

September 2001

# PIPELINE SAFETY

## Progress Made, but Significant Requirements and Recommendations Not Yet Complete



G A O

Accountability \* Integrity \* Reliability

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## Abbreviations

OPS            Office of Pipeline Safety



G A O

Accountability \* Integrity \* Reliability

United States General Accounting Office  
Washington, DC 20548

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September 28, 2001

The Honorable James L. Oberstar  
Ranking Democratic Member  
Committee on Transportation  
and Infrastructure  
House of Representatives

The Honorable Rick Larsen  
House of Representatives

In May 2000, we reported on the performance of the Department of Transportation's Office of Pipeline Safety (OPS) in regulating the safety of natural gas and hazardous liquid pipelines in the United States.<sup>1</sup> Among other things, we found that the number of major pipeline accidents (those resulting in a fatality, an injury, or property damage of \$50,000 or more) increased by about 4 percent annually from 1989 through 1998—from about 190 in 1989 to about 280 in 1998. In addition, OPS had not implemented 22 statutory requirements and 39 recommendations from the National Transportation Safety Board (the Safety Board) that were designed to improve pipeline safety. Furthermore, a number of these requirements and recommendations were over a decade old. Concerned about the potential impact of OPS' responsiveness on pipeline safety, you asked us to assess OPS' progress in implementing these statutory requirements and Safety Board recommendations since May 2000.

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## Results in Brief

OPS has made progress in completing some of the statutory requirements that were reported as open as of May 2000, but important requirements remain uncompleted. OPS has fully implemented 6 of the 22 statutory requirements, including issuing a final rule to specify how pipeline operators should report underwater abandoned pipeline facilities that present a hazard to navigation and reporting on the results of its risk management demonstration projects. However, 11 of the 22 requirements—including some significant, long-standing requirements—have not been fully implemented. For example, while OPS has initiated a series of comprehensive rules designed to improve pipeline safety and

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<sup>1</sup>*Pipeline Safety: The Office of Pipeline Safety Is Changing How It Oversees the Pipeline Industry* (GAO/RCED-00-128, May 15, 2000).

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implement several statutory requirements concerning periodic internal inspections and safety shut-off valves, the agency does not anticipate completing the last rule in the series until fall 2002. Finally, OPS has closed the remaining five requirements that it reported as open in May 2000 because it now considers them to be superseded by or amendments to other requirements or because OPS does not believe that it is required to take further action. Although OPS did not fulfill these requirements, we agree with OPS' rationale for considering them closed.

OPS officials estimate that it will take a year or more to complete action on 10 of the 11 open requirements. According to OPS officials, the agency does not plan to fulfill the remaining open requirement—that it issue a report on underwater abandoned pipeline facilities—primarily because it believes there is insufficient data to conduct the study. We did not evaluate whether sufficient data exist to complete the study. However, if OPS believes that it cannot complete the study, we are recommending that the department advise the Congress of the reasons why it is unable to complete this study and, if appropriate, ask the Congress to relieve it of this responsibility.

The Safety Board is encouraged by OPS' recent efforts to improve its responsiveness, but remains concerned about the amount of time OPS has been taking to implement recommendations. OPS continues to have the lowest rate of any transportation agency for implementing recommendations from the Safety Board. However, the Director of the Safety Board's Office of Pipeline Investigations views OPS' responsiveness as generally improved over its past performance because OPS has initiated several activities in response to the recommendations and communicates more frequently and constructively with the Safety Board. While OPS is apparently working more constructively with the Safety Board, the Safety Board has closed only one recommendation. In addition, the Safety Board has issued 6 new recommendations, resulting in 44 open recommendations as of September 1, 2001—or 5 more than were open in May 2000. OPS officials believe that the agency's progress is better than the Safety Board's records indicate. According to OPS officials, the agency will fulfill nearly half of the open recommendations by the end of 2001 and most of the remaining recommendations by the end of 2002.

In commenting on a draft of this report, officials from the Department of Transportation generally agreed with the report and its recommendation. They stated that OPS is taking a long-term, strategic approach to address safety goals by improving pipeline integrity and preventing damage to pipelines. According to the officials, this approach is more beneficial than

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responding to individual requirements and recommendations as discrete actions. For example, OPS plans to require pipeline operators to comprehensively evaluate and respond to the entire range of risks to pipelines; the requirements will include, but are not limited to, safety practices that have been required by the Congress or recommended by the Safety Board, such as internal inspections and safety valves.

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## Background

OPS administers the national regulatory program to ensure the safe operation of nearly 2.2 million miles of natural gas and hazardous liquid pipelines in the United States.<sup>2</sup> The agency develops, issues, and enforces pipeline safety regulations. These regulations contain minimum safety standards that the pipeline companies that transport natural gas or hazardous liquids 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. In fiscal year 2000, OPS employed 97 people, 55 of whom were pipeline inspectors.

Several federal statutes enacted since 1988 contain requirements designed to improve pipeline safety and enhance OPS' ability to oversee the pipeline industry. In addition, the Safety Board makes recommendations designed to improve transportation safety to OPS and other federal agencies. These recommendations are based on the Safety Board's investigations of transportation accidents, including significant pipeline accidents (such as those involving fatalities). Many of these recommendations address the same issues as the statutory requirements.

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<sup>2</sup>About 325,000 miles are natural gas transmission pipelines—primarily interstate—that transport natural gas from sources to communities. About 1.7 million miles are natural gas distribution pipelines—primarily intrastate—that transport natural gas from transmission pipelines to residential, commercial, and industrial customers. About 156,000 miles are hazardous liquid pipelines—primarily interstate—that transport products such as crude oil, diesel fuel, gasoline, jet fuel, anhydrous ammonia, and carbon dioxide.

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**OPS Has Completed Some Statutory Requirements, but Other Important Requirements Remain Uncompleted**

OPS has made progress in implementing some of the 22 statutory requirements that it reported as open in our May 2000 report but has not fully implemented some significant, long-standing requirements. As of September 1, 2001, 6 of the 22 requirements have been closed as a result of OPS' actions, 11 requirements are still open, and the remaining 5 have been closed because OPS now considers them to be superseded by or amendments to other requirements or because the agency does not believe it is required to take further action.

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**Six Requirements Have Been Closed Due to OPS' Action**

The agency has fully implemented 6 of the 22 statutory requirements that it classified as open in May 2000. (See table 1.) Three of these six requirements were implemented in the last 16 months; OPS issued a final rule to define underwater abandoned pipeline facilities that present a hazard to navigation and specify how operators shall report these facilities, issued a report on its Risk Management Demonstration Program, and conducted activities to address population encroachment near pipelines. OPS had completed action on the other three requirements prior to May 2000, but did not report these actions to us at that time. (Appendix I provides the status of OPS' actions to implement all 22 requirements as of September 1, 2001.)

**Table 1: Pipeline Safety Statutory Requirements Reported as Implemented Since May 2000**

<b>Requirement (year imposed)</b>	<b>Action</b>
<b>Periodic underwater inspections (1992):</b> Define “exposed underwater pipeline” and “hazard to navigation or public safety.”	OPS defined the terms in 49 C.F.R. 192.3 and 195.2 on December 5, 1991 (56 F.R. 63764). At the time of our May 2000 report, OPS did not report that it had fulfilled this requirement and classified it as open.
<b>Underwater abandoned pipeline facilities (1992):</b> Define “hazard to navigation” with respect to underwater abandoned pipeline facilities and, by April 24, 1994, specify how operators shall report such facilities.	OPS issued a final rule on underwater abandoned pipeline facilities on September 8, 2000 (65 F.R. 54440).
<b>Risk assessment report (1996):</b> Not later than March 31, 2000, transmit to the Congress a report on implementing and improving a risk assessment process.	OPS issued a report, <i>A Collaborative Framework for Office of Pipeline Safety Cost-Benefit Analyses</i> , on September 2, 1999. At the time of our May 2000 report, OPS reported that this was an interim report and classified this requirement as open.
<b>Risk management report (1996):</b> Establish risk management demonstration projects and report on the results of such projects by March 31, 2000.	OPS established a demonstration program in March 1997 and issued a report on April 25, 2001.
<b>Updating standards (1996):</b> Update the industry standards that have been adopted as part of the federal pipeline safety regulatory program.	OPS updated standards in September 1997 (Department of Transportation Docket RSPA-97-2251). OPS proposed subsequent updates in March 2000 (65 F.R. 15290) and expects to issue a final rule in fall 2001. At the time of our May 2000 report, OPS did not report the 1997 update and classified this requirement as open.
<b>Population encroachment (1996):</b> (1) Make available to each state the land-use recommendations in the Transportation Research Board’s report <i>Pipelines and Public Safety</i> and (2) evaluate the recommendations and consider other initiatives to make local planning and zoning entities more aware of issues involving population encroachment along pipeline rights-of-way.	OPS sent the report to all states. OPS has conducted the activities listed in the second part of the requirement and has requested \$3 million in its fiscal year 2002 budget to implement initiatives to address population encroachment.

Source: OPS.

## Eleven Requirements Are Still Open

As of September 1, 2001, 11 requirements—including several from 1992 or earlier that could significantly improve pipeline safety—remain uncompleted. While OPS has made some progress on these requirements over the last year, the agency estimates that it will take from several months to more than a year to complete actions on them. For example, OPS is issuing a series of rules requiring pipeline operators to develop an integrity management program to assess and improve, where necessary, the safety of pipeline segments in areas where the consequences of a pipeline failure could be significant (called “high consequence areas.”)<sup>3</sup>

<sup>3</sup>Under an integrity management program, pipeline operators are required to, among other things, identify all segments of the pipeline that pass through a high consequence area, conduct a baseline assessment of the integrity of these segments, address any safety issues, reassess the integrity of the pipeline at intervals not to exceed 5 years, and establish performance measures to measure the program’s effectiveness.

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This series represents a broad-based, comprehensive effort designed to improve pipeline safety, as well as fulfill several specific statutory requirements such as requirements to inspect pipelines periodically and install valves to shut off the flow of product in the pipeline if a failure occurs. In December 2000, OPS issued a final integrity management rule for hazardous liquid pipelines that are at least 500 miles long. OPS still needs to issue similar integrity management rules for hazardous liquid pipelines that are less than 500 miles long, expected in late fall 2001, and for natural gas transmission pipelines. The agency expects to issue a proposed rule for transmission pipelines by the end of 2001 and a final rule in fall 2002. To facilitate the natural gas transmission rule, OPS officials have been meeting with representatives of the pipeline industry, research institutions, state pipeline safety agencies, and public interest groups to understand how integrity management principles can best be applied to improve the safety of gas pipelines. OPS also requested information and clarification in June 2001 and plans to hold a public meeting with its Natural Gas Technical Advisory Committee on this subject. According to OPS officials, they are close to reaching consensus with the pipeline industry and state agencies on safety standards for natural gas transmission pipelines.

In addition, in response to a 1988 requirement to establish standards to complete and maintain a pipeline inventory, OPS is establishing multiple methods of collecting this information, such as annual reports, the integrity management process, and a national pipeline mapping system.<sup>4</sup> According to OPS officials, they are collecting the necessary information for hazardous liquid and gas transmission pipelines, but still need to establish methods to collect additional information for gas distribution pipelines. OPS does not plan to complete forms that will allow it to collect such information until spring 2002—more than 13 years after the original requirement. Finally, in response to a 1992 requirement to define “gathering line” and “regulated gathering line,” OPS is still conducting studies to identify which lines should be regulated.<sup>5</sup> OPS does not plan to issue a final rule before mid-2002.

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<sup>4</sup>As of September 2001, OPS had collected data through the national pipeline mapping system—such as location, diameter, product transported, and operating status—on 50 percent of the natural gas transmission pipelines and 90 percent of the hazardous liquid pipelines.

<sup>5</sup>Gathering pipelines collect natural gas or crude oil from producing wells and carry the product to a natural gas transmission or hazardous liquid pipeline.



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OPS officials estimate that it will take a year or more to implement 10 of the 11 open requirements. OPS does not plan to take action on the remaining open requirement to submit a report on underwater abandoned pipeline facilities, including a survey of where such facilities are located and an analysis of any safety hazards associated with them.<sup>6</sup> According to OPS officials, the agency did not complete the report because there were insufficient data available, and it would be expensive to develop the needed data. OPS officials said they have analyzed to the extent possible all available data, and they do not plan to proceed further. We did not determine whether sufficient data exist or the cost to develop data to complete the report.

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### Five Requirements Have Been Closed Even Though OPS Did Not Take Action

OPS has closed the remaining five requirements that it reported as open in May 2000 because it now considers them to be superseded by or amendments to other requirements or because OPS believes it is no longer required to take action. Although OPS did not fulfill these requirements, we agree with OPS' rationale for considering them closed.

- OPS closed one requirement because it was replaced by a later requirement. A 1988 statute required OPS to establish standards requiring that new and replacement pipelines accommodate the passage of “smart pigs”—mechanical devices that can travel through the pipeline to record flaws in the pipeline, such as dents or corrosion. Although OPS did not meet this requirement, the agency considers it closed because it was superseded by a similar requirement in a 1996 statute, which has not been completed.
- OPS closed three requirements from a 1996 statute that amended requirements from a 1992 statute that have not been completed: (1) defining “gathering lines” and “regulated gathering lines,” (2) requiring the periodic inspection of pipelines in high-density and environmentally sensitive areas, and (3) establishing criteria to identify all pipeline facilities located in areas that are densely populated and/or environmentally sensitive. In general, the amending provisions gave OPS more flexibility in fulfilling the requirements by adding language such as “where appropriate” or “if needed.” Although OPS considered these actions as open in our May 2000 report, OPS now believes that since these three provisions do not impose additional requirements they should not continue to be counted separately.

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<sup>6</sup>This requirement dates from 1992; the report was due by October 1995.

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- OPS closed one requirement because it is no longer required to take action. A 1996 statute required OPS to issue biennial reports to the Congress on how the agency carried out its pipeline safety responsibilities for the preceding two calendar years. OPS issued the first report in August 1997 but did not issue a report in 1999. This reporting requirement was eliminated as of May 15, 2000, under the Federal Reports Elimination and Sunset Act of 1995, as amended.

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## The Safety Board Is Encouraged by OPS' Efforts to Implement Recommendations, but Concerns Remain

The Safety Board is encouraged by OPS' recent efforts to improve its responsiveness, but it remains concerned about the amount of time OPS has been taking to implement recommendations. The Director of the Safety Board's Office of Pipeline Investigations views OPS' responsiveness as generally improving because OPS has recently initiated several activities to respond to recommendations and made efforts to communicate better with the Safety Board. To improve communications with the Safety Board, OPS has changed how it informs the Safety Board of progress made on recommendations by corresponding with the Safety Board as progress occurs on individual recommendations, rather than providing periodic updates that may cover a number of recommendations.

While the Safety Board is encouraged by OPS' recent efforts, it is reserving final judgment on OPS' progress until the agency demonstrates that it can follow through with actions to fully implement the recommendations. OPS continues to have the lowest rate of any transportation agency for implementing recommendations from the Safety Board; and, in May 2000 we reported that the Safety Board was concerned that OPS had not followed through on promises to implement recommendations.<sup>7</sup> According to the Director of the Safety Board's Office of Pipeline Investigations, the Safety Board continues to be concerned about the amount of time OPS is taking to follow through with the recommendations. For example, the Safety Board initially recommended in 1987 that OPS require pipeline operators to periodically inspect pipelines. OPS is responding to this recommendation through its series of rules on integrity management that is expected to be completed in 2002—15 years after the Safety Board made the initial recommendation.

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<sup>7</sup>OPS' overall response rate to the Safety Board's recommendations has improved slightly since May 2000—from 69 to 70 percent—but remains lower than other agencies' response rates. This measure includes data from over 30 years of pipeline safety recommendations.

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According to the Safety Board's records, OPS has completed action on only 1 of the 39 Safety Board recommendations that were open as of May 2000.<sup>8</sup> Since then, the Safety Board has made 6 additional recommendations, resulting in 44 open recommendations on pipeline safety as of September 1, 2001. However, OPS officials believe that the agency's progress is much greater than the Safety Board's records indicate. The majority of the recommendations are related to damage prevention (damage from outside forces is the leading cause of pipeline accidents) and integrity management; OPS is in the process of implementing several broad-based, complementary efforts in these areas. According to OPS officials, the agency will have fulfilled 19 of the open recommendations by the end of 2001 and expects to complete action on 16 additional recommendations by the end of 2002.

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## Conclusions

OPS has made some progress in implementing statutory requirements over the past 16 months and expects to implement most of the remaining requirements in the next year or so. OPS also believes that it will have completed action on most of the 44 open Safety Board recommendations over this same time period. Ultimately, however, it is the Safety Board's decision on whether OPS' actions fulfill the recommendations. While this progress represents an improvement over OPS' previous performance, the agency has not fully implemented some important requirements and recommendations to improve pipeline safety that were imposed more than 10 years ago. The next 15 months are important to OPS because, among other actions, the agency intends to complete its series of integrity management rules within this time frame. These rules are expected to improve the safety of pipelines and allow OPS to fulfill a large portion of the outstanding statutory requirements and Safety Board recommendations.

We are concerned that OPS does not plan to take action in response to the 1992 statutory requirement to report to the Congress on underwater abandoned pipeline facilities. While we did not assess OPS' claims that it is not feasible to complete the report due to insufficient data and funding,

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<sup>8</sup>In response to a recommendation to conduct joint government and industry workshops on excavation damage prevention, OPS cosponsored a public meeting to present a report on best practices for damage prevention and facilitated the establishment of the Common Ground Alliance—a nonprofit organization that focuses on preventing damage to underground facilities, including pipelines.

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OPS has made no response to this requirement, including advising the Congress that it is not possible to complete the study.

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## Recommendation for Executive Action

If the department believes that it cannot complete a report to the Congress on underwater abandoned pipeline facilities, we recommend that the Secretary of Transportation direct OPS to advise the Congress of the reasons why it is unable to complete this study and, if appropriate, ask the Congress to relieve it of this responsibility.

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## Agency Comments and Our Evaluation

We provided a draft of this report to the Department of Transportation for its review and comment. We met with officials from the department, including OPS' Associate Administrator, to obtain their comments. The officials generally agreed with the draft report and its recommendation. The officials stated that OPS is taking a long-term, strategic approach to address safety goals by improving pipeline integrity and preventing damage to pipelines. According to the officials, this approach is more beneficial than responding directly to individual requirements and recommendations as discrete actions. For example, OPS' integrity management rules will require pipeline operators to comprehensively evaluate and respond to the entire range of risks to pipelines; the rules will include, but are not limited to, safety practices that have been required by the Congress or recommended by the Safety Board, such as internal inspections and safety valves. The officials stated that OPS has undertaken several broad-based, complementary efforts, particularly focused on pipeline integrity and damage prevention that, when completed, are expected to improve pipeline safety and fulfill many specific statutory requirements and Safety Board recommendations. They said that such a process requires OPS—working cooperatively with state and local officials and the pipeline industry—to thoroughly explore the safety risks faced by different types of pipelines, devise solutions that work for each unique pipeline, and carefully assess the costs and expected benefits of various methods of mitigating risks. The officials expect that, within a year, the results of these efforts will become apparent to the Congress and the public.

In response to OPS' comments, we provided more detailed information on specific actions OPS has taken to improve pipeline safety, where appropriate.

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## Scope and Methodology

To determine OPS' progress in responding to statutory requirements, we asked OPS officials to identify actions the agency has taken to respond to requirements. We then collected and reviewed documentation on these actions, such as published rules and reports. To determine OPS' progress in responding to recommendations from the Safety Board, we collected and analyzed information from the Safety Board on the status of pipeline safety recommendations. We also interviewed the Safety Board's Director of the Office of Railroad, Pipeline, and Hazardous Materials Investigations to discuss OPS' progress in responding to the Safety Board's recommendations. Consistent with the approach used for our May 2000 report, we relied on OPS and the Safety Board to identify which actions were open and did not attempt to determine whether these open actions were, in actuality, completed. In addition, we did not assess the adequacy of OPS' responses to statutory requirements or the Safety Board's recommendations. We performed our work from July through September 2001 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 7 days after the date of this letter. At that time, we will send copies of this report to congressional committees and subcommittees with responsibilities for transportation safety issues, the Secretary of Transportation, the Administrator of the Research and Special Programs Administration, the Director of the Office of Management and Budget, and the Acting Chairman of the National Transportation Safety Board. We will make copies available to others upon request and on our home page at <http://www.gao.gov>.

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If you or your staff have any questions about this report, please contact me at (202) 512-2834 or [guerrerop@gao.gov](mailto:guerrerop@gao.gov). Key contributors to this report were Helen Desaulniers, Judy Guilliams-Tapia, James Ratzenberger, and Sara Vermillion.

A handwritten signature in black ink, appearing to read 'P. F. Guerrero', with a long horizontal flourish extending to the right.

Peter F. Guerrero  
Director, Physical Infrastructure Issues

# Appendix I: OPS' Actions on Pipeline Safety Statutory Requirements Reported as Open in May 2000 (As of September 1, 2001)

**Table 2: Requirements in the Pipeline Safety Reauthorization Act of 1988 (P.L. 100-561, Oct. 31, 1988)**

No.	Section	Statutory requirement	Status
1	102 (gas) 202 (liquid)	<b>Pipeline inventory:</b> Establish standards to require operators, within 1 year, to complete and maintain an inventory of all types of pipe used, including the materials used and a history of any leaks.	<p><b>Open for natural gas distribution pipelines:</b> OPS currently collects information on pipeline accidents through annual reports from the industry. OPS is planning to revise the form it uses to collect information for these annual reports to improve inventory information. These revisions would apply to calendar year 2002 data and be due 03/15/03. OPS is also collecting more detailed inventory information on plastic pipelines, which constitute about 50 percent of distribution pipelines.</p> <p><b>For natural gas transmission pipelines,</b> OPS has established a national pipeline mapping system and, as of 09/01, has collected location and inventory information on 50 percent of transmission pipelines. In addition, OPS collects pipeline accident and inventory information through annual reports from the industry. OPS also plans to require operators to collect and maintain comprehensive inventory information as part of its integrity management initiative.</p> <p><b>For hazardous liquid pipelines,</b> OPS has established a national pipeline mapping system and, as of 09/01, has collected information on 90 percent of hazardous liquid pipelines. In addition, OPS requires operators to collect and maintain comprehensive inventory information as part of its integrity management initiative. OPS also plans to require operators to provide accident and inventory information in annual reports, which would apply to calendar year 2002 data and be due 03/15/03.</p>
2	108(b) (gas) 207(b) (liquid)	<b>Smart pig accommodation:</b> Establish standards requiring that new and replacement pipe shall accommodate the passage of smart pig inspection devices.	<p><b>Closed-superseded:</b> OPS did not meet this requirement. However, the requirement was superseded by P.L. 104-304 (49 U.S.C. 60102(f)(1)). [See requirement #16 in this appendix.] At the time of our 05/00 report, OPS reported that this requirement was open.</p>
3	108(c) (gas)	<b>Master meter study:</b> Assess the need for an improved inspection program for master meter systems and issue a report within 18 months.	<p><b>Open:</b> A final report, <i>An Analysis of Natural Gas Master Meter Systems (Definition and Program) From a Federal Perspective</i>, was issued 06/15/79. Following a survey of the states, an additional study on master meter systems was drafted, and data in this report are currently being updated. OPS plans to issue the report by the end of 2001.</p>

Source: For columns 1 and 2, GAO's analysis of pipeline safety statutes; for column 3, status reports from OPS.

**Appendix I: OPS' Actions on Pipeline Safety  
Statutory Requirements Reported as Open in  
May 2000 (As of September 1, 2001)**

**Table 3: Requirements Related to Offshore Pipeline Navigational Hazards (P.L. 101-599, Nov. 16, 1990)**

No.	Section	Statutory requirement	Status
4	1(a) (gas) 1(b) (liquid)	<b>Permanent inspections:</b> Establish an inspection program for offshore and navigable water pipelines no later than 30 months after 11/16/90 (as enacted, limited to the Gulf of Mexico and its inlets).	<p><b>Open for natural gas pipelines:</b> OPS signed a memorandum of understanding with the Minerals Management Service in the Department of the Interior to define inspection responsibilities for pipelines on the Outer Continental Shelf. OPS anticipates publishing a proposed rule to further clarify inspection responsibilities for gas and hazardous liquid pipelines that cross directly into state waters in fall 2001 and a final rule by the end of 2001.</p> <p><b>For large liquid pipelines,</b> OPS has issued a final rule on pipeline integrity management for these pipelines in high consequence areas (65 F.R. 75378, 12/01/00), which includes offshore and commercially navigable waterways.</p>

Source: For columns 1 and 2, GAO's analysis of pipeline safety statutes; for column 3, status reports from OPS.

**Table 4: Requirements in the Pipeline Safety Act of 1992 (P.L. 102-508, Oct. 24, 1992)**

No.	Section	Statutory requirement	Status
5	102(a)(2) (gas) 202(a)(2) (liquid)	<p><b>High-density population areas (for natural gas and liquid) and environmentally sensitive areas (for liquid):</b> Within 2 years, issue regulations establishing criteria to identify all pipeline facilities in high-density and environmentally sensitive areas.</p> <p>P.L. 104-304 (49 U.S.C. 60109(b)) changed language concerning what areas should be included as environmentally sensitive. [See requirement #20 in this appendix.]</p>	<p><b>Open for natural gas pipelines and small liquid pipelines:</b> OPS held a public meeting on 02/12/01 to address issues related to the development of proposed integrity management rules for natural gas transmission pipelines, including how to define "high consequence areas" for these pipelines. OPS plans to develop a proposed rule for these pipelines soon, based on public comments, and anticipates issuing a final rule in fall 2002. OPS has proposed a rule on pipeline integrity management for small liquid pipelines in high consequence areas (66 F.R. 15821, 03/21/01) and expects to issue a final rule by late fall 2001.</p> <p><b>For large liquid pipelines,</b> OPS has issued a final rule on pipeline integrity management for these pipelines in high consequence areas (65 F.R. 75378, 12/01/00).</p>
6	103(5) (gas) 203(5) (liquid)	<p><b>Update inspections/smart pigs:</b> Within 3 years, issue regulations requiring periodic inspections of pipelines in high-density and environmentally sensitive areas, specifying the circumstances, if any, under which inspections should be conducted using smart pigs; when smart pigs are not required, require an inspection method that is at least as effective in providing for the safety of the pipeline.</p> <p>This requirement was amended by P.L. 104-304 (49 U.S.C. 60102(f)(2)). As amended, regulations</p>	<p><b>Open for natural gas pipelines and small liquid pipelines:</b> OPS held a public meeting on 02/12/01 to address issues related to developing proposed integrity management rules for natural gas transmission pipelines in high consequence areas, including inspection frequency and the use of smart pigs. OPS plans to develop a proposed rule for these pipelines soon, based on public comments, and anticipates issuing a final rule in fall 2002. OPS has proposed a rule on pipeline integrity management for small liquid pipelines in high consequence areas that addresses these requirements (66 F.R. 15821, 03/21/01) and</p>



**Appendix I: OPS' Actions on Pipeline Safety  
Statutory Requirements Reported as Open in  
May 2000 (As of September 1, 2001)**

No.	Section	Statutory requirement	Status
		are required, if necessary. [See requirement #17 in this appendix.]	expects to issue a final rule by late fall 2001.
7	212 (liquid)	<b>Emergency flow restriction devices:</b> (1) Within 2 years, survey and assess the effectiveness of emergency flow restriction devices (including remotely controlled valves and check valves) and other procedures, systems, and equipment used to detect and locate pipeline ruptures and minimize product releases from pipeline facilities and (2) within 2 years after the survey and assessment, issue regulations prescribing the circumstances under which operators must use emergency flow restriction devices and other procedures, systems, and equipment.	<b>For large liquid pipelines,</b> OPS has issued a final rule on pipeline integrity management for these pipelines in high consequence areas (65 F.R. 75378, 12/01/00). <b>Open for small liquid pipelines:</b> The Research and Special Programs Administration issued a study on emergency flow restriction devices on 09/29/95. OPS has proposed a rule on pipeline integrity management for liquid pipelines that are less than 500 miles long that addresses these requirements (66 F.R. 15821, 03/21/01) and expects to issue a final rule by late fall 2001.
			<b>For large liquid pipelines,</b> OPS has issued a final rule on pipeline integrity management for these pipelines in high consequence areas (65 F.R. 75378, 12/01/00).
8	108(5) (gas) 207(5) (liquid)	<b>Periodic underwater inspections:</b> Within 2 years, define what constitutes an "exposed underwater pipeline" and what constitutes a "hazard to navigation or public safety."	<b>Closed:</b> Duplicative of closed requirement. OPS defined the terms in 49 C.F.R. 192.3 and 195.2 on 12/05/91 (56 F.R. 63764). At the time of our 05/00 report, OPS reported that this requirement was open.
9	109(b) (gas) 208(b) (liquid)	<b>Gathering lines:</b> Within 2 years, issue a regulation defining a "gathering line" and within 3 years, issue a regulation defining a "regulated gathering line."	<b>Open:</b> OPS has completed a review of an industry proposal but additional work is necessary. OPS is coordinating with state partners and other federal agencies to develop a regulatory approach prior to beginning rulemaking. OPS anticipates issuing a proposed rule in the beginning of 2002 and a final rule after mid-2002.
		P.L. 104-304 (49 U.S.C. 60101(b)(2)) changed language regarding regulated gathering lines from "shall" to "if appropriate, shall." [See requirement #13 in this appendix.]	
10	117 (gas) 216 (liquid)	<b>Underwater abandoned pipeline facilities:</b> Identify what constitutes a "hazard to navigation" regarding underwater abandoned pipeline facilities and, within 18 months, specify how operators shall report such facilities.	<b>Closed:</b> OPS has issued a final rule on underwater abandoned pipeline facilities (65 F.R. 54440, 09/08/00).
11	306	<b>Underground utility location technologies:</b> Carry out a research and development program on these technologies.	<b>Open:</b> OPS received funds in its fiscal year 2000 and 2001 research budgets for outside force damage research (which includes underground utility locating technologies). With these funds, OPS has entered into a cooperative agreement with the Gas Technology Institute for research into two areas: smart pig technology to identify mechanical damage and real-time monitoring of acoustic signals generated by boring equipment and transmitted by the gas stream. OPS is scheduling research into underground utility locating technologies for fiscal year 2002.
12	307	<b>Underwater abandoned pipeline facilities:</b> Undertake a study of such facilities and, within 3 years, submit a report to the Congress on the results of the study.	<b>Open:</b> OPS does not plan to complete this report due to insufficient data.

Source: For columns 1 and 2, GAO's analysis of pipeline safety statutes; for column 3, status reports from OPS.

**Appendix I: OPS' Actions on Pipeline Safety  
Statutory Requirements Reported as Open in  
May 2000 (As of September 1, 2001)**

**Table 5: Requirements in the Accountable Pipeline Safety and Partnership Act of 1996 (P.L. 104-304, Oct. 12, 1996)**

<b>No.</b>	<b>Section<sup>a</sup></b>	<b>Statutory requirement</b>	<b>Status</b>
13	49 U.S.C. 60101(b)(2) 3(b)	<b>Gathering lines:</b> Modify the requirement to define "regulated gathering line" by changing "shall" to "if appropriate, shall."	<b>Closed-amending law:</b> Since our 05/00 report was issued, OPS has reclassified this requirement as closed because it amends a previous statutory requirement, P.L. 102-508, sections 109(b) and 208(b). [See requirement #9 in this appendix.]
14	60102(b)(7) 4(b)	<b>Risk assessment report:</b> Not later than 03/31/00, transmit to the Congress a report that (1) describes the implementation of the act's risk assessment requirements and (2) includes any recommendations that would make the risk assessment process a more effective means of assessing the benefits and costs associated with alternative regulatory and nonregulatory options in prescribing standards.	<b>Closed:</b> OPS convened a team of industry, government, and public interest stakeholders, who produced a report, <i>A Collaborative Framework for Office of Pipeline Safety Cost-Benefit Analyses</i> (09/02/99). The report is available in the Department of Transportation Docket (RSPA-99-6045). At the time of our 05/00 report, OPS considered this requirement open and reported that the 1999 report was an interim report and that a final report was being cleared for issuance.
15	60126 5(a)	<b>Risk management report:</b> Establish risk management demonstration projects and report on their results by 03/31/00.	<b>Closed:</b> OPS established a Risk Management Demonstration Program in 03/97 and issued a final report in 04/01.
16	60102(f)(1) 4(e)	<b>Standards on accommodating smart pigs:</b> Requires new and replacement natural gas transmission and hazardous liquid pipelines to accommodate "smart pigs;" allows the extension of such standards to existing pipelines.	<b>Open:</b> On 04/12/94, OPS issued a final rule requiring new and replacement gas and hazardous liquid pipelines to be designed and constructed to accommodate the passage of smart pigs (59 F.R. 17275). On 09/30/94, OPS issued a notice of proposed rulemaking in response to petitions for reconsideration regarding replacement of parts of gas transmission lines in less populated areas and replacement of gas transmission lines located offshore (59 F.R. 49896). On 02/07/95, OPS suspended enforcement of the final rule as it applies to modification of line sections in onshore gas pipelines and as it applies to new and existing offshore gas pipelines (60 F.R. 7133). The 04/94 final rule continues to be enforced for all hazardous liquid pipelines, new onshore gas transmission pipelines, and the actual replaced line pipe, valves, fittings, and other line components in onshore gas transmission lines. No final rule has been published on the issues raised in the 09/94 proposed rule. The gas pipeline integrity management rule, expected in Fall 2002, is expected to address the accommodation of smart pigs for gas transmission pipelines in high consequence areas and OPS plans to take action for other pipelines, as well.
17	60102(f)(2) 4(e)	<b>Periodic inspections:</b> Modify the requirement for the Secretary to prescribe periodic inspections of each pipeline identified in high-density and environmentally sensitive areas by inserting "if necessary, additional" after "shall prescribe."	<b>Closed-amending law:</b> Since our 05/00 report was issued, OPS has reclassified this requirement as closed because it amends a previous statutory requirement, P.L. 102-508, sections 103(5) and 203(5). [See requirement #6 in this appendix.]

**Appendix I: OPS' Actions on Pipeline Safety  
Statutory Requirements Reported as Open in  
May 2000 (As of September 1, 2001)**

No.	Section <sup>a</sup>	Statutory requirement	Status
18	60102(l) 4(f)	<b>Updating standards:</b> To the extent appropriate and practicable, update the standards incorporated by the industry that have been adopted as part of the federal pipeline safety regulatory program.	<b>Closed:</b> OPS updated these standards in 09/97 (Department of Transportation Docket RSPA-97-2251). OPS has proposed subsequent updates (65 F.R. 15290, 03/22/00) and expects to issue a final rule in fall 2001. At the time of our 05/00 report, OPS classified this requirement as open and did not report its 1997 action.
19	60102(j)(3) 4(b)	<b>Remotely controlled valves:</b> (1) By 06/01/98, survey and assess the effectiveness of remotely controlled valves to shut off the flow of natural gas in the event of a rupture and (2) determine whether the use of remotely controlled valves is technically and economically feasible and would reduce the risks associated with a rupture; (3) within 1 year of completing the survey and assessment, if the use of valves is feasible and would reduce risks, prescribe standards for the use of these valves, including requirements for their use in densely populated areas.	<b>Open:</b> OPS published a report in 09/99 concluding that remotely controlled valves are technically, but not economically, feasible. At a public meeting on 11/04/99, OPS proposed that criteria, such as a definitive time to shut off a ruptured section in a high consequence area, be considered. OPS plans to propose criteria for the use of remotely controlled valves in a proposed rule on integrity management of natural gas transmission pipelines in high consequence areas. The agency plans to develop this proposed rule soon, based on public comments, and anticipates issuing a final rule in fall 2002.
20	60109(b) 7(b)	<b>Unusually sensitive areas:</b> Changes language from "shall include" to "shall consider" under areas to be included as unusually sensitive; adds drinking water and wildlife resources as considerations; and deletes earthquakes and other ground movement as considerations.	<b>Closed-amending law:</b> Since our 05/00 report was issued, OPS has reclassified this requirement as closed, since it amends a previous statutory requirement, P.L. 102-508, sections 102(a)(2) and 202(a)(2). [See requirement #5 in this appendix.]
21	60124 15(2)	<b>Biennial reports:</b> Not later than 08/15/97 and every 2 years thereafter, submit to the Congress a report on how pipeline safety activities were carried out during the 2 immediately preceding calendar years.	<b>Closed-not completed:</b> OPS issued a report in 08/97 but did not issue a report in 1999. As of 05/15/00, this requirement was permanently eliminated under the Federal Reports Elimination and Sunset Act of 1995, as amended. OPS classified this requirement as open at the time of our 05/00 report.
22	60127(a) 16(a)	<b>Population encroachment:</b> (1) Make available to each state the land-use recommendations in the Transportation Research Board's special report entitled <i>Pipelines and Public Safety</i> (No. 219) and (2) evaluate the recommendations, determine the extent to which they are being implemented, consider ways to improve their implementation, and consider other initiatives to make local planning and zoning entities more aware of issues involving the encroachment of population along pipeline rights-of-way.	<b>Closed:</b> OPS sent the Transportation Research Board's report to all states. OPS has conducted activities related to the second part of the requirement and has requested \$3 million in its fiscal year 2002 budget to conduct damage prevention activities, including implementing recommendations in the Transportation Research Board's report.

<sup>a</sup>Citations included in table 5 are to the United States Code and to the Accountable Pipeline Safety and Partnership Act of 1996.

Source: For columns 1 and 2, GAO's analysis of pipeline safety statutes; for column 3, status reports from OPS.



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