UNITED STATES DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

Oversight Hearing on

BP's Pipeline Spills at Prudhoe Bay: What Went Wrong?

Before the
Committee on Energy and Commerce
Subcommittee on Oversight and Investigations
United States House of Representatives

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WRITTEN STATEMENT OF VADM THOMAS J. BARRETT, USCG (RET.)
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U.S. DEPARTMENT OF TRANSPORTATION
BEFORE THE
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I. INTRODUCTION

Chairman Barton, Ranking Member Dingell, members of the Subcommittee, thank you for the invitation to appear today. I am pleased to discuss the actions of the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) to oversee safe operations of BP Exploration pipelines on the North Slope of Alaska.

The responsibility for safety rests first with the operator. Our mission is achieving and maintaining the safe, environmentally sound and reliable operation of the nation's pipeline transportation system. This requires understanding the condition of pipelines in the U.S. and assuring that operators take action to address any unsafe condition. We manage oversight based on risk and take a "systems approach" to setting priorities. We make full use of the authority given us in the Pipeline Safety Improvement Act of 2002. Our progress with integrity management programs positioned us well to take effective action when the BP low stress transit line failed in Prudhoe Bay March 2nd. I believe quick DOT/PHMSA action was crucial to improving the performance of

BP since the first incident. Only as a result of additional controls we imposed could limited operation of these key pipelines continue.

Over the past six years, PHMSA has designed and executed a risk-based systems approach to oversight of the national pipeline infrastructure. As to regulatory framework, we undertook rulemaking projects on a risk prioritized basis, acting first on those parts of the infrastructure that posed the greatest risk to people and then the environment. To begin the program, we defined high consequence areas and mapped the locations, including areas unusually sensitive to environmental damage, previously defined in regulation in 2000, in the National Pipeline Mapping System. We completed and implemented regulations which provided integrity management protections for people and the environment that could be affected by a failure from high pressure, large and small hazardous liquid pipelines and provided protections to people that could be affected by high pressure gas transmission pipelines. We began considering this rulemaking in 2003, with discussion in our advisory committees, followed by public meetings in 2004.

The BP transit pipelines that failed in Prudhoe Bay were not regulated by DOT. On August 31 we offered a proposal to bring these lines under Federal oversight. Our rulemaking proposal provides for robust integrity protections, including corrosion control with cleaning and continuous monitoring, integrity assessment, leak detection and other measures for low stress pipelines. The proposal is the last remaining element in our regulatory framework designed to protect unusually sensitive environmental areas from low pressure pipelines in rural locations. The

proposal would mandate a level of care well in excess of what BP had in place in the lines that failed. The recent BP pipeline failures in Alaska are not indicative of the safety of the national pipeline infrastructure which has a steadily improving safety record. Furthermore, BP's low stress lines in Alaska are not a characteristic of other low stress pipelines in the U.S. lower 48 states. We believe that most other unregulated low stress pipelines are operated to a higher standard of care similar to that underlying our regulatory proposal, based on the record developed in connection with our rulemaking proposal.

Since the March 2 spill of 200,000 gallons of crude oil we have been working steadily to ensure BP adequately addresses the safety, integrity and reliability of all of the company's pipelines. While PHMSA was not previously regulating BP's three low pressure transit lines in Prudhoe Bay, following the spill we exercised our statutory authority to protect life and the environment. These pipelines will remain under DOT orders as long as we believe they pose a threat to life and the environment.

II. WHAT DOT HAS DONE TO RESPOND TO THE FAILURES

PHMSA has been on the job since the response began. When the accident occurred on a segment of 34" diameter above ground pipeline in the Western Operating Area referred to as OT21 on March 2, we offered our assistance on cleanup to the Unified Command conducting the response operation, under leadership of the Environmental Protection Agency (EPA). Shortly thereafter, PHMSA notified EPA, the Department of the Interior, and state agencies, as well as the Joint Pipeline Office (JPO), of our intent to exercise statutory jurisdiction over

these three transit lines by issuing a Corrective Action Order (CAO) and bring them under the regulatory authority of the DOT, essentially taking the Federal oversight role in the remediation and repair of the failed line. Our order covered the Western Operating Area line, which failed in March, as well as the Eastern Operating Area and the Lisburne lines, a total of 22 miles. Our mission is and remains ascertaining the condition of these lines, understanding the failure mechanisms, and assuring that the operator takes all needed action to keep them operating safely in the future.

Our Corrective Action Order started with the fundamentals of requiring BP Exploration Alaska, Inc. (BPXA) to determine the condition of its pipelines and to repair defects. First, we ordered BPXA to run what are known as cleaning or maintenance pigs in order to remove solids in the line and to perform in-line inspections, known as smart pigging, in order to understand the pipe condition from the inside out. Second, we directed more frequent testing, and an enhanced corrosion management plan, including changing the mix of corrosion inhibitors to improve corrosion prevention. We required running cleaning pigs on a routine basis to remove water and other constituents that could contribute to internal corrosion. Third, we set standards for assuring integrity of each of BPXA's low stress pipelines in service. Fourth, we dispatched the first of many inspection teams to inspect the pipe that failed, assess the cause of failure, review operations and maintenance records, monitor operations, including testing, inspect repairs, and verify compliance with our requirements. Our inspection indicated the probable cause of the failure on March 2 to be internal corrosion. According to records

provided by BPXA to the agency, the line that failed had been operating at a very low pressure, well below the 20 percent of designed yield strength that would have been the threshold for DOT regulation. BPXA's records indicate that this pipeline was designed to operate at approximately 825 psi and BPXA was operating it at about 80 psi. Most of the line is above ground on vertical and horizontal supports. The pipeline is bare steel pipe, covered with thermal insulation, surrounded with a steel jacket. The pipeline had been hydrostatically tested in 1977, and was internally inspected with a smart pig in 1990 and 1998. We found no history of previous failure. A leak detection system was installed and working but did not sound during the leak.

Until recently, BPXA has not moved as swiftly as we would have expected to comply with key requirements of our orders – namely, the requirements to clean and smart pig its low stress lines. We provided an extension in March to allow BPXA to collect more information, and a second extension in April, pushing the first deadline to June 12, 2006, more than three months after the spill. Soon after we issued the order, BPXA advised PHMSA that it would not be able to comply with the requirements to "smart pig" the lines within the specified time period, the critical step in meeting our objective of having the best possible understanding of the condition of the pipelines.

On May 23, PHMSA dispatched a more comprehensive field investigative team to evaluate all potential integrity threats to the transit lines along with BPXA programs to mitigate those threats. The team reviewed BPXA's overall program to manage the transit lines, assessed

findings emerging from the monitoring plan, reviewed inspection records, observed testing procedures used on the transit lines, toured all facilities, interviewed technicians, reviewed qualifications of personnel, inspected test records, and reviewed the leak detection system. The team suggested improvements for BPXA's Interim Monitoring Strategy such as increased corrosion monitoring points to reduce the potential that vulnerable locations not be overlooked. PHMSA directed BPXA to increase the inspection frequency to provide an early warning of any unanticipated corrosion acceleration. We directed that more stringent repair thresholds be incorporated in the program and asked that communications be improved between analysts and field teams. We also required improved patrolling of the lines. Since the May field inspection, we have maintained a field oversight presence at all times to ensure the operator was taking the actions necessary to maintain safety.

Based on our analysis to date, we believe that internal corrosion, induced by microbial activity, caused the pipe to deteriorate at the point where it failed on March 2 – a low section in a caribou crossing. Typically, operators control this type of corrosion through a combination of cleaning pigs and biocide injections. The cleaning pig is usually necessary to deliver the biocide to the pipe wall and to disperse active bacteria colonies.

We do not understand why BPXA did not address these problems more aggressively much earlier. BPXA could have used cleaning pigs to clean out liquids accumulating in low spots within its low stress pipelines. Further, there is a high likelihood that cleaning pigs would have

improved the effectiveness of the biocide or corrosion inhibitor by getting the chemicals to the wall of pipeline without the interference of solids and other deposits. Given the many risk factors in the North Slope environment, including use of water in the production process, the chemistry of the crude oil product itself, and the varied geologic factors in the production field, it is very puzzling that BP did not choose to run cleaning pigs. From information provided by companies who operate in less challenging environments in response to the public meetings held in conjunction with the rulemaking for low stress pipelines, we believe most operators demonstrate a higher standard of care in their operations, regardless of whether they are federally regulated or not.

On June 6, BPXA sought a further extension of the deadlines for the pigging, contending that factors beyond their control would make it impossible to complete the required pigging until the latter half of 2007. They proposed an alternative plan they claimed would provide safety equal to what could be accomplished with a smart pig until the three transit lines could be smart pigged. We denied the requested extension but issued an order making clear to BP that we were not requiring it to shut down its operations on the basis of its failure to meet the pigging deadlines. We had preliminarily reviewed the alternative test procedures and the testing data furnished by BPXA, and did not believe that a shutdown was required for safety. Our order expressly reserved all other enforcement options with respect to BP's failure to comply with the deadlines.

PHMSA engineers were very concerned about the primary reason BPXA gave for its alleged inability to complete pigging -- build up of solids, including impurities in the product stream such as waxes and other materials. Alyeska, the operator of the Trans-Alaska Pipeline (TAPS), had notified PHMSA about its concerns with adverse impact on its pipeline if these solids should be allowed to pass through from BPXA to TAPS. The Joint Pipeline Office (JPO), which coordinates TAPS issues, had concerns as well, and ensuring the continued safe operation of TAPS is a primary concern of PHMSA.

To address those concerns, PHMSA needed to understand the amount, composition and density of this "sludge" material and how it would be handled before we could allow BPXA to proceed with pigging to be sure that BPXA operations could pose no risk to the safety and reliability of the Trans-Alaska Pipeline System. Alyeska needed to be certain about its ability to handle the waste. BPXA put forward preliminary estimates of as much as 12 inches of sludge, with varying amounts in different segments of its 22 miles of transit lines. After several weeks, BP revised its estimate of the amounts of sludge in the lines downward. PHMSA still does not have a confident estimate of the amount of sludge in the line segments that have not yet been pigged. BPXA also took months to develop plans to handle the removal of sludge. Based on a conclusion that there was limited sludge in the Lisburne line, BPXA pigged that line in June.

Because of the delay in resolving this and other issues, in early July, my Chief Safety Officer, Ms. Stacey Gerard, and my Western Regional

Director, Mr. Chris Hoidal, and I traveled to Prudhoe Bay and Anchorage to meet with BPXA and Alyeska executives, JPO officials and State of Alaska representatives and to see first hand what BPXA was doing to comply with our order and to overcome any engineering or other issues that would complicate or delay maintenance and smart pigging required on each of the lines. Our assessment was that BPXA was not pursuing all available options for handling the sludge and preparing for pigging. We were concerned they were exploring a single option, one at a time, rather than considering multiple options, and not working or communicating effectively. I was dismayed at the slow rate of progress and observed difficulty in problem solving, poor communications, delay in ordering needed parts and equipment, and failure to take actions necessary to ascertain fully the condition of the pipelines and to address the conditions uncovered.

For example, BPXA told us in May of the need to order valves and stopples to isolate a certain section of the failed pipeline and the need to move the pig launcher around the failed site. Two months later, during our July visit, we learned that some parts were still not ordered. It is still not clear to us that it was impossible to make plans to remove the solids and begin pigging operations by the June 12 deadline in our order.

Subsequent to this visit, on July 20, we issued an amendment (Amendment Number One) to our original order intended to address these deficiencies by mandating that BPXA develop specific plans and timetables or parallel tactics to expedite pigging operations on lines that had not yet been cleaned. We required development of preliminary

engineering design and an implementation plan to install a permanent facility for handling solids resulting from cleaning pig operations plus a concurrent contingency plan for a bypass around TAPS Pump Station (PS)-1 facilities so solids could be delivered into storage. This action would assure that sediment in the product stream picked up in pigging would be safely managed in tanks to avoid contamination and maintain the safety of TAPS. We required a comprehensive engineering plan for the draining or "de-oiling" of approximately 17,000 barrels of oil contained in the idled OT21 line segment that failed in March. We also ordered the taking of wall samples and gamma ray photography post pigging to gain the best possible understanding of the real time levels of remaining solids.

By the end of July, BPXA was finally making progress to address our safety concerns and to restore reliable energy transportation service. I am pleased to report that as a result of these orders extracting product from the OT 21 segment of line was completed in late August. The PS-1 bypass – aimed at delivering solids from the WOA line through the use of a bypass line into TAPS storage tanks was successfully hydro-tested in early September and that an alternate bypass, "the Fizzy Bypass," will be completed at the end of September. All these steps are necessary to get us to our goal of understanding the condition of these pipelines and making sure the operator is doing all that is needed to operate them safely.

In our observation however, progress has also been impaired by operator error on the startup of the production line damaged by falling equipment

near the Lisburne line, and failure to maintain backup compressors. Discovery of asbestos on the WOA and BP's need to provide worker protection delayed testing on the WOA. While these missteps may not appear to have a direct bearing on the low-stress line corrosion issues, failure to understand and manage change in operations always poses safety risks.

On July 22, 2006, 37 days after the deadline established in our March order, BPXA performed the smart pigging ordered by PHMSA on the 30 inch segment of the FS2-FS1 Eastern Operation Area pipeline. BP informed us of the results of the testing on August 4. The report identified 16 locations of wall loss in excess of 70 percent, including two over 80 percent, at 12 separate areas. While the failure on the Western line occurred on a low spot in a caribou crossing, the locations of severe wall loss on the Eastern line were on straight pipe.

On August 6, BPXA reported that it discovered a leak while in the process of performing direct examination of the EOA as a follow-up to the pig inspection. On the basis of this leak and the discovery of several other locations that were beginning to leak, BPXA initially reported to us its decision to shut down this and the Western line. BPXA explained that its decision was based on a complete lack of understanding of the corrosion that could cause this type of wall loss. BPXA subsequently decided to keep the Western line operating and to consider restarting the 34" segment of the Eastern line.

In response to this second spill on the Eastern line, PHMSA issued a second amendment to its order (Amendment Number Two) requiring additional rigorous, automated ultrasonic inspections on a continuous basis of the company's entire North Slope pipeline network and outlining the standards BPXA would need to meet to restart its pipeline. Prior to completion of smart pigging, we need to have the best possible factual information about the condition of the pipelines. The order required the conduct of four daily ground patrols using heat-seeking infrared equipment to spot leaks along the entire length of the 22 miles of oil transit lines. The order required continuous automated ultrasonic testing on the outside of the operating portion of the Western line, including the stripping of the insulation to apply the instrument directly to the pipeline. This technology is producing promising results. The order also required the de-oiling of the failed segment of the Eastern line and specified the testing that would be needed on the Eastern line until it could be smart pigged, and as a condition of smart pigging.

In addition to imposing new requirements for BPXA, PHMSA further stepped up its presence in Alaska to respond to new threats presented by the August 6 failure. Our first concern was the impact of transit line shutdown on the Trans-Alaska Pipeline System. Reduced product flow from the BPXA transit lines could cause new safety risks to the TAPS pipeline. The hydraulics of the pipeline is set to operate at a certain threshold of product flow. It was necessary to determine whether the operation could be adjusted to a lower level flow. A reduced level of flow can cause vibrations to occur over certain high elevation passes, causing PHMSA to question whether it would be necessary to monitor

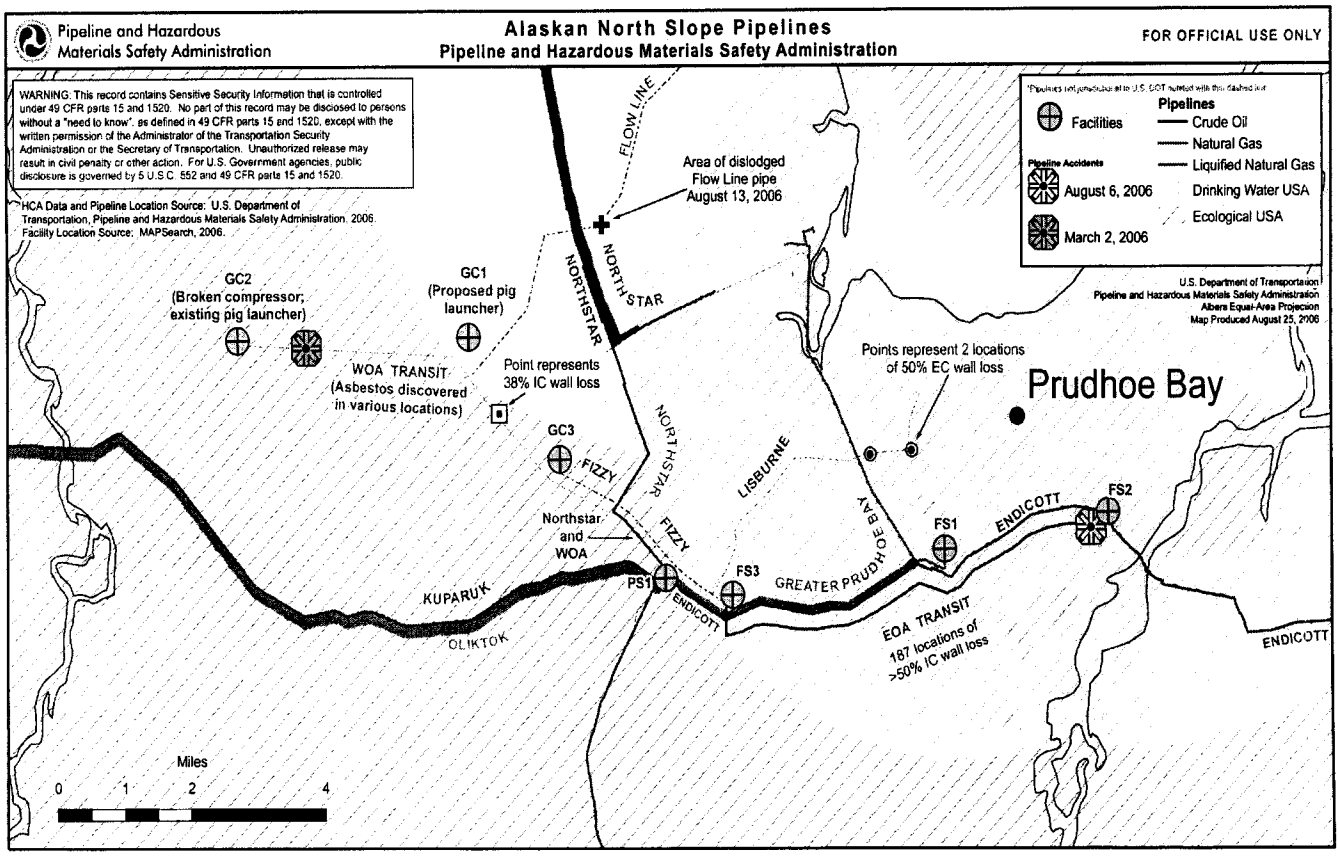
strain. Long-term reduced flow rate could also cause an environment more susceptible to internal corrosion. We have determined that Alyeska can adjust the hydraulics to operate at a lower flow rate, that it is monitoring the strain caused by vibrations, and that it has an aggressive cleaning pig program to minimize internal corrosion.

Given the impact of the BPXA line shut down, we were concerned about any immediate risk that could lead to a shutdown on any of the other feeder lines to TAPS. We therefore deployed a team to update our knowledge of the risks to these other pipelines, including those at the Kuparuk, Alpine, Badami, North Star, Oliktok and Milne Point fields. We were particularly concerned about a nine-mile section of non-piggable line on Kuparuk. While we have some long-term integrity management concerns, no immediate concerns were detected.

We are working with BPXA on its plan to restart the 34" diameter section of the Eastern line (the line with extensive corrosion discovered in August) and the conditions it would need to meet to satisfy our safety concerns. Given that BPXA was not able to sufficiently explain the causes of the corrosion on the Eastern line, and the potential extent of damage to the pipe wall, PHMSA has required that BPXA demonstrate that the Eastern line is in safe condition for pigging operation. PHMSA needs to be sure that the wall condition is satisfactory to return flow to the line and pass a smart pig through it, without causing another failure. On August 29, PHMSA provided very detailed written guidance to BPXA as to how it must demonstrate the Eastern line's integrity prior to commencing pigging operations and make appropriate arrangements for

spill contingencies. PHMSA will not authorize restart until we have analyzed adequate data without undue reliance on the results of data collected on the in-service segment of the Western line.

Given recent progress with the terms of the amendments to our CAO, we are hopeful that smart pigging of the 60 percent of the 22 miles of low stress pipelines that have not been tested will be started later this fall.



PHMSA will maintain the high level of oversight needed to enforce compliance.

III. DOT'S REGULATION OF LOW STRESS LINES

The BXPA lines that failed on the North Slope were unregulated by DOT/PHMSA. On August 31, PHMSA proposed new safety requirements that would bring these lines under regulation. Our proposed rule applies to facility operators of hazardous liquid gathering and low stress pipelines in rural areas. We already regulated low stress lines in populated areas and crossing commercially navigable waterways.

We have taken a risk-based approach – we intend to protect all lines that, in the event of a failure, could spill into an unusually sensitive area, or USA, a term we have already defined in our regulations. We have determined these to be low stress lines within a ¼ mile of a USA and of a diameter of 8 5/8 inches or more. Our assessment of which lines to regulate is based on how they can impact a USA, based on the pressure of the line and the volume of product that could be spilled. Based on data provided to us by operators of rural low-stress pipelines, spills from these types of lines have not traveled beyond a quarter of a mile from the pipelines, and three quarters of those spills have traveled no more than about 100 feet.

The proposal addresses the need to provide additional and robust integrity protection to areas where oil pipelines in rural areas could affect drinking water resources, endangered species and other ecological resource concerns. This proposed rule will enhance corrosion protection by including cleaning and continuous monitoring, integrity assessment, and leak detection. It would require operators of these lines to follow safety rules for design, construction, testing, and maximum operating

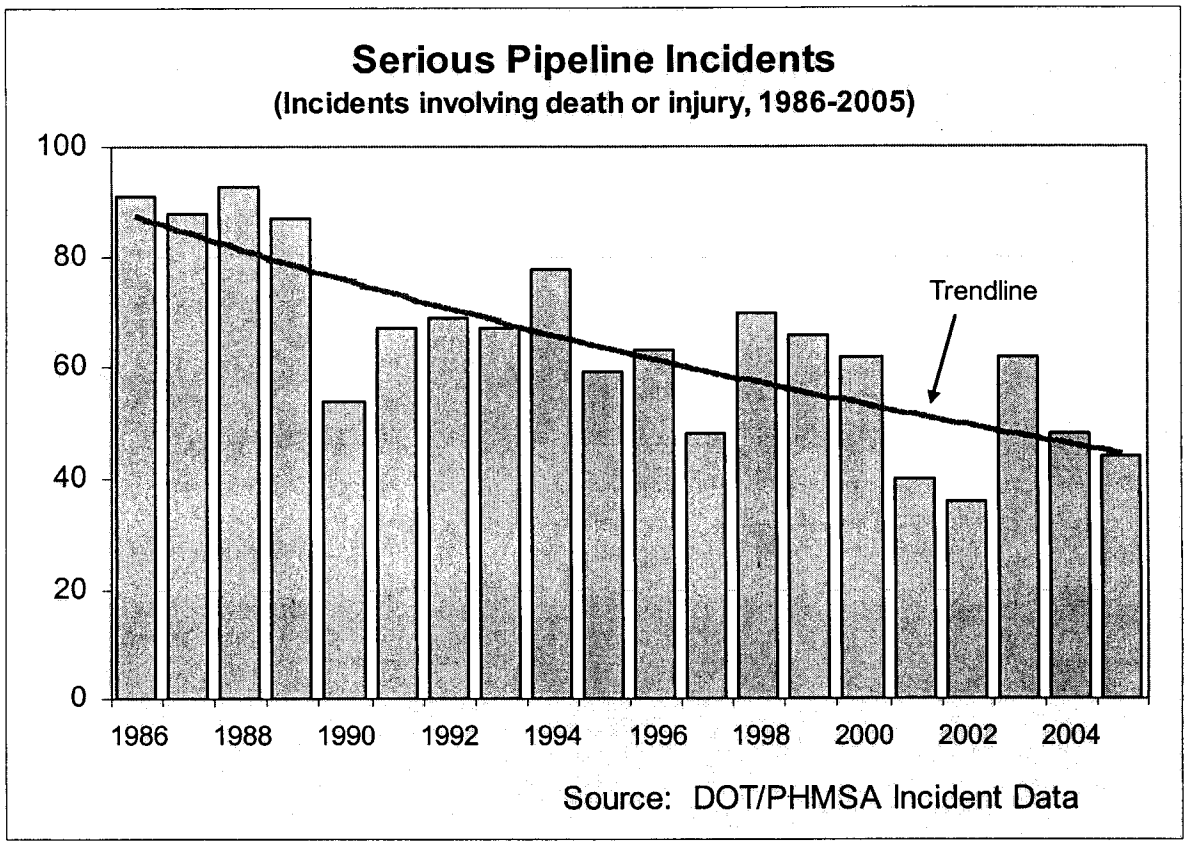
pressure. In addition, the proposal would require operators to protect the lines from corrosion and excavation damage, install and maintain line markers, establish operator qualification and damage prevention programs, provide public education, and report accidents and safety-related conditions.

Most low stress lines in the lower 48 States of the U.S. bear little resemblance in their diameter to the low stress lines that BPXA operates on the North Slope. Most of the lines in the lower 48 States are very short in length and small in diameter. We believe that most operators of unregulated crude oil low stress lines have programs in place to regularly clean and test their pipelines. We believe the regulation we have proposed will better protect rural environmental areas. We have asked a number of questions in the notice of proposed rulemaking to get the best possible information to complete the proposal, including whether we should extend protections beyond the ¼ mile area, whether if we should require all unregulated lines to report spills, and whether implementation time frames are appropriate, and other questions. We can modify the regulatory proposal as needed based on the information that becomes available on the docket.

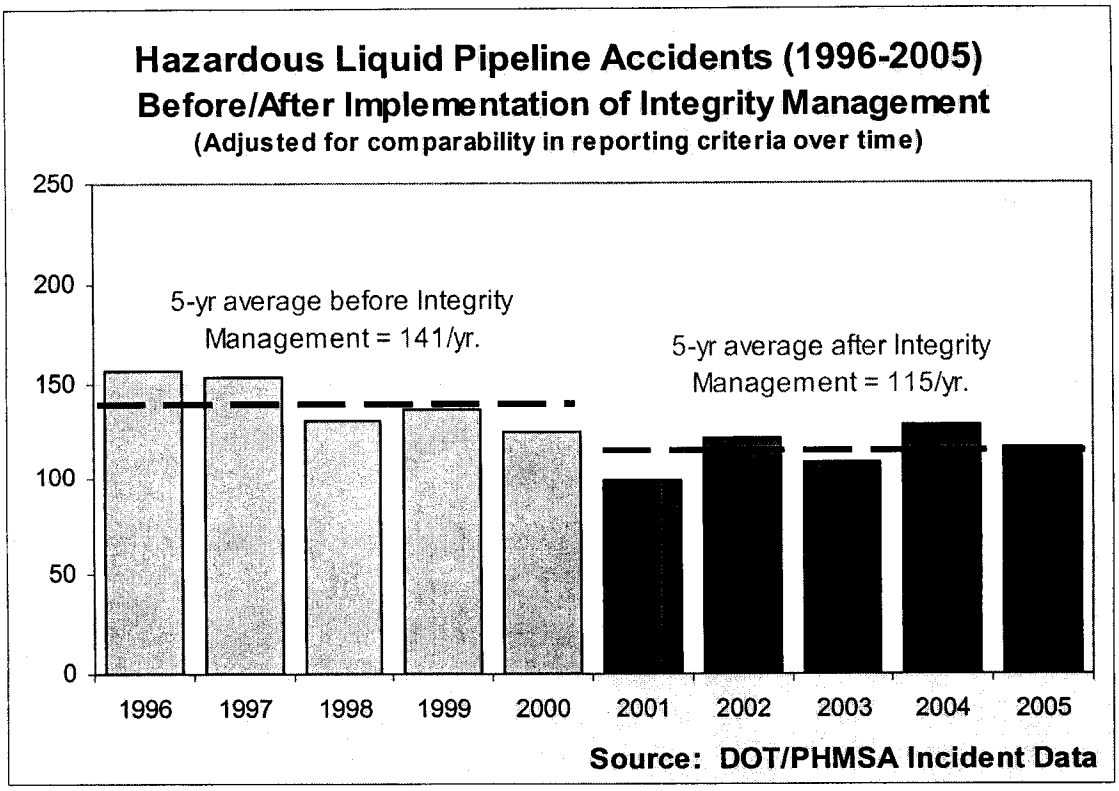
IV. THE U.S. PIPELINE INFRASTRUCTURE IS SOUND

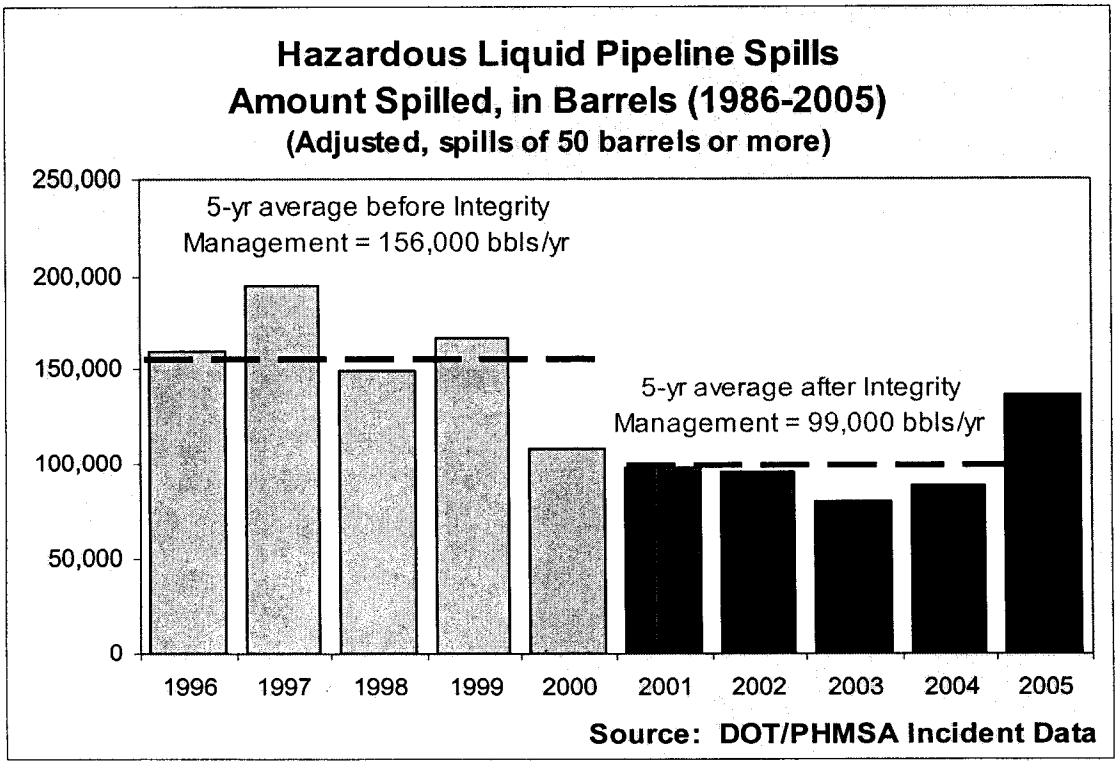
As unfortunate as the recent Alaska incidents are, they are not a bellwether for the health of the majority of the energy pipeline infrastructure. It is in much better shape. PHMSA has designed and is implementing a strong risk-based systems approach to ensure the safety and reliability of our nation's energy pipeline infrastructure. Our

regulation is having positive results. The number of serious incidents in which people or the environment are harmed is steadily declining, particularly on oil pipelines.



Our data shows the integrity management program on hazardous liquid pipelines is working. Comparing the five year periods before and after integrity management programs were implemented on hazardous liquid pipelines, spill frequency dropped 18 percent and volumes spilled dropped 35 percent.



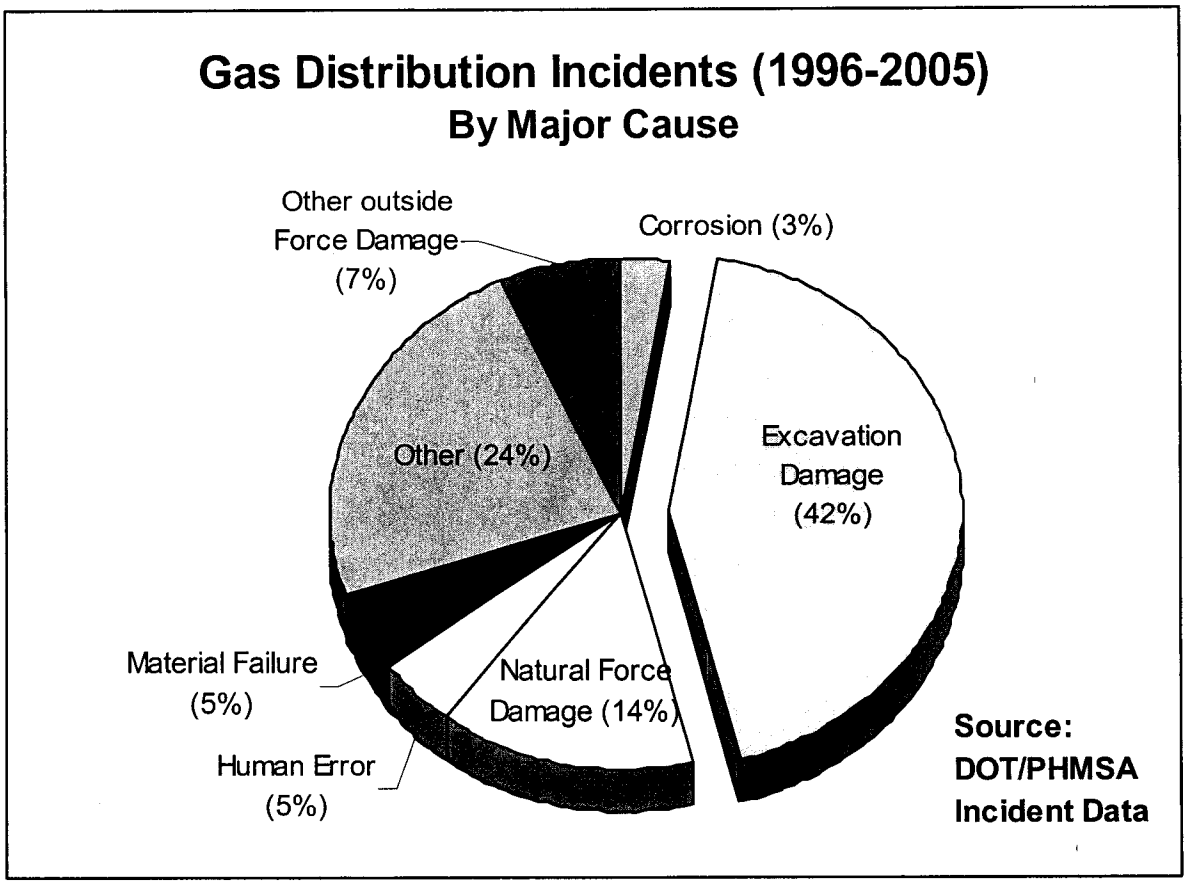


The leading causes of failure on hazardous liquid transmission pipelines are down nearly 50 percent since the integrity management programs were put in place in 2000.

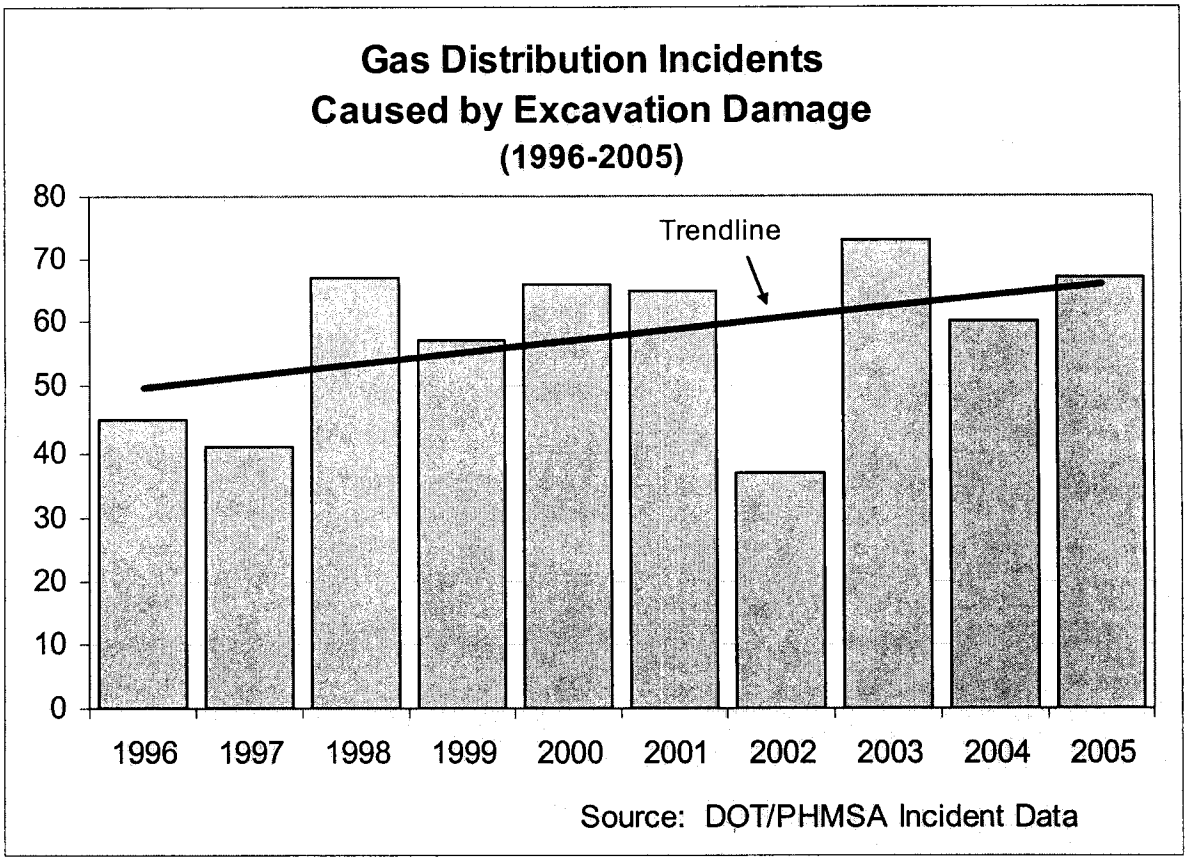
Operators have a better understanding of the condition of their pipelines and the pipelines are in better condition. Safety programs are improving to sustain improved performance in the future. PHMSA closely monitors operator-specific performance and flags companies whose performance is falling for more intense oversight and inspection. We had flagged BP as one of those companies, prior to the accident in March. We have several enforcement actions in place against BPXA affiliate BP Pipelines (Alaska) Inc. for shortcomings in its integrity management on regulated lines in Alaska. We have taken actions in recent years against BP North America for compliance issues in the lower 48 States. We intervene with operator executives to prevent accidents, usually before they happen, not just respond after the fact, and make full use of all our enforcement options, including civil penalties at the higher level authorized under the Pipeline Safety Act of 2002.

V. LET'S NOT LOSE SIGHT OF THE MOST PRESSING SAFETY PROBLEM

In the past few years, PHMSA has taken a hard look at incidents, their causes and what can be done to prevent them. One thing is clear-the leading cause of incidents (42 percent of total) in which people are hurt or killed is construction-related damage causing an immediate rupture or damage that later grows to failure. This occurs most often on the distribution systems that run through the neighborhoods where people live and work.



Unfortunately, since 1996, incidents of construction-related damages on distribution systems have clearly increased as much as 49 percent, and this in areas where people are most likely to be hurt.



This part of the pipeline system, the distribution network, is almost entirely under the jurisdiction of States, our foremost partners in pipeline safety. These incidents are almost entirely preventable. We need to help States do more, and we need new authority to make this happen.

The Secretary of Transportation recently submitted to Congress the Administration's legislative proposal to reauthorize and improve pipeline safety and protection for the environment, and also to enhance infrastructure reliability. The proposal, the "Pipeline Safety and Reliability Improvement Act of 2006" aims to build on our progress in achieving the mandates of the 2002 Act by placing more emphasis on damage prevention and enhancing state programs' oversight of pipelines.

Our progress on completing recent and past mandates and recommendations is attached.

These reauthorization concepts have been generally supported across our stakeholder community, including the Federal and State family, and we are pleased to see many of the same priorities reflected in the Committee's proposal.

VI. CONCLUSION

I assure the members of this Subcommittee, that the Administration, Acting Secretary Cino, and the dedicated men and women of PHMSA share your strong commitment to improving safety, reliability, and public confidence in our Nation's pipeline infrastructure.

Like you, we understand the importance of our mission to the safety of our citizens and the energy security and continued economic growth of our great Nation.

Thank you.

I would be pleased to answer any questions you may have.

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Attachments:
PHMSA Mandate Progress Chart
PHMSA Mandate Progress Graph