elaborate network of more than 2 million miles of pipe moving millions of gallons of hazardous liquids and more than 55 billion cubic feet of natural gas daily. Exhibit A contains a diagram of the natural gas pipeline system. Exhibit B contains a glossary of terms used in the pipeline industry.

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 pipeline operators⁴ and

³ We first raised our concerns about security of the Nation's pipeline systems in testimony presented before the House Subcommittee on Highways and Transit in February 2002 (OIG Number CC-2002-103, "Reauthorization of the Pipeline Safety Program," February 13, 2002).

⁴ Of the 2,200 operators of natural gas distribution and transmission pipelines, there are approximately 1,300 operators of natural gas distribution pipelines and 880 operators of natural gas transmission pipelines.

220 operators of hazardous liquid pipelines. There are approximately 90 Federal and 400 state inspectors responsible for overseeing the operators' compliance with pipeline safety regulations.

Although moving commodities such as crude oil, diesel fuel, gasoline, and natural gas through pipelines is safer than moving the same commodities on other modes of transportation (e.g., barges, rail, trucks), pipeline incidents can have catastrophic consequences, such as the deadly pipeline rupture, explosion, and fire in the Bellingham, Washington, area in June 1999.

On June 10, 1999, a 16-inch-diameter pipe near Bellingham ruptured, discharging 237,000 gallons of gasoline into a nearby creek. The fuel ignited, killing three people and injuring eight others, with property damage estimated at \$45 million in 2002. In the largest criminal and civil settlement ever obtained in a pipeline rupture case, two pipeline companies agreed to pay \$113 million to resolve criminal and civil penalties arising from the accident and to ensure the safety of their pipelines. The charges, the first ever brought under the Hazardous Liquid Pipeline Safety Act of 1979, as amended, included three criminal counts for violating the Act, which sets minimum safety standards for training employees who operate interstate pipelines that carry hazardous liquids.

As a result of the accident, Senator Patty L. Murray requested that the OIG review OPS's role in promoting and overseeing pipeline safety. In March 2000, we reported 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 2002⁵ (2002 Act), which also required OIG to assess OPS's progress to:

- Fulfill the pipeline safety mandates from legislation enacted in 1992 and 1996.
- Expand the focus of OPS research and development (R&D) to improve the capabilities of technologies used to inspect the integrity of pipeline systems.
- Design and implement a program to train safety inspectors on the use of internal inspection devices (referred to as "smart pigs"⁶) and the interpretation of the results.
- Correct shortcomings in collection and analysis of pipeline accident data.

⁵ Public Law 107-355, dated December 17, 2002.

⁶ A "smart pig" is an instrumented internal inspection device that traverses a pipeline to detect potentially dangerous defects, such as corrosion.

- Establish timetables to implement open National Transportation Safety Board pipeline safety recommendations.

Our recommendations were issued while OPS was finalizing its Pipeline Risk Management Demonstration Program,⁷ mandated by the Accountable Pipeline Safety and Partnership Act of 1996. According to OPS, this program was designed to “test whether allowing operators the flexibility to allocate safety resources through risk management is an effective way to improve safety, environmental protection, and reliability of pipeline operations.” OPS concluded from the results of the Demonstration Program that there was potential for developing effective safety management processes that would protect the public and environment and provide more useful information about the integrity of the Nation’s pipeline systems.

Consequently, this risk-based approach to overseeing pipeline safety evolved into what OPS has termed as “integrity management” and requires pipeline operators to develop integrity management programs (IMPs)⁸ to “assess, evaluate, repair and validate through comprehensive analysis the integrity of pipeline segments that, in the event of a leak or failure, could affect populated areas, areas unusually sensitive to environmental damage and commercially navigable waterways.”

RESULTS IN BRIEF

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 periodically inspect pipelines and to use smart pigs to inspect pipelines. In recent years, however, OPS has implemented several actions to improve pipeline safety, such as requiring IMPs for operators of hazardous liquid and natural gas transmission pipelines, which they use to assess their pipelines for risk of a leak or failure, to take action to mitigate the risks, and to develop program performance measures.

⁷ OPS’s Pipeline Risk Management Demonstration Program comprised several projects nationwide that evaluated different aspects of pipeline systems’ operations for ways to improve safety management and performance.

⁸ 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 program’s effectiveness, and (9) a process for review of integrity assessment results and data analysis by a qualified individual.

While OPS has made progress in implementing the recommendations, the work is not done. The current situation is far from an “end state” for ensuring the safety of the Nation’s pipeline system. The IMP is in the early stages of implementation, and there is clearly not enough evidence available to evaluate its effectiveness in strengthening pipeline safety. It is significant that this is the first time that baseline integrity inspections are being established systemwide—starting with hazardous liquid pipelines—so there are no comparable benchmarks.

Also, it is important to note that even though IMP rules for hazardous liquids and natural gas transmission pipelines have been issued in their final form, they will not be fully implemented nationwide for at least 8 years. For example, the operators of hazardous liquid pipelines have 7 years from the effective date of the final rule to complete baseline inspections, which will be March 2008. *This is a key issue as the IMP is the backbone of OPS’s risk-based approach to overseeing pipeline safety.*

Nevertheless, as they 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 show that more than 20,000 integrity threats were identified for remediation.⁹ This many threats—20,000—may not have been discovered during the operators’ routine inspections.

While implementing the IMP goes a long way in promoting the safe, reliable, and environmentally sound operation of the Nation’s pipeline system, only operators of hazardous liquid and natural gas transmission pipelines are required to implement IMPs and *not* operators of natural gas distribution pipelines.¹⁰ Distribution is the final step in delivering natural gas to end users such as homes, businesses, and industries. Nearly all of the natural gas distribution pipelines are located in highly populated areas, such as business districts and residential communities, where a rupture could have the most significant consequences.

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. For the 10-year period from 1994 through 2003, accidents in natural gas distribution pipelines have resulted in more fatalities and injuries than hazardous liquid and natural gas transmission lines combined.

⁹ OPS’s remediation criteria encompass a broad range of actions, which include mitigative measures (e.g., reducing the pipeline pressure flow) as well as repairs that an operator can take 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 repairs.

¹⁰ Many operators of natural gas transmission pipelines are also operators of natural gas distribution pipelines. IMP requirements do not apply to their distribution pipelines.

Although OPS has moved forward with initiatives to enhance the safety of natural gas distribution pipelines, OPS needs to ensure that the pace of its efforts moves quickly enough given that there has been no steady decreasing trend in the number of accidents, fatalities, and injuries involving natural gas distribution pipelines.

OPS's progress in implementing the recommendations in our March 2000 report follows, as well as further actions that need to be taken to improve the safety and security of the Nation's pipeline system.

- ***OPS implemented most, but not all, mandates from legislation enacted in 1992 and 1996.*** Of the 31 mandates from legislation enacted in 1992 and 1996, 25 mandates have been implemented, 17 of which were implemented since our March 2000 report. In the most noteworthy example, OPS issued final rules requiring IMPs for operators of all hazardous liquid pipelines.

OPS has also made considerable progress in meeting the 23 mandates from the 2002 Act, such as requiring IMPs for operators of natural gas transmission pipelines. This accomplishment is noteworthy because the IMP final rule for operators of natural gas transmission pipelines was issued on December 15, 2003, only 1 year after the enactment of the 2002 Act.

Also 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. This is also a significant because in order 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.

NPMS is 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.

As a result, Government agencies and industry have access to reasonably accurate pipeline data in the event of emergency or potentially hazardous situations. The public also has access to contact information about pipeline operators within their specified geographic areas.

It is important to note that even though some rules have been issued in their final form, they will not be fully implemented for many years. For example, as part of the rule requiring IMPs for operators of more than 500 miles of hazardous liquid pipelines, operators have 7 years¹¹ from the effective date of the final rule to complete baseline inspections. The baseline assessment period for these hazardous liquid pipeline operators will not end until March 2008.

As of December 31, 2002 (the most current available data¹²), 25 percent of pipeline miles for this segment of the industry have been baselined, using mostly smart pigs but also alternative methods approved by OPS, such as pressure testing. According to OPS, 50 percent of hazardous liquid pipeline miles¹³ in high-consequence areas will be baselined by September 2004, as required by the IMP rule.

- ***Much has been accomplished in the past 3 years, but OPS needs to continue in its efforts to implement mandates from legislation enacted in 1992 and 1996.*** Two reasons for OPS's progress have been its high level of management emphasis and the priority attention given to rulemaking by the highest levels of the Department of Transportation's (DOT) management, namely the Secretary, Deputy Secretary, Chief of Staff, and General Counsel. The Secretary has taken an active interest in improving DOT's rulemaking process and has emphasized to senior DOT managers the need to ensure that rules are completed in a timely manner or that problems and issues causing delays are identified and fixed.

Nevertheless, six mandates from legislation enacted in 1992 and 1996 remain open, and all are over 8 years past due. For example, two mandates, which are a decade overdue, would define "natural gas and hazardous liquid gathering lines"¹⁴ so as to determine which lines can and should be regulated. OPS published a Notice of Proposed Rulemaking (NPRM) in the Federal Register on natural gas gathering lines for comment and discussion in March 1999 and published an

¹¹ Prior to the issuance of the final rule, there had been considerable debate on whether the initial baseline inspection period of 7 years was excessive and that a 5-year timeframe might be more desirable given the importance of the information to be developed during baseline inspections. However, because smart pigs are the preferred method for conducting pipeline assessments under the rule, reasonable estimates of growth rates for the smart pig industry would have made a 5-year timeframe difficult to achieve. A 7-year timeframe appeared more feasible.

¹² Baseline data were provided by the American Petroleum Institute through OPS and have not been verified by OPS.

¹³ 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 final rule, 25,700 of the 51,400 miles (50 percent) should have received baseline assessments by September 30, 2004.

¹⁴ Gathering lines are pipelines, usually of small diameter, used in moving gas or hazardous liquid from the field to a central point.

advisory bulletin in October 2002. This mandate is still under discussion, with a supplemental notice expected in December 2004. OPS also expects to issue a NPRM on hazardous liquid gathering lines for comment in December 2004, 12 years after the mandate was enacted.

- ***Closing the safety gap on natural gas distribution pipelines.*** The mandates from legislation enacted in 1992, 1996, and 2002 go a long way in promoting safe, reliable, and environmentally sound operations of the Nation’s pipeline system. However, operators of natural gas *distribution* pipelines are not required to implement the integrity management safety mandates that govern operators of hazardous liquid and natural gas *transmission* pipelines.

For example, the Pipeline Safety Improvement Act of 2002 requires that the operators of a gas pipeline facility¹⁵ implement IMPs. However, the IMP requirement only applies to operators of natural gas *transmission* pipelines. As part of the IMP rule, operators of 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.¹⁶

According to officials of the American Gas Association, the initial reason for not requiring operators of natural gas distribution pipelines to have IMPs 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. The fact that natural gas distribution pipelines cannot be internally inspected using smart pigs is not a sufficient reason for not requiring IMPs for operators of natural gas distribution pipelines. 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

¹⁵ A gas pipeline facility is defined as new and existing pipeline, right-of-way, and any equipment, facility, or building used in the *transportation of gas* or in the treatment of gas during the course of transportation. Transportation of gas is defined as the “gathering, transmission, or *distribution* of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce [italics added].”

¹⁶ 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.

information about pipeline integrity and the consequences of failure, and (3) 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. 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.

In fact, 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 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 to enhance the safety of natural gas distribution pipelines, OPS needs to ensure that the pace of its efforts moves quickly enough given that there has been no steady decreasing trend in the number of accidents, fatalities, and injuries involving natural gas distribution pipelines. 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 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.

- ***OPS increased the funding and scope for R&D projects to improve the technologies used to inspect pipeline systems; however, project oversight improvements need to be completed.*** 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 a

variety of methods such as smart pigs and 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, such as direct assessment. 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.

OPS's R&D funding more than tripled, from \$2.7 million in fiscal year (FY) 2001 to \$8.7 million in FY 2003. Nearly \$4 million of the \$8.7 million is for projects to improve the technologies used to inspect the integrity of pipeline systems. R&D projects currently funded have increased in size and scope, from a single project before 2001 to 22 active projects in 2004. These projects 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.

With the increase in size and scope of R&D projects, OPS has developed and implemented an internet-based system to electronically manage pre-award activities (e.g., issuance of announcements, receipt and review of proposals). OPS is developing, as part of the same system, a component to monitor post-award activities, such as managing project costs, schedules, and performance.

OPS estimates that 10 to 15 additional R&D projects are planned to begin in late 2004. OPS needs to complete its internet-based system component for monitoring post-award activities of R&D projects to ensure that viable, reliable, cost-effective technologies become readily available to meet the requirements of the IMP and, at the same time, to ensure efficient and effective management of its R&D funds.

- ***OPS designed and implemented a program to train safety inspectors on the use of smart pig technologies and the interpretation of the result of the inspections. OPS must now be forward-looking to ensure its inspector workforce knowledge base is commensurate with increased usage of and advances in smart pig technology.*** All OPS inspectors are required to take an awareness course on internal inspection technologies as part of their 9-course basic training. 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 IMP inspectors are required to take a more comprehensive course on internal inspection technologies as part of their advanced training. The course is designed to provide inspectors with 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. As of May 31, 2004, 110 Federal and state inspectors have received the advanced training, with an additional 58 Federal and state inspectors scheduled to take the advanced training in 2004.

OPS will be monitoring the implementation of 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. IMP inspectors are actively overseeing the IMP implementation through their assessments of hazardous liquid pipeline operators' IMP plans—the first segment of the industry required to implement the IMP.

As of April 30, 2004, results from OPS's IMP assessments disclosed, among other things, that (1) the 63 largest operators of hazardous liquid pipelines have undergone IMP assessments, which leaves 157 more operators of hazardous liquid pipelines and 884 operators of natural gas transmission pipelines who will need initial IMP assessments; (2) smart pigs were used by the pipeline operators about 70 percent of the time to conduct their baseline integrity inspections of hazardous liquid pipelines; and (3) more than 20,000 integrity threats were identified and remediated as part of the operators' IMPs. One of the most serious threats discovered was 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.

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 remediation actions within the defined time limit.

OPS must ensure its inspector workforce knowledge base is commensurate with increased usage and technological advances of

smart pigs. As OPS has noted, hazardous liquid pipeline operators strongly favor the use of smart pigs to conduct baseline integrity inspections. Also, increased funding in smart pig R&D will improve the technology to allow more pipeline mileage to be inspected using smart pigs instead of alternative inspection methods. Current training course curricula may have to be revised to account for the increased usage of and advances in the technologies used to inspect the integrity of pipeline systems.

- ***OPS corrected shortcomings in pipeline data collection. However, “best practices” are needed in its internal review process to ensure that the accident data submitted by pipeline operators are accurate and reliable.*** In 1997, NTSB noted significant problems with pipeline accident data collection and analysis and recommended that OPS revise its reporting forms and instructions to eliminate overlapping and confusing categories and to include new, more descriptive causal categories.

In January 2002, OPS issued new reporting forms and instructions for accidents involving natural gas transmission and hazardous liquid pipelines, increasing the number of causal categories from 4 to 25 for natural gas transmission pipelines and from 7 to 25 for hazardous liquid pipelines. In March 2004, OPS issued a new reporting form and instructions for accidents involving natural gas distribution pipelines, increasing the number of causal categories from 5 to 25. The new reporting forms and instructions also require operators to indicate if the data being provided are initial, supplemental, or final. With the added causal categories, OPS will have access to far more detailed information about the causes of pipeline accidents.

To assess root causes of accidents, identify appropriate corrective actions, and ensure that the operator provides the most current, accurate, and complete accident information as it becomes available, OPS has begun to improve its process for internally reviewing accident information. It is developing written guidelines and conducting the first of several quarterly sessions of formal training for the personnel responsible for the internal review process. Training will be ongoing until OPS has established best practices for the internal review of operator accident information.

As more accident data are collected, data analysis becomes an integral component in assessing and evaluating the performance of the IMP, identifying safety trends, and reporting program results (e.g., in the annual performance report to Congress required under the Government

Performance and Results Act). However, the quality of OPS's data analysis and reporting is only as good as the timeliness, completeness, and accuracy of data submitted by the operators.¹⁷ As we have seen in other DOT programs, the quality and timeliness of the accident data is key to an effective program. We recently reported on the Federal Motor Carriers Safety Administration's (FMCSA) Motor Carrier Safety Status Measurement System (SafeStat)¹⁸ and found that significant problems existed with the data motor carriers and the states provide to FMCSA, such as errors and omissions in the data records. These data problems limited SafeStat's effectiveness and introduced bias into the ranking process for targeting high-risk motor carriers.

To avoid future problems and to ensure that operators' data can be relied on to target its oversight resources, OPS needs to finalize and implement the best practices for its internal review process, including procedures to review data quality. As part of its data quality review, OPS should include reviews of source documentation to make sure accident data submitted to OPS by the pipeline operators are complete and accurate. OPS should also take enforcement action against those operators who are not complying with the reporting requirements.

- ***OPS made progress in closing out long overdue NTSB safety recommendations, but improvements are still needed in the internal processing of open recommendations.*** OPS has closed out 21 of 23 NTSB safety recommendations we identified in our March 2000 report. One of the remaining two open NTSB recommendations is considered by OPS as being in the close-out phase (i.e., acceptable action taken by OPS and close-out letter at NTSB for review).

Since our March 2000 report, OPS has shown considerable progress in fully implementing NTSB recommendations. OPS has received 13 new NTSB recommendations, of which 8 have been closed, and 7 of those 8 recommendations were closed within 2 years of issuance. OPS expects the remaining five open recommendations to be closed within 4 years of issuance. This is compared to an average issuance-to-closure time of 6.4 years, with a range of 3.3 years to 17.1 years, for the 21 of 23 recommendations identified in our March 2000 report.

¹⁷ At the time of our review, the requirement that operators use the new accident reporting forms and instructions was in the early stages of implementation, and it was too soon to tell whether the new accident reporting forms and instructions would improve the comprehensiveness and quality of data.

¹⁸ OIG Report Number MH-2004-034, "Improvements Needed in the Motor Carrier Safety Status Measurement System," February 13, 2004.

OPS needs to continue in its efforts to close out the remaining five NTSB recommendations where acceptable actions have not been completed, especially the recommendations addressing issues that are fundamental to the integrity of the pipeline system. For example, one recommendation would require that new or replaced pipelines be designed and constructed with features to mitigate internal corrosion. The significance of this recommendation cannot be overstated, as corrosion is the second leading cause of pipeline accidents.

OPS also needs to establish a formal internal policy and procedures for responding to NTSB recommendations so that key safety recommendations are addressed completely and in a timely manner. Of the 13 new recommendations OPS received since our March 2000 report, only 3 were processed in accordance with DOT policy. This policy requires Operating Administrations to reply to NTSB recommendations within 90 days of receipt. For recommendations with which the Operating Administration concurs, the response must include an implementation timetable. The policy also requires that all actions proposed in response to NTSB recommendations will be pursued expeditiously.

Pipeline Security Roles and Responsibilities Need To Be Solidified

To its credit, OPS has moved forward on several fronts to help reduce the risk of terrorist activity against the Nation's pipeline infrastructure. For example, OPS has conducted pipeline vulnerability assessments and identified critical pipeline systems; it has also developed security standards and guidance for security programs.

However, 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 which agency or agencies will have responsibility for pipeline security rulemaking, oversight, and enforcement.

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-7¹⁹ (HSPD-7):

¹⁹ Homeland Security Presidential Directive/HSPD-7, "Critical Infrastructure Identification, Prioritization, and Protection," issued December 2003.

- Assigned the Department of Homeland Security (DHS) the responsibility for coordinating the overall national effort to enhance the protection of the Nation’s critical infrastructure and key resources.
- Assigned the Department of Energy (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 (1) on all matters relating to transportation security and transportation infrastructure protection, and (2) in 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. To be more useful in the operating environment, the delineation of roles and responsibilities between DOT and DHS needs to be spelled out by executing a Memorandum of Understanding (MOU) or a Memorandum of Agreement. OPS also needs to seek clarification on the delineation of roles and responsibilities between itself and DOE.

RECOMMENDATIONS

The progress described above was the direct result of a high level of management attention and priority by OPS in the past few years to implementing the recommendations and to helping reduce the risk of terrorist activity against the Nation’s pipeline infrastructure. OPS needs to maintain this level of attention in the future because further actions are needed. Specifically, RSPA needs to ensure that OPS:

1. Completes its actions on the remaining six mandates from legislation enacted in 1992 and 1996.
2. Requires 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 as the hazardous liquid and natural gas transmission pipelines.
3. Completes its internet-based system for monitoring its R&D project costs, schedules, and performance.

4. Finalizes and implements “best practices” for its internal review process, including procedures to review data quality and to ensure that the operators are providing current, complete, and accurate accident information. OPS should also take enforcement action against those operators who are not complying with the reporting requirements.
5. Completes its actions to close out the remaining five NTSB recommendations identified in this report.
6. Implements a formal internal policy and procedures for responding to NTSB recommendations so that key safety recommendations are addressed completely and in a timely manner in accordance with DOT policy.
7. Seeks clarification on the delineation of roles and responsibilities between itself and DOE.

MANAGEMENT COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

A draft of this report was provided to RSPA on May 4, 2004. In its comments, RSPA agreed in general with our recommendations and stated that work is underway to address all outstanding issues identified in the draft report. For six of seven recommendations, we consider RSPA comments to be positive and constructive, and RSPA actions taken and planned for the recommendations are reasonable. Specifically, RSPA agreed to ensure that OPS:

- Completes its actions on the remaining six mandates from legislation enacted in 1992 and 1996 by December 2004.
- Completes its internet-based system for monitoring its research and development projects’ costs, schedules, and performance by October 2004.
- Finalizes and implements “best practices” for its internal review process, including procedures to review data quality and to ensure that the operators are providing current, complete, and accurate accident information by March 2005.
- Completes its actions to close out the remaining five NTSB recommendations identified in this report by December 2005.
- Uses both the Department of Transportation (DOT) and RSPA’s policies and procedures for addressing NTSB recommendations. According to OPS, it is currently doing so.

- Clarifies its security roles and responsibilities with DOE by November 2004.

However, for one recommendation, RSPA comments were not fully responsive, and we are requesting some additional information.

We recommended that RSPA ensure that OPS 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 as the hazardous liquid and natural gas transmission pipelines.

In its response, RSPA stated that industry, state, and Federal regulators are now working to develop natural gas distribution IMPs, and that a public workshop to discuss IMP concepts is planned for December 2004. Other than indicating that it is working with the states and industry to develop an IMP for natural gas distribution pipelines and plans to hold a public workshop to discuss IMP concepts in December 2004, RSPA did not indicate when it expected to require an IMP for natural gas distribution pipelines. We requested that RSPA clarify this issue.

We are withdrawing our recommendation that RSPA ensure that OPS petition the DOT, through RSPA, to execute a Memorandum of Agreement or MOU with DHS, formalizing the security roles and responsibilities of OPS and DHS's Transportation Security Administration. Since we made this recommendation, DOT's Deputy Secretary has made it clear that an MOU is needed, and we understand that the Deputy Secretary has communicated this to DHS. Hopefully an MOU between DOT and DHS can be consummated by September 1, 2004. DOT should keep the appropriate Congressional committees apprised of its progress on the MOU with DHS.

In commenting on the findings in the draft report, there was one issue that RSPA believed needed to be clarified. In the draft report, we stated that natural gas distribution pipelines were excepted from integrity management safety mandates that govern hazardous liquid and natural gas transmission pipelines. According to RSPA:

The statement was misleading in that it implies that OPS have taken action to "except" gas distribution pipelines from the integrity management programs. The fact is, Federal law only mandated that transmission pipelines be assessed, so the Office of Pipeline Safety (OPS) only addressed transmission pipelines first.

We never intended to imply that OPS had excepted natural gas distribution from the IMPs and are aware that the Pipeline Safety Improvement Act of 2002 mandated IMPs for operators of only natural gas transmission pipelines. Section

14 of the 2002 Act required each operator of a gas pipeline facility²⁰ subject to 49 United States Code Section 60109 to adopt and implement an IMP. However, natural gas distribution pipelines are *excepted* from Section 60109 requirements. We have revised our report to clarify that operators of natural gas distribution pipelines are not required to implement IMPs.

²⁰ A gas pipeline facility is defined as new and existing pipeline, right-of-way, and any equipment, facility, or building used in the *transportation of gas* or in the treatment of gas during the course of transportation. Transportation of gas is defined as the “gathering, transmission, or *distribution* of gas by pipeline or the storage of gas, in or affecting interstate or foreign commerce [italics added].”

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INTRODUCTION

Background

The Office of Pipeline Safety (OPS) is responsible for overseeing the safety of the Nation’s pipeline system, an elaborate network of more than 2 million miles of pipe moving millions of gallons of hazardous liquids and more than 55 billion cubic feet of natural gas daily. Exhibit A contains a diagram of the natural gas pipeline system. Exhibit B contains a glossary of terms used in the pipeline industry.

The pipeline system is composed of predominantly three segments—natural gas transmission pipelines, natural gas distribution pipelines, and hazardous liquid pipelines—run by about 2,200 natural gas pipeline operators and 200 operators of hazardous liquid pipelines (as seen in Table 1). 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 130 small operators

Although moving commodities such as crude oil, diesel fuel, gasoline, and natural gas through pipelines is safer than moving the same commodities on other modes of transportation (e.g., barges, rail, trucks), pipeline incidents can have catastrophic consequences, such as the deadly pipeline rupture, explosion, and fire in the Bellingham, Washington, area in June 1999.

On June 10, 1999, a 16-inch-diameter pipe near Bellingham ruptured, discharging 237,000 gallons of gasoline into a nearby creek. The fuel ignited, killing three people and injuring eight others, with property damage estimated at \$45 million in 2002. In the largest criminal and civil settlement ever obtained in a pipeline rupture case, two pipeline companies agreed to pay \$113 million to resolve criminal and civil penalties arising from the accident and to ensure the safety of their pipelines. 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.

As a result of the accident, Senator Patty L. Murray requested that the Office of Inspector General (OIG) review OPS's role in promoting and overseeing pipeline safety. In March 2000, we reported 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), which also required OIG to assess OPS's progress to:

- Fulfill the pipeline safety mandates from legislation enacted in 1992 and 1996.
- Expand the focus of OPS research and development (R&D) to improve the capabilities of technologies used to inspect the integrity of pipeline systems.
- Design and implement a program to train safety inspectors on the use of internal inspection devices (referred to as "smart pigs"²¹ and the interpretation of the results.
- Correct shortcomings in collection and analysis of pipeline accident data.
- Establish timetables to implement open National Transportation Safety Board (NTSB) pipeline safety recommendations.

²¹ A "smart pig" is an instrumented internal inspection device that traverses a pipeline to detect potentially dangerous defects, such as corrosion.

Our recommendations were issued while OPS was finalizing its Pipeline Risk Management Demonstration Program,²² mandated by the Accountable Pipeline Safety and Partnership Act of 1996. According to OPS, this program was designed to “test whether allowing operators the flexibility to allocate safety resources through risk management is an effective way to improve safety, environmental protection, and reliability of pipeline operations.” OPS concluded from the results of the Demonstration Program that there was potential for developing effective safety management processes that would protect the public and environment and provide more useful information about the integrity of the Nation’s pipeline systems.

Consequently, this risk-based approach to overseeing pipeline safety evolved into what OPS has termed as “integrity management” and requires pipeline operators to develop integrity management programs (IMPs)²³ to “assess, evaluate, repair and validate through comprehensive analysis the integrity of pipeline segments that, in the event of a leak or failure, could affect populated areas, areas unusually sensitive to environmental damage and commercially navigable waterways.”

Objectives, Scope, and Methodology

Congress passed the Pipeline Safety Improvement Act of 2002, which mandates the Secretary of Transportation to implement the safety improvement recommendations made in the OIG’s Report Number RT-2000-069, “Pipeline Safety Program,” March 13, 2000. In addition, the 2002 Act requires the Inspector General to report periodically to Congress on the Secretary’s progress in implementing the recommendations and to identify options for the Secretary to consider in accelerating implementation of the recommendations.

The audit objective was to assess OPS’s progress in implementing the pipeline safety improvement recommendations included in our March 2000 report. Specifically, we assessed whether OPS has:

- Fulfilled the pipeline safety mandates from legislation enacted in 1992 and 1996,

²² OPS’s Pipeline Risk Management Demonstration Program comprised several projects nationwide that evaluated different aspects of pipeline systems’ operations for ways to improve safety management and performance.

²³ 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 program’s effectiveness, and (9) a process for review of integrity assessment results and data analysis by a qualified individual.

- Expanded the focus of OPS research and development programs to improve the capabilities of technologies used to inspect the integrity of the pipeline system,
- Designed and implemented a program to train safety inspectors on the use of internal inspection devices and the interpretation of inspection results,
- Improved the collection and analysis of pipeline accident data,
- Established an enforcement mechanism to ensure operators' accident reports are complete and accurate, and
- Established timetables to implement open NTSB pipeline safety recommendations.

In addition, with the need to protect the Nation's infrastructure of pipelines, we reviewed OPS's involvement in the security of the pipeline system.

The audit was conducted from May 2003 to January 2004 and covered OPS actions in implementing our recommendations for the period March 2000 through April 2004. We conducted our review in accordance with Government Auditing Standards prescribed by the Comptroller General of the United States.

To determine OPS's progress in responding to congressional mandates, we asked OPS officials to identify actions OPS has taken to implement these requirements. We then gathered and analyzed available documentation, OPS reports, and published rules in the DOT Docket Management System. To determine OPS's progress in responding to recommendations from the NTSB, we asked OPS to provide a progress report. We then interviewed NTSB's Director of the Office of Railroad, Pipeline, and Hazardous Materials Investigations about OPS's progress in responding to Board recommendations. In addition, we obtained from NTSB a detailed status report for each open pipeline recommendation.

During the audit we also met with state agencies, pipeline operators, congressional staff members, and industry representatives to better understand pipeline operations and safety issues. We performed work in OPS Headquarters and the OPS Eastern Region in Washington, D.C. We also visited or contacted the OPS Southern Region in Atlanta, Georgia; Southwestern Region in Houston, Texas; and Western Region in Denver, Colorado. We visited pipeline research contractors in Columbus, Ohio, and San Antonio, Texas. We observed a Pacific Gas and Electric pipeline excavation near Hollister, California. We also met with

state pipeline regulatory officials and inspectors from Olympia, Washington, and from Los Angeles, Sacramento, and San Francisco, California.

At each location, we conducted interviews with key program officials and, where possible, observed operations or pipeline repair demonstrations. We also analyzed performance goals, budget documents, accident report forms, accident investigation reports, internal memoranda, and other documents we considered germane to our audit objectives.

Prior Audit Coverage

On February 13, 2002, we testified before the House Committee on Transportation and Infrastructure, Subcommittee on Highways and Transit on the reauthorization of the Pipeline Safety Program. While we noted that the Research and Special Programs Administration (RSPA) has made progress in responding to recommendations made by OIG in a 2000 report, we identified six issues where additional work remains: (1) fulfilling long-overdue congressional mandates on integrity management of natural gas transmission pipelines and mapping of the pipeline system, (2) expanding pipeline safety R&D to improve the capabilities of internal inspection devices, (3) completing improvements in pipeline accident data collection and analysis, (4) training pipeline inspectors to use internal inspection devices and interpret test results, (5) completing baseline inspections by 2008 for all hazardous liquid and natural gas transmission pipelines, and (6) developing action plans for security roles among agencies.

On March 13, 2000, we issued Report Number RT-2000-069, “Pipeline Safety Program.” The report included six recommendations. First on the list was a recommendation to finalize the actions to implement 1992 and 1996 congressional mandates. The next two recommendations reflected OIG’s concern about smart pigs. We recommended that OPS expand its R&D program to develop more sophisticated internal inspection devices and explore ways to internally inspect pipelines that cannot accept smart pigs. We also recommended that OPS train its safety inspectors to read and interpret internal pipeline inspection results.

Accident reporting was also an area of concern. We recommended OPS revise its accident report forms to expand causal categories and to clarify instructions for completing the form. This recommendation was aimed at sharpening OPS’s trend analysis. To ensure the accident forms were updated as additional facts surfaced, we recommended a regulatory change to give OPS enforcement authority to compel operators to revise accident reports.

Finally, we noted that OPS did not provide NTSB with required enactment timetables for recommendations with which OPS agreed, and we recommended OPS establish these timetables and provide them to NTSB.

FINDINGS AND RECOMMENDATIONS

Since our March 2000 report, OPS has shown considerable progress in implementing congressional mandates and NTSB safety recommendations, but more needs to be done. For example, of the 31 mandates from legislation enacted in 1992 and 1996, 25 mandates have been implemented, 17 of which were implemented since our March 2000 report. Six mandates from legislation enacted in 1992 and 1996 remain open, and all are over 8 years past due.

Also, OPS has increased its research and development (R&D) funding to improve pipeline inspection methods, trained safety inspectors on the use of smart pig technologies, and corrected shortcomings in pipeline data collection and analysis, but these actions need ongoing attention and follow through to ensure continued success of the IMP and OPS's safety oversight.

The IMP is now under way for operators of hazardous liquid and natural gas transmission pipeline systems, but the IMP rules 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.*

Because IMP is in the early stages of implementation, there is clearly not enough evidence available to evaluate its effectiveness in strengthening pipeline safety. This is the first time that baseline integrity inspections are being established systemwide—starting with hazardous liquid pipelines—so there are no comparable benchmarks. While OPS has made progress in implementing the recommendations, the work is not done. The current situation is far from an “end state” for ensuring the safety of the Nation's pipeline system.

Mandates Implemented from 1992 and 1996 Legislation

Historically, OPS has been slow to implement critical pipeline safety initiatives and to improve its oversight of the pipeline industry. The lack of responsiveness has prompted Congress to repeatedly mandate basic elements of a pipeline safety program, such as requirements to inspect pipelines periodically and to use smart pigs to inspect pipelines. In recent years, however, OPS has initiated several actions to improve pipeline safety, such as requiring IMPs for pipeline operators, which they use to assess their pipelines for risk of a leak or failure, to take action to mitigate the risks, and to develop program performance measures.

The mandates from legislation enacted in 1992, 1996, and 2002 go a long way in promoting safe, reliable, and environmentally sound operations of the Nation's pipeline system. However, natural gas *distribution* pipelines are not required to implement the integrity management safety mandates that govern hazardous liquid and natural gas *transmission* pipelines. For the 10-year period from 1994 through 2003, accidents in natural gas distribution pipelines have resulted in more fatalities and injuries than hazardous liquid and natural gas transmission pipelines combined. Although OPS has moved forward with initiatives to enhance the safety of natural gas distribution pipelines, OPS needs to ensure that the pace of its efforts moves quickly enough given that there has been no steady decreasing trend in the number of accidents, fatalities, and injuries involving natural gas distribution pipelines. OPS needs to encourage and assist operators of natural gas distribution pipelines to develop IMPs that would protect the public and environment and provide more useful information about the integrity of the Nation's pipeline systems.

FULFILLING OUTSTANDING MANDATES

OPS has aggressively moved forward in the past 3 years in implementing many of the mandates from legislation enacted in 1992 and 1996. Of the 31 mandates from legislation enacted in 1992 and 1996, 25 have been implemented, 17 of which were implemented since our March 2000 report. OPS has also made considerable progress in meeting the 23 mandates enacted in the 2002 Act. The most noteworthy of those mandates:

- Required IMPs for operators of hazardous liquid and natural gas transmission pipelines, and
- Defined environmentally sensitive and high-density population areas and established inventories of pipelines in these areas.

Also 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 Act of 2002. This is also a noteworthy accomplishment because in order 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.

NPMS is 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.

As a result, Government agencies and industry have access to reasonably accurate pipeline data in the event of emergency or potentially hazardous situations. The public also has access to contact information about pipeline operators within their specified geographic areas.

Table 2 identifies a selection of actions taken by OPS to implement mandates since our March 2000 report.

Table 2. Selection of OPS Actions To Implement Mandates Since Our March 2000 Report

Issuance Date	Final Rules Issued by RSPA/OPS to Implement Mandates
9/8/2000	Final rule requiring that a report of abandonment be submitted to the Secretary of Transportation by the last operator of an abandoned natural gas or hazardous liquid pipeline facility that is located offshore or crosses under, over, or through a commercially navigable waterway
12/1/2000	Final rule requiring operators of 500 miles or more of hazardous liquid pipelines to develop integrity management programs
12/21/2000	Final rule defining areas unusually sensitive to environmental damage
1/8/2002	Final rule relating to the reporting of accidents involving hazardous liquid pipelines
1/14/2002	Final rule on repair provisions for hazardous liquid pipelines pertaining to the integrity management program
1/16/2002	Final rule extending integrity management programs to operators of less than 500 miles of hazardous liquid pipelines
8/6/2002	Final rule defining areas of high consequence where the potential consequences of a gas pipeline accident may be significant or may do considerable harm to people and their property
12/15/2003	Final rule requiring operators to develop integrity management programs for natural gas transmission pipelines

It is important to note that even though some rules have been issued in their final form, they will not be fully implemented for many years. For example, as part of the rules requiring integrity management programs for operators:

- The operators of more than 500 miles of hazardous liquid pipelines have 7 years from the effective date of the final rule to complete baseline inspections to determine the existing condition of their pipelines. The baseline inspections period for these hazardous liquid pipeline operators will not end until March 2008.

Prior to the issuance of the final rule, there had been considerable debate on whether the initial baseline inspection period of 7 years was excessive and that a 5-year timeframe might be more desirable given the importance of the information to be developed during baseline inspections. However, because smart pigs are the preferred method for conducting pipeline assessments under the rule, reasonable estimates of growth rates for the smart pig industry would have made a 5-year timeframe difficult to achieve. A 7-year timeframe appeared more feasible.

- The operators of less than 500 miles of hazardous liquid pipelines have 7 years from the effective date of the final rule to complete baseline inspections to determine the existing condition of their pipelines. The final rule went into effect February 15, 2002, meaning that the baseline inspection period for these hazardous liquid pipeline operators will not end until February 2009.
- The operators of natural gas transmission pipelines are required to begin baseline integrity inspections no later than June 17, 2004, with inspections completed no later than December 17, 2012.

Although OPS has made significant progress, several mandates remain outstanding, with most awaiting final rulemaking. Currently, six mandates from legislation enacted in 1992 and 1996 remain outstanding. All are over 8 years past due. Table 3 identifies those mandates OPS has yet to implement since our March 2000 report.

- Two of the six mandates that would require periodic inspections of all offshore and navigable waterway hazardous liquid and natural gas pipeline facilities are in rulemaking, and OPS expects final rules to be issued in August 2004.
- One mandate, a report due to Congress on a study concerning how to abandon underwater pipelines, is in the clearance process with an expected release in July 2004.
- Two mandates, which are a decade overdue, would define “natural gas and hazardous liquid gathering lines” so as to determine which lines can

and should be regulated. OPS published a Notice of Proposed Rulemaking (NPRM) in the Federal Register on natural gas gathering lines for comment and discussion in March 1999 and published an advisory bulletin in October 2002. This mandate is still under discussion, with a supplemental notice expected in December 2004. OPS expects to issue a NPRM on hazardous liquid gathering lines for comment in December 2004.

- One mandate is still under discussion, with a final rule expected in August 2004. This mandate would clarify a requirement that new and replaced hazardous liquid and natural gas transmission pipelines be able to accommodate smart pigs.

Table 3. Status of Outstanding Mandates from Legislation Enacted in 1992 and 1996

Pipeline Act & Section	Mandate	Status
1992 <i>Sec. 108</i>	Require periodic inspection of all offshore and navigable waterway natural gas pipeline facilities	NPRM published and awaiting public comment, final rule expected August 2004
1992 <i>Sec. 207</i>	Require periodic inspection of all offshore and navigable waterway hazardous liquid pipeline facilities	NPRM published and awaiting public comment, final rule expected August 2004
1992 <i>Sec. 307(b)</i>	Prepare a report to Congress on a study concerning how to abandon underwater pipelines	Report is in the clearance process, report expected July 2004
1992 <i>Sec. 109(b)</i>	Define and regulate natural gas gathering lines	NPRM comments under discussion, supplemental notice expected December 2004
1992 <i>Sec. 208(b)</i>	Define and regulate hazardous liquid gathering lines	OPS is coordinating with the states and industry to develop a definition, NPRM expected December 2004
1996 <i>Sec. 4e(1)</i>	To the extent possible, new and replaced hazardous liquid and natural gas transmission pipelines must accommodate smart pigs	Final rule issued in April 1994, but enforcement was stayed by OPS for some gas transmission pipelines in rural areas; final rule on the stay expected August 2004

NPRM: Notice of Proposed Rulemaking

OPS officials explained that daily workload, staffing, other priorities, and the unpredictable nature of rulemaking and administrative processing have slowed implementation of these mandates. For example, they explained that as part of the rulemaking process, the Office of the Secretary and Office of Management and Budget each must clear significant rules. Each of these clearances can take as little time as a day or as long as 90 days.

While we acknowledge rulemaking can be a lengthy and unpredictable process, in our opinion OPS can and should focus on expediting final rule implementation for these long-outstanding mandates from legislation enacted in 1992 and 1996, as all are over 8 years past due with the oldest mandates 11 years past due. Also, the Secretary has taken an active interest in improving DOT's rulemaking process and has emphasized to senior DOT managers the need to ensure that rules are completed in a timely manner or that problems and issues causing delays are identified and fixed.

CLOSING THE SAFETY GAP ON NATURAL GAS DISTRIBUTION PIPELINES

The Nation's natural gas distribution system makes up 1.8 million miles (over 85 percent) 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, businesses, and industries. Nearly all of the natural gas distribution pipelines are located in highly populated areas, such as business districts and residential communities, where a rupture could have the most significant consequences.

However, integrity management safety mandates that govern hazardous liquid and natural gas *transmission* pipelines do not apply to natural gas *distribution* pipelines. For example, the Pipeline Safety Improvement Act of 2002 requires that the operators of a natural gas facility implement IMPs. However, the IMP requirement only applies to operators of natural gas *transmission* pipelines. As part of the IMP rule, operators of 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.²⁴

According to officials of the American Gas Association, the initial reason for not requiring operators of natural gas distribution pipelines to have IMPs is that distribution pipelines cannot be inspected using smart pigs. The smart pig technologies currently available cannot be used in natural gas distribution

²⁴ 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.

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 IMPs for operators of natural gas distribution pipelines. 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.

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. Of the major pipeline accidents occurring from January 1, 1994, through December 31, 2003, OPS’s data show (as seen in Table 4) accidents in natural gas distribution pipelines (1,228 accidents) were 50 percent *fewer* than accidents in hazardous liquid and natural gas transmission pipelines combined (2,458 accidents). However, 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.

**Table 4. Pipeline Accidents, Fatalities, and Injuries
January 1994 through December 2003**

Type of Pipeline Segment	Total Number of Accidents	Total Number of Fatalities	Total Number of Injuries	Average Number of Fatalities per Year	Average Number of Injuries per Year
Natural Gas Distribution	1,228	174	662	17.4	66.2
Hazardous Liquid	1,666	17	81	1.7	8.1
Natural Gas Transmission	792	26	97	2.6	9.7

Also, the average number of fatalities and injuries per year caused by natural gas distribution pipelines (17 and 66, respectively), exceeds the average number of 4 fatalities and 18 injuries per year caused by hazardous liquid and natural gas transmission pipelines accidents combined. The risk is greater that there will be more fatalities and injuries when an accident involving natural gas distribution pipelines occurs, given that nearly all of these pipelines are concentrated in highly populated areas, both in residential communities and business districts (.14 fatalities per accident for natural gas distribution versus .01 for hazardous liquid and .03 for natural gas transmission pipelines).

Furthermore, accidents involving natural gas distribution pipelines can be as catastrophic as accidents involving hazardous liquids or natural gas transmission pipelines. For example, on December 11, 1998, in downtown St. Cloud, Minnesota, a communications crew ruptured an underground plastic gas distribution pipeline causing an explosion that killed 4 people, seriously injured 1 person, 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 other residents. Rescue efforts were halted for more than 90 minutes while utility workers searched for a way to cut off the gas to the site.

Since OPS's new pipeline safety program is based on managing risks from a system perspective, it seems contradictory to exclude natural gas distribution pipelines from integrity management rules, given this segment of the industry's safety record over the 10-year period beginning in 1994. For that period, OPS's data show that there has been no steady decreasing trend in the number of accidents, fatalities, and injuries involving natural gas distribution pipelines.

In fact, 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 (as seen in Table 5). 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.

**Table 5. Pipeline Fatalities and Injuries for the Period
January 2001 to December 2003**

Year	Natural Gas Distribution	Natural Gas Transmission	Hazardous Liquids
2001	5 Fatalities 46 Injuries	2 Fatalities 5 Injuries	0 Fatalities 10 Injuries
2002	9 Fatalities 45 Injuries	1 Fatality 5 Injuries	1 Fatality 0 Injuries
2003	11 Fatalities 58 Injuries	1 Fatality 8 Injuries	0 Fatalities 5 Injuries
3-Year Total	25 Fatalities 149 Injuries	4 Fatalities 18 Injuries	1 Fatality 15 Injuries

OPS’s data also show that excavation damage was the leading cause of accidents involving natural gas distribution pipelines. In the past 5 years (1999-2003), 46 percent of the accidents involving natural gas distribution pipelines were caused by excavation damages, with a high of 49 percent in 2003. To address this concern, OPS undertook an initiative called the Common Ground Study of One-Call Systems and Damage Prevention Best Practices. This initiative involved a broad spectrum of more than 160 damage prevention stakeholders to identify, define, and agree on best practices that governed all aspects of damage prevention, including excavation, at underground facilities. One such best practice of damage prevention is holding a pre-excavation meeting with owners/operators who have underground facilities in the area of the proposed excavation.

Although OPS has moved forward with this and other initiatives²⁵ 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, as well as the projected increase in distribution pipelines to meet the increasing demand for natural gas. According to the Department of Energy, the demand for natural gas in the United States is likely to increase 50 percent by 2020.

OPS has the basic authority to issue standards requiring IMPs that cover natural gas distribution pipelines. 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 as the hazardous liquid and natural gas transmission pipelines. This would be consistent with OPS’s risk-based approach to overseeing pipeline safety using IMPs to reduce the risk of accidents that may cause injuries or fatalities to people living or

²⁵ With OPS support, the American Gas Foundation is sponsoring a study that identifies the practices distribution operators use to manage the integrity of their distribution systems and the areas where improvements could be made.

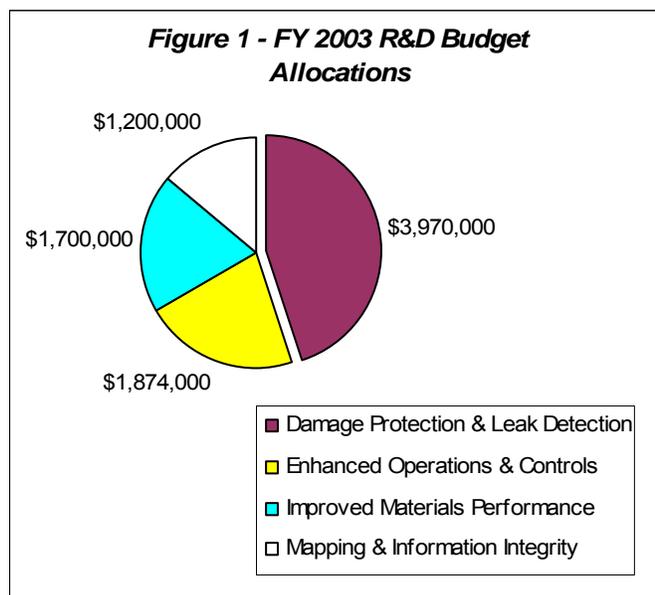
working near natural gas distribution pipelines, as well as to reduce property damage.

R&D Funding and Pipeline Inspection Technologies

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

As is shown in Figure 1, recent R&D funding has focused on damage protection and leak detection, enhanced operations and controls, improved materials performance, and mapping and information integrity. These projects address technological solutions that can be quickly implemented (preferably within 2 years) to improve pipeline safety.

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.



R&D projects currently funded have increased in size and scope, from a single project before 2001 to 22 active projects in 2004. These projects 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. With the increase in R&D spending and activity, the 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. This becomes an even larger challenge as an estimated 10 to 15 additional R&D projects are planned to begin in late 2004.

We visited two major research facilities doing work for OPS to evaluate projects' progress and oversight. Of eight internal inspection research projects we reviewed, four projects were behind schedule, did not file quarterly performance reports, or both.

For example, a contract awarded to the Battelle Memorial Institute for a 24-month project was scheduled to begin October 1, 2002. However, the project was delayed 12 months due to a lack of industry funding,²⁶ and work did not start until October 2003. The project was scheduled to be completed in September 2004 but has been extended another 6 months, with a projected completion date of March 2005. This project is unique in that it will improve the capabilities of smart pigs to detect and measure both corrosion and mechanical damage. 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. The expected project outcome is a smart pig that is simpler to build and use.

At the time of our visits to the research facilities, OPS had just one inspector monitoring all eight projects. OPS recognized the need to increase its R&D oversight and has assigned additional staff to monitor the projects. Also, OPS has developed and implemented an internet-based system to electronically manage pre-award activities (e.g., issuance of announcements, receipt and review of proposals). OPS is developing a component to monitor post-award activities, such as managing project costs, schedules, and performance.

OPS needs to complete its internet-based system component for monitoring post-award activities of these projects to ensure that viable, reliable, cost-effective technologies become readily available to meet the requirements of the IMP and to ensure efficient and effective management of its R&D funds. To augment its electronic monitoring of project schedule, costs, and performance, OPS also needs to ensure that staff who oversee the projects make periodic visits to the research facilities. Contractor performance and product quality are best observed during on-site visits to the research facilities.

²⁶ OPS funds up to 50 percent of a project's costs but no more than \$500,000 per project. Under an agreement between OPS and the research institutes, project participants are required to contribute at least 50 percent of the project cost.

Training Needs for Smart Pig Operations

To read and interpret the results of a smart pig inspection requires a skilled and trained inspector. Before FY 2002, there was no OPS course designed to provide its inspectors with the knowledge and skills required to evaluate smart pigging programs of natural gas and hazardous liquid pipelines.²⁷ Recognizing the need to address this issue, in December 2001, OPS implemented such a course. OPS IMP inspectors are required to take this course as part of their advanced training in assessments of the pipeline operators' IMPs. As of May 31, 2004, 110 Federal and state inspectors have taken the advanced training, with an additional 58 Federal and state inspectors scheduled to do so by the end of 2004.

Also, IMP inspectors are actively overseeing the IMP implementation through their assessments of hazardous liquid pipeline operators' IMP plans—the first segment of the industry required to implement the IMP. As of April 30, 2004, results from OPS's IMP assessments disclosed, among other things, that (1) the 63 largest operators of hazardous liquid pipelines have undergone IMP assessments, (2) smart pigs were used by the pipeline operators about 70 percent of the time to conduct their baseline integrity inspections of hazardous liquid pipelines, and (3) more than 20,000 integrity threats were remediated as part of the operators' IMPs.

Of the more than 20,000 threats that have been identified and repaired 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 repairs where remediation activities are not considered time-sensitive. OPS's remediation criteria encompass a broad range of actions, which include mitigative measures (e.g., reducing the pipeline pressure flow) as well as repairs that an operator can take 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 repairs.

The challenges inspectors face during a review of an operator's baseline integrity inspection results is 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.

²⁷ All OPS inspectors are required to take an awareness course on internal inspection technologies as part of their 9-course basic training.

With the expected increase in use of smart pigs as the preferred inspection tool and with research underway to advance smart pig technology, OPS must now ensure its inspector workforce knowledge base is commensurate with the increased usage of and technological advances in smart pigs. OPS's IMP assessments have found that operators of hazardous liquids pipelines used smart pigs about 70 percent of the time to conduct their pipeline inspections and strongly favored the use of smart pigs over alternative inspection methods available under the IMP. Also, it is expected that increased funding in smart pig R&D will improve on the technology to allow more pipeline mileage to be inspected using smart pigs instead of alternative inspection methods.

Current training course curricula may have to be revised to account for the increased usage of and advances in the technologies used to inspect the integrity of pipeline systems. For example, R&D is currently underway to develop a smart pig that is capable of detecting and measuring both corrosion and mechanical damage. Smart pigs currently in use can successfully detect and measure corrosion but are not reliable in detecting mechanical damage. IMP inspectors will need to be aware of this technological breakthrough when it happens and become familiar with the function, proper selection, and use of a multi-detecting/measuring smart pig and its data.

Pipeline Accident Data Collection and Analysis

Data collection and analysis of pipeline accidents have been longstanding problems at OPS. In 1997, the NTSB noted significant problems with pipeline accident data collection and analysis and recommended that OPS revise its reporting forms and instructions to eliminate overlapping and confusing categories and to include new, more descriptive causal categories. OPS took over 6 years to revise all its reporting forms and instructions.

In January 2002, OPS made available new reporting forms and instructions for accidents involving natural gas transmission and hazardous liquid pipelines, increasing the number of causal categories from 4 to 25 for natural gas transmission pipelines and from 7 to 25 for hazardous liquid pipelines. In March 2004, OPS made available a new reporting form and instructions for accidents involving natural gas distribution pipelines, increasing the number of causal categories from 5 to 25. The new reporting forms and instructions also require operators to indicate if the data being provided are initial, supplemental, or final.

With the added causal categories, OPS will have access to far more detailed information about the various causes of pipeline accidents. Inspectors in the OPS regions are required to assess accident reports to ensure that the operators are, at a

minimum, complying with the reporting form instructions and providing reliable and timely data about the accident, which can be verified by requesting additional accident information from the operator. In the past, the lack of a comprehensive internal review process has been a weakness in the collection of complete and accurate accident information.

We examined this internal review process and found that the assessment procedures varied among OPS's regions. Some regions reviewed all submitted reports, others reviewed only reports on interstate pipelines inspected by OPS, and one region was not reviewing any of the reports. In our discussions about these inconsistencies, OPS officials stated the procedures were new, being pilot-tested in one region, and still a work in progress, but they acknowledged the need to ensure the consistency of regional reviews.

After accidents, OPS needs to effectively assess root causes, identify appropriate corrective actions, and ensure that the operator provides the most current accident information when additional information becomes available. To do this, OPS began improving its process of internal review of accident information by developing written guidelines and conducting the first of several quarterly sessions of formal training for personnel responsible for the internal review process. According to OPS, training will be ongoing until it has established best practices for internal review of operator accident information.

As more accident data are collected, data analysis becomes an integral component in assessing and evaluating the performance of the IMP, identifying safety trends, and reporting program results, such as in the annual performance report to Congress required under the Government Performance and Results Act. However, the quality of OPS's data analysis and reporting is only as good as the timeliness, completeness, and accuracy of data submitted by the operators. At the time of our review, the requirement that operators use the new accident reporting forms and instructions was in the early stages of implementation, and it was too soon to tell whether the new accident reporting forms and instructions would improve the comprehensiveness and quality of data.

As we have seen in other DOT programs, the quality and timeliness of the data are key to an effective program. We recently reported on the Federal Motor Carriers Safety Administration's (FMCSA) Motor Carrier Safety Status Measurement System (SafeStat)²⁸ and found that significant problems existed with the data motor carriers and the states provide to FMCSA, such as errors and omissions in the data records. These data problems limited SafeStat's effectiveness and introduced bias into the ranking process for targeting high-risk motor carriers.

²⁸ Report Number MH-2004-034, "Improvements Needed in the Motor Carrier Safety Status Measurement System," February 13, 2004.

To avoid future problems and to ensure that operators' data can be relied on to help target its oversight resources, OPS needs to finalize and implement the best practices for its internal review process, including procedures to review data quality to ensure that the operators are providing complete and accurate accident information. As part of its data quality review, OPS should include reviews of source documentation to make sure accident data submitted to OPS by the pipeline operators are complete and accurate. OPS should take enforcement action against those operators who are not complying with the reporting requirements.

Closing-out Long-overdue NTSB Safety Recommendations

The NTSB is an independent Federal agency charged, in part, with investigating pipeline accidents involving a fatality or substantial property damage. NTSB recommendations—issued to OPS through RSPA—are intended to prevent future accidents and promote safety. DOT policy requires its Operating Administrations to reply to NTSB recommendations within 90 days of receipt. For recommendations with which the Operating Administration concurs, the response must include an implementation timetable. Timetables establish completion dates and allow RSPA to measure OPS's progress in implementing NTSB recommendations. DOT policy also requires that all actions proposed in response to NTSB's recommendations be pursued expeditiously.

PROGRESS IN IMPLEMENTING NTSB RECOMMENDATIONS

We found OPS has closed out 21 of 23 NTSB safety recommendations we identified in our March 2000 report. One of the remaining two open NTSB recommendations is considered by OPS as being in the close-out phase (i.e., acceptable action taken by OPS, close-out letter to NTSB for review).²⁹ Nevertheless, some of these recommendations had been open for 15 years, with acceptable actions just recently having been completed. For the 21 recommendations OPS closed, we found an average issuance-to-closure time of 6.4 years, with a range of 3.3 years to 17.1 years. Some of the recommendations had been open since the early 1990s and were the catalysts for many of the mandates in legislation enacted in 1992 and 1996.

Since our March 2000 report, OPS has shown considerable progress in fully implementing NTSB recommendations. OPS has received 13 new NTSB recommendations, of which 8 have been closed; 7 of those 8 recommendations

²⁹ Exhibit C contains a list of NTSB recommendations that remain open.

were closed within 2 years of issuance. OPS expects the remaining five open recommendations to be closed by the end of 2005, within 4 years of issuance.

OPS should continue expeditiously implementing all open NTSB recommendations, especially the recommendations addressing issues that are fundamental to the integrity of the pipeline system. One such recommendation still open requires OPS to revise its regulations so that new or replaced pipelines be designed and constructed with features to mitigate internal corrosion. The significance of this recommendation cannot be overstated, as corrosion is the second leading cause of pipeline accidents.

OPS RESPONSES OFTEN NOT TIMELY OR COMPLETE

As we reported in March 2000, OPS's responses to NTSB recommendations were often incomplete and not timely: 21 of 23 NTSB recommendations selected for review were without timetables. Of the 13 new recommendations OPS received since our March 2000 report, only 3 were processed in accordance with DOT policy. OPS did not respond to NTSB on five recommendations within the required 90 days, and five responses did not include an implementation timetable.

OPS officials agreed their processing was deficient for those 10 new recommendations. Further, they acknowledged they did not have specific written policy and procedures addressing NTSB recommendation processing. However, they disagreed that written procedures would correct the problems we identified and felt a documented process explaining how to accomplish their daily work was both impractical and unnecessary. Nonetheless, without the additional written procedural guidance, there is insufficient assurance that key safety recommendations will be addressed in a timely manner or completely.

Pipeline Security Roles and Responsibilities

Threats of attacks on the Nation's pipeline infrastructure existed before September 11, 2001. For example, in December 1999, Federal agents arrested two anti-government militia members for plotting to detonate 24 million gallons of liquid propane at a storage facility in Elk Grove, California. This event prompted OPS to establish requirements for operators of liquid petroleum gas facilities to develop:

- Security procedures, including security patrols of the facility,
- Instructions for actions to be taken if a security breach occurs,

- Methods for determining which persons are allowed access to the plant,
- Positive identification of persons entering the plant,
- A liaison with local law enforcement to keep them informed about current security procedures, and
- Training of security personnel according to a written plan of instructions on security procedures.

For pipelines containing liquids other than liquid petroleum gas, OPS requires operators to provide protection for each pumping station and other exposed facility from vandalism and unauthorized entry.

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 advance 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.

OPS estimates pipeline companies responsible for the operation of about 90 percent of the Nation's pipelines have submitted a security plan and a certification letter. During 2003, OPS in conjunction with the Transportation Security Administration (TSA) initiated a review of operator security plans. The plans reviewed have been judged responsive to the OPS guidance.

PIPELINE SECURITY ROLES AND RESPONSIBILITIES NEED TO BE SOLIDIFIED

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.

This ongoing issue has caused considerable debate among Federal, state, and local governments on where the lines of authority should be drawn. Although OPS took the lead to help reduce the risk of terrorist activity against the Nation's pipeline infrastructure following September 11, 2001, OPS has stated it now plays a secondary role to TSA, which has primary responsibility for ensuring the security of the Nation's pipeline system.

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:

- Assigned the Department of Homeland Security (DHS) the responsibility for coordinating the overall national effort to enhance the protection of the Nation's critical infrastructure and key resources.
- Assigned the Department of Energy (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 (1) on all matters relating to transportation security and transportation infrastructure protection, and (2) in regulating the transportation of hazardous materials by all modes, including pipelines.

Although HSPD-7 directs DOT and DHS to collaborate, it is not clear from an operational perspective what "to collaborate" encompasses, and it is also not clear what DOT's relationship will be with DOE. To be useful in the operating environment, the delineation of roles and responsibilities between DOT and DHS needs to be solidified. As a matter of national security, this collaborative effort should be solidified through a binding legal document, such as a Memorandum of Agreement or Memorandum of Understanding. Also, OPS needs to seek clarification on roles and responsibilities between itself and DOE.

RECOMMENDATIONS

We recommend that RSPA ensures that OPS:

1. Completes its actions on the remaining six mandates from legislation enacted in 1992 and 1996.

2. 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 as the hazardous liquid and natural gas transmission pipelines.
3. Completes its internet-based system for monitoring its R&D project costs, schedules, and performance.
4. Finalizes and implements “best practices” for its internal review process, including procedures to review data quality, to ensure that the operators are providing current, complete, and accurate accident information. OPS should also take enforcement action against those operators who are not complying with the reporting requirements.
5. Completes its actions to close out the remaining five NTSB recommendations identified in this report.
6. Implements a formal internal policy and procedures for responding to NTSB recommendations so that key safety recommendations are addressed completely and in a timely manner in accordance with DOT policy.
7. Seeks clarification on roles and responsibilities between itself and DOE.

MANAGEMENT COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

In responding to a draft of this report, RSPA agreed in general with our recommendations and stated that work is underway to address all outstanding issues identified in the draft report.

OPS provided specific comments on the recommendations, detailing the corrective actions planned or ongoing to close out our recommendations. For Recommendations 1, 3, 4, 5, 6, and the second part of 7, we consider OPS comments to be positive and constructive, and OPS actions taken and planned for the recommendations are reasonable. However, for Recommendation 2, RSPA comments were not fully responsive, and we are requesting some additional information. We are also withdrawing the first part of Recommendation 7.

OPS’s comments to Recommendations 1, 3, 4, 5, and 6 are summarized below.

- **Recommendation 1. Concur.** OPS agreed to complete its actions on the remaining six mandates from legislation enacted in 1992 and 1996 by December 2004.
- **Recommendation 3. Concur.** OPS is expected to finalize its internet-based system for monitoring R&D project costs, schedules, and performance by October 2004.
- **Recommendation 4. Concur.** OPS is currently pilot testing new procedures for its internal review process. Expected completion of best practices is March 2005.
- **Recommendation 5. Concur.** OPS agreed to complete provided updated actions and completion dates for NTSB recommendations that remain open since our March 2000 report.
- **Recommendation 6. Concur.** OPS agreed to close out the remaining five NTSB recommendations identified in this report by December 2005.
- **Second part of Recommendation 7. Concur.** OPS agreed to clarify its security roles and responsibilities between itself and DOE.

OPS's comments and OIG responses to **Recommendations 2** are summarized below.

- **Recommendation 2. Concur.** OPS stated that before the passage of the Act of 2002, it challenged industry to develop a framework to gas distribution IMPs, and further stated that industry, state, and Federal regulators are now working to develop natural gas distribution IMPs and that a public workshop to discuss IMP concepts is planned for December 2004.

Other than indicating that it is working with the states and industry to develop and IMP for natural gas distribution pipelines and plans to hold a public workshop to discuss IMP concepts in December 2004, RSPA did not indicate when it expected to require an IMP for natural gas distribution pipelines. We requested that RSPA clarify this issue.

We are withdrawing our recommendation that RSPA ensure that OPS petition the DOT, through RSPA, to execute a Memorandum of Agreement or MOU with DHS, formalizing the security roles and responsibilities of OPS and DHS's Transportation Security Administration.

Since we made this recommendation, DOT's Deputy Secretary has made it clear that an MOU is needed, and we understand that the Deputy Secretary has

communicated this to DHS. We hope an MOU between DOT and DHS can be consummated by September 1, 2004. DOT should keep the appropriate Congressional committees apprised of its progress in consummating an MOU with DHS.

In commenting on the findings in the draft report, there was one issue that RSPA believed needed to be clarified. In the draft report, we stated that natural gas distribution pipelines were excepted from integrity management safety mandates that govern hazardous liquid and natural gas transmission pipelines. According to RSPA:

The statement was misleading in that it implies that OPS have taken action to “except” gas distribution pipelines from the integrity management programs. The fact is, Federal law only mandated that transmission pipelines be assessed, so the Office of Pipeline Safety (OPS) only addressed transmission pipelines first.

We never intended to imply that OPS had excepted natural gas distribution from the IMPs and are aware that the Pipeline Safety Improvement Act of 2002 mandated IMPs for operators of only natural gas transmission pipelines. Section 14 of the 2002 Act required each operator of a gas pipeline facility subject to 49 United States Code Section 60109 to adopt and implement an IMP. However, natural gas distribution pipelines are *excepted* from Section 60109 requirements. We have revised our report to clarify that operators’ natural gas distribution pipelines are not required to implement IMPs.

EXHIBIT A. GAS PIPELINE SYSTEM DIAGRAM

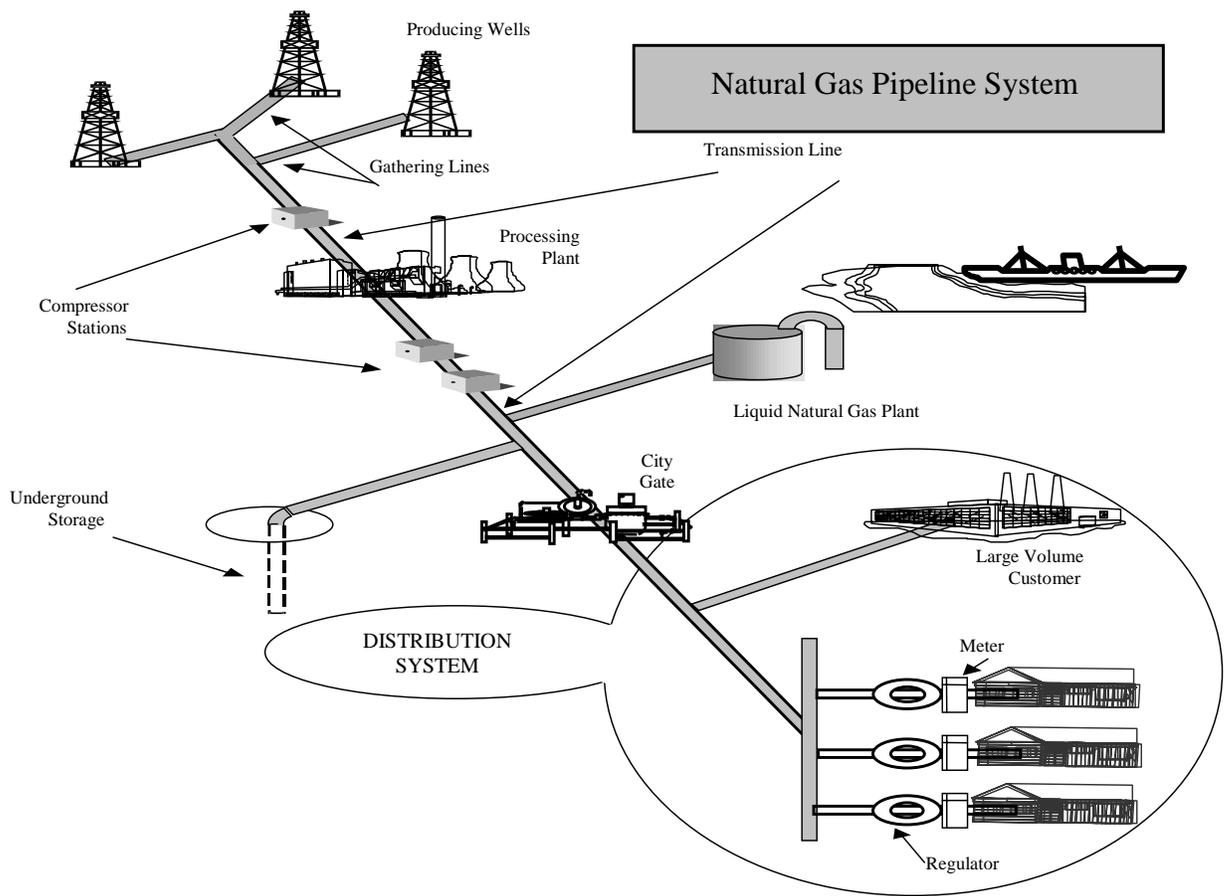


EXHIBIT B. GLOSSARY OF PIPELINE TERMS

Corrosion	Destruction of a metal by a chemical or electrochemical reaction with its environment.
Distribution	The act or process of delivering gas from the city gate or plant to the consumers.
Distribution System	Generally the mains, services, and equipment that carry or control the supply of gas from the point of local supply to and including the sales meters.
Gathering Line	A pipeline, usually of small diameter, used in moving gas or hazardous liquid from the field to a central point.
Gathering System	A network of pipelines transporting natural gas from individual wells to the compressor station, processing point, or main trunk pipeline.
High-Consequence Area	Regions of the United States where the consequences of a hazardous liquid leak or spill could be considered significant. This includes unusually sensitive areas of the environment, dense population areas (urbanized areas identified by the Census Bureau), other populated areas (other areas of concentrated population defined by the Census Bureau), and commercially navigable waterways.
Inline Inspection (ILI)	A method of inspecting a pipeline using an internal inspection device or smart pig. ILI is also known as Internal Inspection or Smart Pigging. Different ILI techniques and tools are designed to detect defects on the internal and external surfaces of the pipe. Defects can include corrosion, dents, metal loss, and cracks.
Interstate Gas	Gas transported in pipelines to be sold and consumed in states other than the state in which the gas was produced.
Intrastate Gas	Gas sold and consumed in the state in which it is produced and not transported in interstate pipelines.

Operator	An entity that manages and controls a facility and the product moving through that facility. The operator performs the day-to-day operations, contract scheduling, and communications and routinely monitors, tests, and repairs facilities and/or measurement equipment. The operator is not necessarily the owner. A producer-operator operates a well.
Pipeline	All parts of those physical facilities through which gas or hazardous liquids are moved in transportation, including pipe, valves, and other appurtenances attached to pipe; compressor units; metering stations; regulator stations; delivery stations; holders; and fabricated assemblies.
Smart Pig (Intelligent Inspection Device)	An instrumented inspection device that is inserted into the pipeline and pushed through the line by pressure of the flowing gas or liquids. Smart pigs can detect certain irregularities in the pipe wall and record the existence, location, and relative severity of the irregularities using recording equipment carried on board the pig. The pig is later recovered and its data examined to identify the existence and severity of pipeline irregularities.
Transmission System	Pipelines that transmit gas from a source or sources of supply to one or more distribution centers, to one or more large volume customers, or to a pipeline installed to interconnected sources of supply. In typical cases, transmission lines differ from gas mains in that they operate at higher pressures, they are longer, and the distance between connections is greater.

EXHIBIT C. NTSB RECOMMENDATIONS THAT REMAIN OPEN SINCE OUR MARCH 2000 REPORT

Rec. No. and Date Issued	Action Needed	Status
P-90-29 Issued 10/1/90	Develop and implement, with the assistance of the Minerals Management Service, the U.S. Coast Guard, and the U.S. Army Corps of Engineers, effective methods and requirements to bury, protect, inspect the burial depth of, and maintain all submerged pipelines in areas subject to damage by surface vessels and their operations	Acceptable action taken per OPS, close-out letter at NTSB for review
P-98-25 Issued 10/16/98	Require pipeline system operators to precisely locate and place permanent markers at sites where their gas and hazardous liquid pipelines cross navigable waterways	OPS is working with the Common Ground Alliance on a best practice, closure expected December 2005
P-01-02 Issued 6/22/01	Require that excess flow valves be installed in all new and renewed gas service lines, regardless of a customer's classification, when the operating conditions are compatible with readily available valves	OPS states work continues, NPRM expected summer of 2005
P-02-01 Issued 8/2/02	Establish quantitative criteria, based on engineering evaluations, for determining whether a wrinkle may be allowed to remain in a pipeline	Acceptable action taken per OPS, close-out letter at NTSB for review
P-02-04 Issued 10/11/02	Develop and issue guidance to pipeline operators on specific testing procedures that can be used to approximate actual operations during the commissioning of a new pumping station or the installation of a new relief valve and determine during annual tests whether a relief valve is functioning properly	OPS states NTSB will close based on issuance of valve testing guidance bulletin, closure expected November 2004
P-03-01 Issued 2/27/03	Require that new or replaced pipelines be designed and constructed with features to mitigate internal corrosion	OPS is evaluating rulemaking options, NPRM expected summer of 2005

Rec. No. and Date Issued	Action Needed	Status
P-03-03 Issued 2/27/03	Evaluate OPS's pipeline operator inspection program to identify deficiencies that resulted in the failure of inspectors, before the Carlsbad, NM, accident, to identify the inadequacies in the El Paso Natural Gas Company's internal corrosion control program; implement the changes necessary to ensure adequate assessments of pipeline operator safety programs	OPS states work is completed, closure is expected in October 2004

OPS: Office of Pipeline Safety
NPRM: Notice of Proposed Rulemaking
NTSB: National Transportation Safety Board

EXHIBIT D. MAJOR CONTRIBUTORS TO THIS REPORT

THE FOLLOWING INDIVIDUALS CONTRIBUTED TO THIS REPORT.

<u>Name</u>	<u>Title</u>
Scott Macey	Program Director
Greggory S. Bond	Project Manager
Stephen L. Jones	Senior Auditor
Kim P. Tieu	Senior Auditor
Earl G. Kindley	Auditor
Robert Y. Lee	Auditor
Susan M. Zimmerman	Auditor
Kathleen Huycke	Writer-Editor
Petra Swartzlander	Statistician



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

Memorandum

Date JUN - 3 2004

Reply to Attn. of:

Subject: Comments on Draft Report on Actions Taken and Needed for Pipeline Safety Project No. 03B3006B000

From Samuel G. Bonasso
Deputy Administrator

To: Kenneth M. Mead
Inspector General

Thank you for the opportunity to comment on the contents and conclusions in the Office of the Inspector General's (OIG) Draft Report on Actions Taken and Needed for Improving Pipeline Safety (Project No. 03B3006B000) as provided to Deputy Administrator, RSPA by memorandum of May 4, 2004. We appreciate the care and attention that the OIG audit staff has devoted to understanding the pipeline safety program. We agree in general with the OIG's seven recommendations and have work underway to address all outstanding issues. See attachment for proposed actions and completion dates. There is one important issue that we believe should be clarified.

The draft report stated that "[o]ne segment of the pipeline system remains excepted from integrity management safety mandates." The statement is misleading in that it implies that OPS has taken action to "except" gas distribution pipelines from the integrity management programs. The fact is, Federal law only mandated that transmission pipelines be assessed, so the Office of Pipeline Safety (OPS) only addressed transmission pipelines first. We agree that the safety issues posed by distribution pipelines need to be addressed through an appropriate integrity management program requirement once we have some experience with gas transmission pipelines. We have always known that distribution pipelines were the next step in the integrity management program.

In fact in 2002, before the passage of the Pipeline Safety Improvement Act of 2002 (PSIA), we challenged the industry to develop a framework for gas distribution integrity management. The OPS gave presentations to two industry groups: the first was on May 13, 2002 at the American Gas Association (AGA) Operations Conference, and the second on August 20, 2002 at the American Public Gas Association (APGA) Annual Conference. Please reference the attached presentations. On slide 15 of the presentation to the AGA and on slide 14 of the presentation to the APGA, OPS discussed the need to develop a framework for gas distribution integrity management programs.

In these presentations, OPS challenged the membership of the AGA and the APGA to take the lead in vetting parameters for a program. OPS will then review these concepts along with its own findings at the appropriate time when we take action within the Department on an integrity management program for distribution pipelines. This is a proven approach that OPS employs to gain buy-in from industry when improvements are needed.

In answer to the OPS challenge, the American Gas Foundation formed the Distribution Infrastructure Government-Industry Group (DIGIG). On May 14, 2004, OPS provided the OIG audit team a copy of the charter (see attached). The DIGIG consists of industry representatives and State regulators (our interstate partners) with OPS as an observer. It evaluates safety performance, current operating and regulatory practices, and emerging technologies for gas distribution pipelines. The DIGIG is expected to provide guidance on how to apply integrity management principles to gas distribution systems. OPS plans to initiate pilot programs as appropriate to provide practical demonstration of these principles.

I hope these comments are helpful in preparation of the final report. In addition, we are providing some suggestions for miscellaneous editorial corrections as an attachment. If I can provide further information or assistance, please contact me or James Wiggins, Director of Policy and Program Support at (202) 366-4978.

Attachments (5)

OPS RESPONSE TO DRAFT REPORT RECOMMENDATIONS – PROPOSED ACTIONS AND COMPLETION DATES

1. Completes its actions on the remaining six mandates from legislation enacted in 1992 and 1996.

Response: Please note updated actions and completion dates in the status column of the following table.

Status of Outstanding Mandates from Legislation Enacted in 1992 and 1996

Pipeline Act & Section	Mandate	Status
1992 <i>Sec. 108</i>	Require periodic inspection of all offshore and navigable waterway natural gas pipeline facilities	Notice of Proposed Rulemaking (NPRM) published and awaiting public comment. Final rule expected August 2004.
1992 <i>Sec. 207</i>	Require periodic inspection of all offshore and navigable waterway hazardous liquid pipeline facilities	NPRM published and awaiting public comment. Final rule expected August 2004.
1992 <i>Sec. 307(b)</i>	Prepare a report to Congress on a study concerning how to abandon underwater pipelines	Report is in clearance process. Report expected July 2004.
1992 <i>Sec. 109(b)</i>	Define and regulate natural gas gathering lines	NPRM comments under discussion, supplemental notice expected December 2004.
1992 <i>Sec. 208(b)</i>	Define and regulate hazardous liquid gathering lines	OPS is coordinating with the states and industry to develop a definition, NPRM expected December 2004.
1996 <i>Sec. 4e(1)</i>	To the extent possible, new and replacement natural gas transmission pipelines, or hazardous liquid pipeline facilities, must accommodate internal inspection devices	Final rule issued in April 1994, but enforcement was stayed by OPS for some gas transmission pipelines in rural areas; final rule on the stay is expected in December 2004.

2. 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 as the hazardous liquid and natural gas transmission pipelines.

Response: Before the passage of the Pipeline Safety Improvement Act of 2002 (PSIA) OPS challenged the industry to develop a framework for gas distribution integrity management programs. OPS made these challenge to the American Gas Association on May 13, 2002 and to the American Public Gas Association on August 20, 2002. The industry, state and Federal Regulators are now working to develop a natural gas distribution integrity management program. A public workshop to discuss concepts an effective gas distribution integrity management program is planned for December 2004.

3. Completes its internet-based system for monitoring its R&D projects' costs, schedules, and performance.

Response: OPS will finalize its internet-based system in conjunction with the publication of the fourth R & D Broad Agency Announcement. Expected completion is October 2004.

4. Finalizes and implements "best practices" for its internal review process, including procedures to review data quality, to ensure that the operators are providing current, complete, and accurate accident information. OPS should also take enforcement against those operators who are not complying with the reporting requirements.

Response: OPS is currently pilot testing new procedures with all of the regional offices. Each region is reviewing monthly status reports and the data team is holding quarterly meetings to develop best practices. OPS currently enforces accident reporting requirements. Expected completion of "best practices" is March 2005.

5. Completes its actions to close out the remaining five NTSB recommendations identified in this report.

Response: Please note updated statements on actions and completion dates in the status column of the following table.

**NTSB RECOMMENDATIONS THAT REMAIN OPEN SINCE OIG'S
MARCH 2000 REPORT**

Recommendation No. and Date Issued	Action Needed	Status
P-90-29 Issued 10/1/90	Develop and implement, with the assistance of the Minerals Management Service, the U.S. Coast Guard, and the U.S. Army Corps of Engineers, effective methods and requirements to bury, protect, inspect the burial depth of, and maintain all submerged pipelines in areas subject to damage by surface vessels and their operations.	OPS has taken acceptable action. Close-out letter is at the NTSB for review.
P-98-25 Issued 10/16/98	Require pipeline system operators to precisely locate and place permanent markers at sites where their gas and hazardous liquid pipelines cross navigable waterways.	OPS is working with the Common Ground Alliance on a best practice. OPS expects to request closure December 2005.
P-01-02 Issued 6/22/01	Require that excess flow valves be installed in all new and renewed gas service lines, regardless of a customer's classification, when the operating conditions are compatible with readily available valves.	OPS continues to work on this controversial issue. OPS plans to publish a NPRM in the summer of 2005.
P-02-01 Issued 8/2/02	Establish quantitative criteria, based on engineering evaluations, for determining whether a wrinkle may be allowed to remain in a pipeline.	OPS has taken acceptable action. Close out letter is at the NTSB for review.
P-02-04 Issued 10/11/02	Develop and issue guidance to pipeline operators on specific testing procedures that can be used to approximate actual operations during the commissioning of a new pumping station or the installation of a new relief valve and determine during annual tests whether a relief valve is functioning properly.	OPS expects the NTSB will close recommendation based on issuance of a valve testing guidance bulletin. OPS expects to publish a bulletin and request closure in November 2004.
P-03-01 Issued 2/27/03	Revise 49 Code of Federal Regulations Part 192 to require that new or replaced pipelines be designed and constructed with features to mitigate internal corrosion.	OPS is evaluating rulemaking options. OPS estimated publication of a NPRM in the summer of 2005.

<p>P-03-03 Issued 2/27/03</p>	<p>Evaluate OPS's pipeline operator inspection program to identify deficiencies that resulted in the failure of inspectors, before the Carlsbad, New Mexico, accident, to identify the inadequacies in the El Paso Natural Gas Company's internal corrosion control program. Implement the changes necessary to ensure adequate assessments of pipeline operator safety programs.</p>	<p>This recommendation is addressed by gas integrity management inspection protocols, inspector training and new NACE standards for internal corrosion. OPS expects to request closure in October 2004.</p>
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6. Implements a formal internal policy for responding to NTSB recommendations so that key safety recommendations are addressed completely and in a timely manner in accordance with DOT policy.

Response: OPS is using both the DOT and RSPA policies and procedures for addressing NTSB recommendations.

7. Petition the DOT, through RSPA, to execute a Memorandum of Agreement or Memorandum of Understanding with DHS, formalizing the security roles and responsibilities of OPS and TSA. OPS should also seek clarification on the delineation of roles and responsibilities between itself and DOE.

Response: There is no need for OPS to petition the Department for establishment of a MOU with DHS. The Deputy Secretaries of DOT and DHS have already agreed to produce an MOU between DOT and DHS on security matters. It is to be a general agreement supplemented with annexes on specific topics, with the first three being rail security; transit security and hazmat security. A future annex on pipeline security will follow. This is a Departmental priority to be completed as soon as practical. OPS will clarify its roles and responsibilities regarding security with DOE by November 2004.



U.S. Department
of Transportation

**Research and
Special Programs
Administration**



Preparation

James K. O'Steen

Equals

Dep. Assoc. Admin. for Pipeline Safety

Performance

May 13, 2002



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

Gas Distribution

- Outside force damage major cause of pipeline failure
- Time to address integrity management program for distribution systems
- Need to develop a framework for distribution IMP
- Damage prevention will be a major part
- Industry efforts in operational excellence have been great
- Challenge you to reconstitute quality teams to address distribution IMP framework



U.S. Department
of Transportation

**Research and
Special Programs
Administration**



Preparation

James K. O'Steen

Equals

Dep. Assoc. Admin. for Pipeline Safety

Performance

August 20, 2002



U.S. Department
of Transportation

**Research and
Special Programs
Administration**

Gas Distribution Integrity Management

- Need to develop a framework for a distribution IMP
- Outside force damage major cause of pipeline failure
- Damage prevention will be a major part
- Industry efforts in operational excellence will also play a major part
- Challenge you to start addressing a distribution IMP framework

DISTRIBUTION INFRASTRUCTURE GOVERNMENT-INDUSTRY GROUP

CHARTER

Overview

The American Gas Foundation (AGF) has commissioned a study to assess the Nation's gas distribution infrastructure by evaluation of safety performance, current operating and regulatory practices and emerging technologies.

Mission & Scope

The Distribution Infrastructure Government-Industry Group (DIGIG) is established to enable Operators of natural gas distribution facilities and government authorities overseeing natural gas pipeline safety to provide direction, review, and endorsement to the AGF study. The outcome will be communicated to the U.S. Department of Transportation (DOT) along with recommendations on how to proceed.

Organization

The DIGIG shall be comprised of equal number of Members and Observers from industry and the states, and a secretary to attend to the group's matters. In addition, DOT will participate as Observers.

There shall be an Industry Co-chair and a State Co-chair, selected from among the Members to serve indefinite terms.

Both industry and state Members represent respective constituencies.

Membership

State Members shall be selected from the National Association of Pipeline Safety Representatives (NAPSR) and the National Association of Regulatory Utility Commissioners (NARUC).

Industry Members shall be selected from sponsor utilities of the American Gas Foundation, American Gas Association (AGA), and the American Public Gas Association (APGA).

Each Observer may be selected at the discretion of the DIGIG Member group the Observer represents.

With the approval of the member group Co-chairs, Observers may serve as Alternates when a given Member is absent.

Committee Process

Meetings shall be held as often as necessary as determined by the Members.

A consensus process shall be used to agree on specific items brought before the DIGIG for consideration. Consensus is defined here as: *A decision which all Members or designated Alternates present at the meeting can agree upon. The decision may not be everyone's first choice, but the group finds it an acceptable means of addressing the issue presented.*

All Members' opinions are equal.

Observers may comment, but not participate in the consensus process unless representing Members as designated Alternates.

Amendments

Amendments to this Charter shall be approved by the Members. All proposed amendments shall be adopted by consensus.

Sunset

Dissolution of the DIGIG as an organization shall be by consensus of its Members.

ATTACHMENT

Miscellaneous Editorial Comments on *Draft Report on Actions Taken and Needed for Improving Pipeline Safety* (Project No. 03B3006B000).

1. The term “natural gas” should be changed to “gas” throughout the report. Part 192 applies to all gas pipelines, whether carrying natural gas, liquefied petroleum gas, or some other flammable, toxic, or corrosive gas.

2. Reference: page iv line 3

“The baseline assessment period for these hazardous liquid pipeline operators will not end until March 2008”

OPS comment: OPS suggests that the term “baseline inspection” be substituted for “baseline assessment” to more correctly characterize the requirement. Under the integrity management rules for hazardous liquid pipeline operators, we are requiring inspections to establish a baseline assessment of pipe conditions.

3. Reference: page xi line 35 and onto page xii

“... unlike its pipeline safety program, OPS’ security guidance is not mandatory.”

OPS comments: Under HSPD-7 the Department of Homeland Security (DHS) is the lead agency for ensuring the security of critical transportation infrastructure.