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Reauthorization of the Pipeline Safety Program

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Mr. Chairman, Congressman Borski, and Members of the Subcommittee:

We appreciate the opportunity to be here today to discuss the reauthorization of the Department of Transportation's pipeline safety program.

The Nation's pipeline infrastructure includes roughly 2.2 million miles of pipe, including 156,000 miles of hazardous liquid transmission pipelines, 325,000 miles of natural gas transmission pipelines, and 1.7 million miles of natural gas distribution pipelines.¹ These pipelines carry vast quantities of natural gas, petroleum products, and other materials to fuel our commercial and consumer demands. Pipelines are a relatively safe way to transport energy resources and other products, but they are subject to forces of nature, human actions, and material defects that can cause potentially catastrophic accidents.

The Department's Office of Pipeline Safety (OPS), a part of the Research and Special Programs Administration (RSPA), is responsible for overseeing the safety of the Nation's interstate pipeline system. OPS regulations contain minimum safety standards that pipeline companies must meet for the design, construction, inspection, testing, operation, and maintenance of their pipelines. In general, OPS retains full responsibility for inspecting pipelines and enforcing regulations on interstate pipelines, and certifies states to perform these functions for intrastate pipelines.

Following the deadly pipeline explosion and fire in Bellingham, Washington, in June 1999, Senator Patty Murray requested the Office of Inspector General to review the activities of OPS. Our March 2000 audit report and our May 2000 testimony before the Senate Commerce Committee identified needed improvements in OPS's oversight of the pipeline infrastructure. Specifically, we found that RSPA needed to (1) implement unmet congressional safety mandates, (2) expand pipeline safety research and development, (3) correct shortcomings in pipeline accident data collection, and (4) provide specialized pipeline inspector and operator training. RSPA generally agreed with our recommendations and progress has been made since that time, but more needs to be done.

- Long overdue mandates on integrity management of natural gas transmission pipelines and mapping of the pipeline system remain unfulfilled.

¹ The 156,000 miles of primarily interstate hazardous liquid pipelines transport products such as crude oil, diesel fuel, gasoline, jet fuel, anhydrous ammonia, and carbon dioxide. The 325,000 miles of primarily interstate natural gas transmission pipelines transport natural gas from sources to communities. The 1.7 million miles of primarily intrastate natural gas distribution pipelines transport natural gas from transmission pipelines to residential, commercial, and industrial customers.

- Pipeline safety research and development must be expanded to improve the capabilities of internal inspection devices. Congress has increased RSPA's research budget and some of those funds need to be directed toward expanding RSPA research on new inspection technologies for pipelines.
- Pipeline accident data collection and analysis improvements that are needed to focus and measure program performance are incomplete. RSPA lacks the in-house analytical capability to effectively assess root causes of pipeline accidents. RSPA needs to complete the hiring and training of the 26 staff authorized in 2002.
- Pipeline inspectors have not been trained in using internal inspection devices and interpreting test results. With the industry's growing reliance on internal inspection devices (smart pigs), OPS needs to ensure that it has available the necessary technical skills and training to independently interpret internal inspection data and make safety recommendations.
- Baseline inspections for all hazardous liquid and natural gas transmission pipelines can be completed by 2008. Although we had initially hoped that a 5-year interval for both the initial and recurrent inspections might be feasible, reasonable growth rates for the internal inspection industry will make a 2007 deadline difficult to achieve. A 2008 deadline, however, appears feasible as well as a 5-year interval for reinspection.
- Security roles among agencies need to be defined and action plans developed. Given the events of September 11, 2001, RSPA needs to work closely with relevant Federal agencies in enhancing the security of the Nation's pipelines, without impeding the supply of energy needed for National Defense and by residential and business communities.

My testimony today will address these six issues.

FIRST, RSPA HAS MADE PROGRESS IN IMPLEMENTING CONGRESSIONAL SAFETY MANDATES, ALTHOUGH MORE WORK REMAINS. These requirements date from legislation enacted in 1992 and 1996, and some of the mandates are as much as 7 years late in implementation. The key mandates are defining environmentally sensitive and high-density population areas, establishing inventories of pipelines in these areas, and requiring increased pipeline inspections.

Actions Completed. Since our testimony in May 2000, RSPA has made significant progress in issuing a number of important pipeline safety rules. On December 1, 2000, RSPA issued a final rule addressing pipeline integrity management for high consequence areas for pipeline operators of 500 miles or more of pipeline.² This rule required continual assessment and evaluation of pipeline integrity through inspection or testing; data integration and analysis; and follow-up remedial, preventive, and mitigative actions.

² 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 (HCA); (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 HCAs; (8) methods to measure the integrity management program's effectiveness; and (9) a process for review of integrity assessment results and data analysis by a qualified individual.

On December 21, 2000, RSPA issued a long overdue (congressional deadline of 1994) final rule addressing pipeline safety and areas unusually sensitive to environmental damage. This rule defined drinking water and ecological areas that are unusually sensitive to environmental damage if there were a hazardous liquid pipeline release. A year later, RSPA issued a third final rule addressing corrosion control. It changed some of the corrosion control standards to improve the clarity and effectiveness of the standards and reduce the potential for pipeline accidents due to corrosion.

So far this year, RSPA has issued three additional final rules. On January 8, 2002, a rule was issued relating to the reporting of accidents involving hazardous liquid pipelines. This rule lowered the spill (or release) reporting threshold, established 25 causal categories, and revised the reporting form. On January 14, 2002, another rule was issued finalizing repair provisions for hazardous liquid pipelines pertaining to the integrity management program. Finally, on January 16, 2002, RSPA issued a rule extending integrity management requirements for operators of less than 500 miles of hazardous liquid pipelines.

Actions Needed. Although RSPA has made significant progress, several rules still are under development. RSPA recently issued a Notice of Proposed Rulemaking (NPRM) proposing to define areas of high consequence where the

potential consequences of a gas pipeline accident may be significant or may do considerable harm to people or their property. The comment period for this rule closes March 11, 2002. RSPA is still doing outreach with industry on issues associated with integrity management requirements for natural gas transmission pipelines and an NPRM has not yet been issued.

OPS still needs to complete a long overdue mapping system for the thousands of miles of existing and future pipelines as mandated by Congress in 1992. Since 1994, OPS has worked with industry to create a National Pipeline Mapping System (NPMS) that depicts the location of major pipelines. RSPA requested, through NPMS, that operators voluntarily submit location data for OPS to develop the nationwide pipeline inventory.

By January 2002, OPS reported that pipeline operators had voluntarily submitted inventories for 90 percent of hazardous liquid pipelines and 52 percent of natural gas pipelines, or 64 percent of total pipeline mileage. However, OPS's original goal was to collect 70 percent of the pipeline mileage by the end of 2000. This progress is too little, too late. *OPS should move forward on a rulemaking for mandatory reporting of these data immediately and not wait to collect the remaining natural gas pipeline data as part of the natural gas integrity management rulemaking.*

Furthermore, it is important to note that those rules that have been issued in their final form will not be fully implemented for many years. For example, the baseline assessment periods for hazardous liquid pipeline operators will not end until 2008 and 2009.

SECOND, PIPELINE SAFETY RESEARCH AND DEVELOPMENT MUST BE EXPANDED TO IMPROVE THE CAPABILITIES OF INTERNAL INSPECTION DEVICES. Previous OPS research has concluded that internal inspection devices (often referred to as "smart pigs") can detect certain defects in a pipeline before failures occur. However, they have limited capabilities to pinpoint stress corrosion cracks, longitudinal mechanical damage, defects in seam welds and pipe materials, and have operating limitations in a natural gas environment.

Specifically, a pipe's size, configuration, angle bends, and valve designs can prohibit a smart pig from moving inside the pipeline.³ One of the most significant hurdles is that natural gas transmissions pipelines were not designed for use of pigs, and will most likely require modifications for their use. For those pipelines that cannot accommodate a smart pig, operators must rely on visual inspections and hydrostatic pressure testing to check the condition of the pipe. However,

³ According to a December 2000 Interstate Natural Gas Association of America survey, smart pigs could be used in 55 percent of natural gas transmission pipelines. In comparison, the American Petroleum Institute estimates that approximately 89 percent of all hazardous liquid pipelines could accommodate smart pigs.

visual inspections can only look for evidence of leaks at the surface, and hydrostatic tests stress the pipe material and can cause microfractures or crack defects harmful to the pipe.

OPS must expand research to develop new inspection technologies for pipelines that cannot accommodate a smart pig. Between Fiscal Years (FY) 2001 and 2003, if the Administration's 2003 proposal were enacted, RSPA's research and development budget would increase by 222 percent, from \$2.7 million to \$8.7 million.⁴ In FY 2003, over \$3.9 million will be allocated for damage prevention and leak detection research. These budget increases will permit RSPA to begin needed technological research in the following areas:

- Improving the capabilities of smart pigs to detect pipe defects, such as stress corrosion cracks, longitudinal mechanical damage, and defects in seam weld and pipe materials;
- Enhancing technologies to detect the severity of pipeline corrosion; and
- Developing technologies for internal inspection and monitoring of pipelines that cannot accommodate smart pigs.

⁴ RSPA's enacted research funds for FY 2002 were \$4.7 million.

Such improvements in technology will provide needed data on the condition of the pipeline system. Without such data, both the industry and OPS are limited in their ability to identify and address potential pipeline problems before they occur.

THIRD, PIPELINE ACCIDENT DATA COLLECTION AND ANALYSIS IMPROVEMENTS NEEDED TO FOCUS AND MEASURE PROGRAM PERFORMANCE ARE INCOMPLETE.

RSPA needs to improve its internal analytical capability to effectively assess root causes of pipeline accidents and to identify appropriate corrective actions. This is especially important given OPS's recent revision to its accident report forms for hazardous liquid and natural gas transmission pipelines, which expanded the number of causal categories to 25 (from 7 and 4, respectively). With the added causal categories, OPS will have access to far more detailed information from operators on the various causes for pipeline accidents. OPS needs to complete the hiring and training of the 26 additional positions authorized in its FY 2002 budget, and establish the capability to perform this causal analysis.

FOURTH, PIPELINE INSPECTORS HAVE NOT BEEN TRAINED IN USING INTERNAL INSPECTION DEVICES AND INTERPRETING TEST RESULTS.

OPS needs to ensure Federal and state pipeline inspectors are capable of providing the necessary technical oversight as operators move to implement their integrity management programs. Oversight skills and training are needed by both Federal and state inspectors to improve their oversight of operator risk assessments and integrity

management and to ensure consistent implementation of pipeline inspection regulations.

An important element of an integrity management program is the use of smart pigs as a tool for monitoring pipeline conditions. Specialized skills (e.g., interpreting smart pig results) are essential for pipeline inspectors to make more comprehensive safety assessments and to ensure pipeline operators are qualified to do their jobs, thereby reducing the probability and consequences of serious accidents. Yet, historically, OPS has not trained its inspectors on how to interpret data obtained from such inspection devices. As a result, the OPS inspection force relies on reports prepared by pipeline operators or smart pig vendors for general information. The only technical training currently available is from the pigging industry.

According to an OPS official, this particular skill requires a higher level of competency than can be expected from classroom or computer-based training. Therefore, they are training their workforce in general assessment skills, and plan to rely on third party contractors for specialized support. The addition of this technical skill will provide the Government with the necessary tools to independently assess a pipeline's condition and to make safety recommendations. OPS needs to expedite efforts to obtain the required contractor support.

FIFTH, BASELINE INSPECTIONS FOR ALL HAZARDOUS LIQUID AND NATURAL GAS TRANSMISSION PIPELINES CAN BE COMPLETED BY 2008. In our May 2000 testimony we noted that proposed, extended intervals for both baseline inspections of pipelines, 7 years, and re-inspection, 10 years, seemed excessive given the importance of the information to be developed in the inspections. Since that time, we have examined the capability of the internal inspection industry to grow to meet the demand for inspection of both hazardous liquid and natural gas pipelines. Although we had hoped that a 5-year interval for both the initial and recurrent inspections might be feasible, reasonable growth rates for the internal inspection industry will make a 2007 deadline difficult to achieve, but a 2008 deadline appears feasible. A reinspection interval of 5 years thereafter is feasible and one we recommend.

SIXTH, SECURITY ROLES AMONG AGENCIES NEED TO BE DEFINED AND ACTION PLANS DEVELOPED. The events of September 11, 2001, reinforced the need to protect our critical infrastructure such as pipelines. The Nation's infrastructure of pipelines for carrying hazardous liquids and natural gas includes critical elements that, if interrupted, could pose a serious threat to national defense and/or economic security.

Many agencies are potentially involved in the security of the pipeline system including the new Transportation Security Agency, RSPA, the Department of

Energy, the Federal Energy Regulatory Commission, and state and local governments. To avoid duplication of effort or conflicting requirements, the role of each agency must be defined and coordinated. Once roles are clearly assigned, then a common action plan must be developed that will enhance the security of the Nation's pipelines without impeding the supply of energy needed for National Defense and by residential and business communities.

Mr. Chairman, this concludes my statement. I would be happy to answer any questions.