

# CRS Report for Congress

## BP Alaska North Slope Pipeline Shutdowns: Regulatory Policy Issues

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Prepared for Members and  
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# BP Alaska North Slope Pipeline Shutdowns: Regulatory Policy Issues

## Summary

On August 6, 2006, BP Exploration (Alaska), Inc. (BP) announced the shutdown of the Prudhoe Bay area oil field on the North Slope of Alaska to conduct major repairs following the discovery of severe corrosion and a small spill from a Prudhoe Bay oil pipeline. The loss of North Slope oil production initially was expected to cut overall U.S. oil supplies by approximately 2.6%. Corrective measures, however, allowed BP to restore nearly 100% of its Prudhoe Bay area supplies by early December, 2006, while longer term repairs were underway.

The unexpected discovery of severe corrosion problems in BP's pipelines and the sudden loss of Prudhoe Bay oil supplies have drawn intense media attention and strong criticism from Congress. Congressional Committees have held hearings to examine BP's maintenance problems and the adequacy of federal pipeline safety regulation administered by the Department of Transportation (DOT). The Pipeline Safety Improvement Act of 2006 (P.L. 109-468) mandates the promulgation of new regulations covering the types of pipelines used by BP on the North Slope, among other provisions.

BP executives have admitted to the inadequacy of the company's maintenance program for its North Slope pipeline operations. Likewise, federal policy makers and pipeline safety regulators have acknowledged that "low-stress" hazardous liquids pipelines like BP's North Slope pipelines should be under stricter federal oversight. The federal Office of Pipeline Safety (OPS) must promulgate new regulations covering such pipelines by December 31, 2007. In the meantime, the agency has responded to BP's problems under its current regulations. The OPS's Corrective Action Orders since March, 2006 have revealed the extensive corrosion problems in BP's North Slope pipelines, have likely prevented additional oil spills, and have facilitated BP's restoration efforts.

As BP's activities continue, Congress may consider ensuring that Prudhoe Bay area pipeline restoration and OPS rulemaking remain on schedule. Congress may review the specific requirements of the OPS's proposed low-stress pipeline regulations to ensure they appropriately balance safety benefits and implementation costs. Congress may also act to ensure that the OPS strictly enforces all its pipeline safety regulations so that incremental problems in particular systems do not accumulate and lead to major supply disruptions. In addition to these issues, Congress may opt to assess how U.S. pipeline safety regulation fits within the nation's overall strategy to ensure the reliability of critical energy infrastructure. Most observers would argue that federal efforts to protect pipelines either from accidents or security risks should be consistent in their consideration of pipeline criticality to the nation's energy supplies. Reviewing how the federal government, industry, and private groups work together to achieve common goals in pipeline safety could be an oversight challenge for Congress.

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# BP Alaska North Slope Pipeline Shutdowns: Regulatory Policy Issues

## Introduction

On August 6, 2006, BP Exploration (Alaska), Inc. (BP) announced the shutdown of the Prudhoe Bay area oil field on the North Slope of Alaska to conduct major pipeline repairs “following the discovery of unexpectedly severe corrosion and a small spill from a Prudhoe Bay oil transit line.”<sup>1</sup> This shutdown followed the March 2, 2006, shutdown of another BP pipeline serving the same field. The discovery of the August corrosion problems resulted from inspections ordered by the federal Office of Pipeline Safety in response to the March incident. Shutdown of the Prudhoe Bay field initially was expected to cut overall U.S. oil supplies by approximately 2.6%. Subsequent inspection findings and immediate corrective measures allowed BP to restore approximately 88% of its Prudhoe Bay supplies by late September, 2006, and nearly 100% by early December, 2006, while longer term repairs were underway.<sup>2</sup>

The unexpected discovery of severe corrosion problems in BP’s pipelines and the sudden loss of Prudhoe Bay oil supplies have drawn intense media attention and strong criticism from Congress. Stakeholders on all sides have been trying to understand the circumstances which led to the failure of these nationally critical pipeline facilities. Newspaper editorials have criticized BP’s apparent inattention to the condition of its North Slope oil pipelines at a time of record high oil prices, record oil company profits, and military conflict in the oil-rich Middle East.<sup>3</sup> Members of Congress have accused federal pipeline safety regulators of being “asleep at the switch” for not establishing stricter oversight of BP’s North Slope operations.<sup>4</sup> Congressional Committees have held hearings to examine BP’s maintenance problems and the adequacy of federal pipeline safety regulation administered by the Department of Transportation (DOT).

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<sup>1</sup> BP Exploration Alaska, Inc. “BP to Shutdown Prudhoe Bay Oil Field.” Press release. August 6, 2006.

<sup>2</sup> Pemberton, M. “BP Increases Production at Prudhoe Oil Field.” Associated Press. September 26, 2006; Dinesh, M. “Feds Ask BP for Details of Prudhoe Bay Pipe Replacement.” *Oil Daily*. December 19, 2006. p. 5.

<sup>3</sup> See, for example: “Simply Irresponsible How could BP not maintain its pipelines?” *The Dallas Morning News*. Editorial. August 13, 2006. p. 2P.

<sup>4</sup> Hon. Charles E. Schumer. “Schumer: Major Corrosion In Alaska Pipeline Could Indicate Future Trouble In US Pipeline System.” Press release. August 8, 2006.

While the BP pipeline problems on the North Slope have recently intensified public and Congressional attention to U.S. pipeline safety issues, policy makers have been examining pipeline operator performance and federal regulation of pipeline safety for many years. Reacting to a history of pipeline safety problems and documented inadequacies in federal oversight of natural gas and hazardous liquids pipelines, Congress began a major overhaul of federal pipeline safety programs in the 1990s, culminating in the passage of the Pipeline Safety Improvement Act of 2002 (P.L. 107-355). The 109<sup>th</sup> Congress passed the Pipeline Safety Improvement Act of 2006 (P.L. 109-468) to further improve pipeline safety and security practices, and to address perceived regulatory loopholes which contributed to the Prudhoe Bay area pipeline closures. Among other provisions, P.L. 109-468 sets a deadline for the promulgation of new regulations covering the types of pipelines used by BP on the North Slope (Sec. 4).<sup>5</sup>

## Scope and Limitations

This report discusses policy issues in federal oversight of pipeline safety related to BP's North Slope pipeline operations. It also summarizes federal pipeline regulatory authorities and agency activities. It reviews key details of the operational problems at the North Slope pipeline facilities in 2006, including corrective actions ordered by the federal government. The report discusses the status of federal regulations for pipelines operating at relatively low pressure of the type employed by BP. It also summarizes ongoing changes in federal pipeline safety enforcement activities. The report concludes with a discussion of the relationship between federal pipeline safety regulations and the overall reliability of critical U.S. energy supplies.

This report focuses on federal pipeline safety regulation administered by the DOT. It does not address regulation by the Environmental Protection Agency, the Department of the Interior, or other agencies that may also have jurisdiction over BP's Prudhoe Bay operations. Although oil spills on the North Slope may have implications for the possible development of the Arctic National Wildlife Refuge (ANWR), issues related specifically to ANWR are beyond the intended scope of this report. For further information about ANWR, see CRS Report RL33872, *Arctic National Wildlife Refuge (ANWR): New Directions in the 110th Congress*, by M. Lynne Corn, Bernard A. Gelb, Pamela Baldwin. This report also does not discuss BP's safety record at energy facilities other than those on the North Slope.

## Federal Pipeline Safety Regulation

The federal government regulates the safety of interstate pipelines under the Natural Gas Pipeline Safety Act of 1968 (P.L. 90-481), the Hazardous Liquid Pipeline Act of 1979 (P.L. 96-129), the Pipeline Safety Act of 1992 (P.L. 102-508), and the Pipeline Safety Improvement Act of 2002 (P.L. 107-355), among other statutes. Under these statutes, the Secretary of Transportation has primary authority to regulate interstate pipeline design, construction, operation and maintenance, and

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<sup>5</sup> For a more comprehensive discussion of federal pipeline legislation, see CRS Report RL33347, *Pipeline Safety and Security: Federal Programs*, by Paul W. Parfomak.

spill response planning. Pipeline safety regulations are covered in Title 49 of the Code of Federal Regulations. The DOT administers pipeline regulations through the Office of Pipeline Safety (OPS) within the Pipelines and Hazardous Materials Safety Administration (PHMSA).<sup>6</sup> The OPS has approximately 170 staff, including 88 inspectors based in Washington, D.C., Atlanta, Kansas City, Houston, and Denver.<sup>7</sup> In addition to its own staff, the OPS' enabling legislation allows the agency to delegate authority to *intrastate* pipeline safety offices, and allows state offices to act as "agents" administering *interstate* pipeline safety programs (excluding enforcement) for those sections of *interstate* pipelines within their boundaries.<sup>8</sup> Over 400 state pipeline safety inspectors are available in 2007. The OPS safety program is funded primarily by user fees (49 U.S.C. § 60107).

The OPS uses a variety of strategies to promote compliance with its safety standards. The agency conducts physical inspections of facilities and construction projects; conducts programmatic inspections of management systems, procedures, and processes; investigates safety incidents, and maintains a dialogue with pipeline operators. The agency clarifies its regulatory expectations through published protocols and regulatory orders, guidance manuals, and public meetings. The OPS relies upon a range of enforcement actions, including administrative actions and civil penalties, to ensure that operators correct safety violations and take measures to preclude future safety problems. From 2002 through 2006, the OPS initiated 1,313 enforcement actions against pipeline operators. Civil penalties proposed by the OPS for safety violations during this period totaled approximately \$10.9 million.<sup>9</sup> The OPS also conducts accident investigations and systemwide reviews focusing on high-risk operational or procedural problems and areas of the pipeline near sensitive environmental areas, high-density populations, or navigable waters.

Since 1997, the OPS has encouraged industry's implementation of "integrity management" programs on pipeline segments near "high consequence" areas. Integrity management provides for continual evaluation of pipeline condition; assessment of risks to the pipeline; inspection or testing; data analysis, and followup repair, as well as preventive or mitigative actions. High consequence areas include population centers, commercially navigable waters, and environmentally sensitive areas, such as drinking water supplies or ecological reserves. The integrity management approach directs priority resources to locations of highest consequence rather than applying uniform treatment to the entire pipeline network.<sup>10</sup> The OPS

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<sup>6</sup> PHMSA succeeds the Research and Special Programs Administration (RSPA), reorganized under P.L. 108-246 which was signed by the President on November 30, 2004.

<sup>7</sup> OPS. Phone directory. Updated May 15, 2007. [<http://ops.dot.gov/contact/phonelist.htm>].

<sup>8</sup> United States Code. 49 U.S.C. 601. States may recover up to 50% of their costs for these programs from the federal government.

<sup>9</sup> Office of Pipeline Safety (OPS). "PHMSA Pipeline Safety Program: Summary of Enforcement Actions." Web page. May 15, 2007. [[http://primis.phmsa.dot.gov/comm/reports/enforce/Letters\\_opid\\_0.html](http://primis.phmsa.dot.gov/comm/reports/enforce/Letters_opid_0.html)]

<sup>10</sup> Research and Special Programs Administration (RSPA). "Pipeline Safety. Pipeline Integrity Management in High Consequence Areas (Hazardous Liquid Operators with 500 (continued...)

made integrity management programs mandatory for most operators with 500 or more miles of regulated oil pipeline as of March 31, 2001.

## Low-Stress Pipelines Regulation

Pipelines operated at less than 20% of the specified minimum strength of the material from which they are constructed are classified as “low-stress” pipelines under 49 C.F.R. § 195.2. According to the OPS, federal pipeline safety regulations originally did not apply to low-stress pipelines because they operated at low pressures, were not prone to accidents, and were thought to pose little risk to the public. In 1990, however, a major heating oil spill from an underwater low-stress pipeline in New York prompted OPS to begin developing safety regulations for such pipelines.<sup>11</sup> The Pipeline Safety Act of 1992 subsequently prohibited the exemption of pipeline facilities from OPS safety regulation “solely” because they operate at low stress (49 U.S.C. § 60102(k)). OPS analysis of data the agency received under its low-stress pipeline rule making showed that regulation of all such pipelines would not be cost-effective. The agency therefore chose to focus on low-stress pipelines posing higher public and environmental risk based on their location and the commodities they carried. In 1994, OPS extended its hazardous liquid pipeline regulations under 49 C.F.R. § 195 to include low-stress pipelines that 1) transport highly volatile liquids, 2) are not located in rural areas, 3) are located offshore, or 4) are located in waterways used for commercial navigation (§ 195.1(b)(3)).<sup>12</sup>

On September 6, 2006, the OPS published in the Federal Register proposed rules for risk-based regulation of hazardous liquid low-stress pipelines located in “unusually sensitive areas” and exempted from its regulations under 49 C.F.R. § 195.<sup>13</sup> The OPS defines an unusually sensitive area (USA) as “a drinking water or ecological resource area that is unusually sensitive to environmental damage from a hazardous liquid pipeline release” (49 C.F.R. § 195.6).<sup>14</sup> Although USAs would be identified on a site-by-site basis, the OPS has indicated that the North Slope is a USA.<sup>15</sup> There is general agreement that the OPS can promulgate new low-stress

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<sup>10</sup> (...continued)

or More Miles of Pipeline).” *Federal Register*. Vol. 65, No. 232. December 1, 2000: 75378.

<sup>11</sup> Pipeline and Hazardous Materials Safety Administration (PHMSA). “Pipeline Safety: Meetings of the Pipeline Safety Standards Advisory Committees and Two Public Workshops.” *Federal Register*. Vol. 71, No. 83. May 1, 2006. p. 25640.

<sup>12</sup> Research and Special Programs Administration (RSPA). “Low-Stress Hazardous Liquid Pipelines Serving Plants and Terminals.” *Federal Register*. Vol. 63, No. 39. February 27, 1998.

<sup>13</sup> Pipeline and Hazardous Materials Safety Administration (PHMSA). “Pipeline Safety: Protecting Unusually Sensitive Areas From Rural Onshore Hazardous Liquid Gathering Lines and Low-Stress Lines.” *Federal Register*. Vol. 71, No. 172. September 6, 2006. pp. 52504-52519.

<sup>14</sup> 49 C.F.R. § 195.6 further define “drinking water” or “ecological resource” areas.

<sup>15</sup> Dept. of Transportation (DOT). “U.S. Department of Transportation Proposes New Safety Requirements for Rural Low-Stress and Gathering Pipelines in Unusually Sensitive Areas.”

pipeline regulations under its existing statutory authority under Section 49 of the U.S. Code. The agency expected to finalize regulations for low-stress hazardous liquids pipelines in USAs by the end of 2006, but has not yet done so.<sup>16</sup> P.L. 109-648 requires the OPS to promulgate these regulations by December 31, 2007 (Sec. 4).

## Prudhoe Bay West Oil Spill, March 2006

On March 2, 2006, BP crews discovered a crude oil leak from a 34-inch pipeline in the Prudhoe Bay West Operating Area (PBWOA) on the North Slope of Alaska. The company isolated and shut down the affected section of pipeline and began cleaning up approximately 5,000 barrels of oil spread over two acres of adjacent land. The shutdown initially caused North Slope oil production to fall by approximately 100,000 barrels per day, although BP restored most of that volume by mid-April using other pipelines.<sup>17</sup> Subsequent investigation by BP revealed at least six additional areas of corrosion along the pipeline, which had last been inspected internally in 1998. At the time of the spill, BP did not have a program for regular inspection or cleaning of its North Slope pipelines internally using “pigs,” devices that travel inside pipelines and named for the sounds they make during operation.<sup>18</sup>

**OPS Corrective Action Order.** On March 15, 2006, the OPS issued to BP a Corrective Action Order (CAO) requiring the company to take corrective action to protect the public, property, and environment from potential hazards associated with the Prudhoe Bay pipeline failure. The CAO asserted federal safety jurisdiction over BP’s PBWOA pipeline, as well as the company’s adjacent Prudhoe Bay East Operating Area (PBEOA) and Lisburne pipelines, finding that they met the definition of a “hazardous pipeline facility” under 49 U.S.C. § 60112(a), which grants general authority under the statute.<sup>19</sup> These operating areas are indicated in **Figure 1**. The CAO also concluded, however, that the specific federal pipeline safety regulations under 49 C.F.R. § 195 did not apply to the PBWOA pipeline under the exception in 49 C.F.R. § 195.1 for onshore low-stress pipelines located in rural areas, outside commercial waterways, which do not transport highly volatile liquids.<sup>20</sup>

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<sup>15</sup> (...continued)

Press release. PHMSA 8-06. August 31, 2006.

<sup>16</sup> Ibid. DOT. August 31, 2006; Hebert, H.J. “In Wake of Pipeline Trouble in Alaska, Government Renews Push for Regulations.” Associated Press. August 10, 2006.

<sup>17</sup> “BP Restores Prudhoe Production to 70,000 b/d.” *Platts Commodity News*. April 11, 2006.

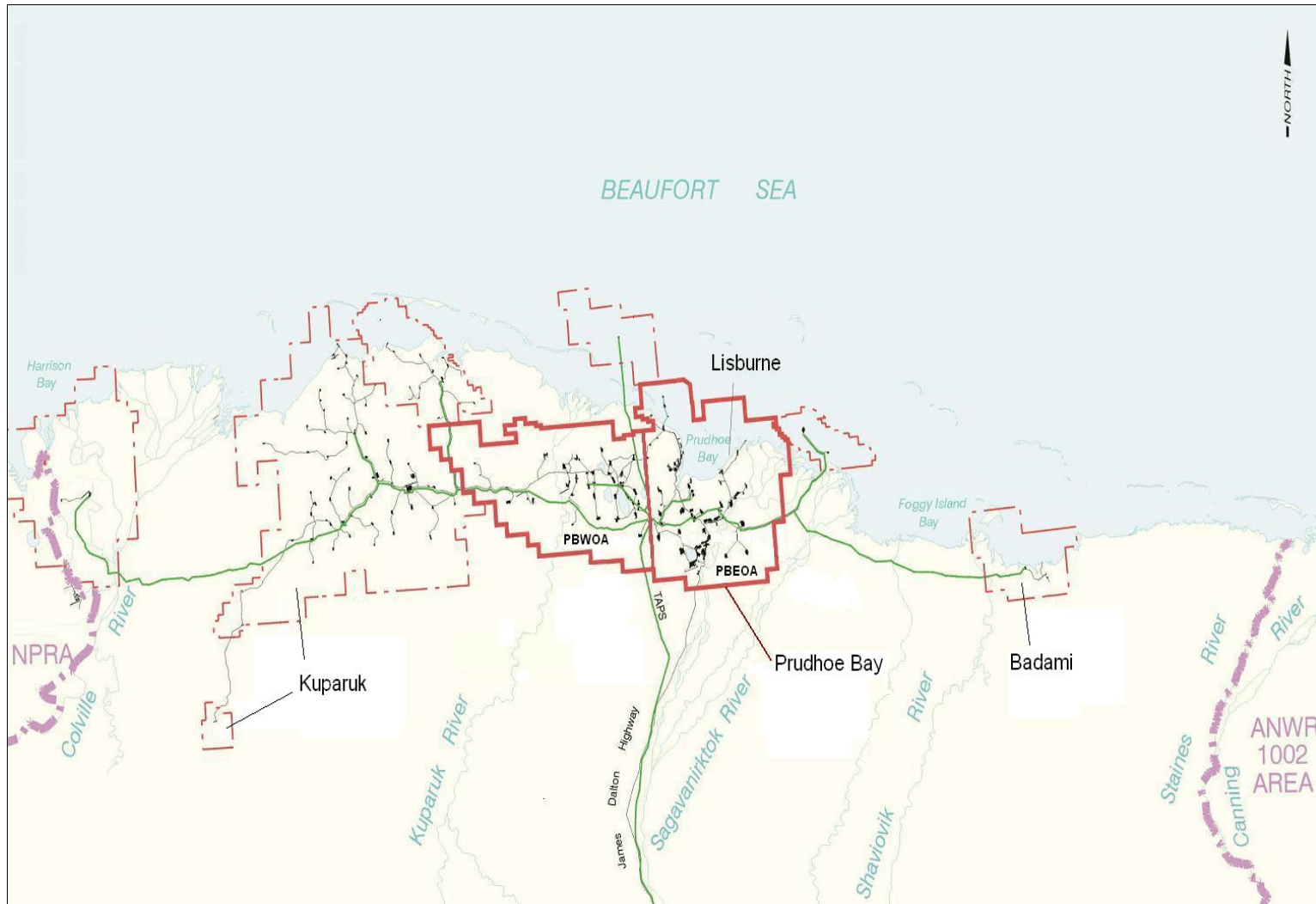
<sup>18</sup> Pipeline and Hazardous Material Safety Admin (PHMSA). *Corrective Action Order in the Matter of BP Exploration (Alaska), Inc., Respondent*. CPF No. 5-2006-5015H. March 15, 2006. [<http://ops.dot.gov/regions/west/BP%205-2006-5015H%20-%20Final.pdf>].

<sup>19</sup> Ibid. p. 3.

<sup>20</sup> Ibid. p. 2.



**Figure 1: BP Exploration (Alaska) North Slope Pipeline Network**



**Source:** Courtesy of BP. Modified by CRS for clarity and monochrome printing. Aug 18, 2006.

In its March 15 order, the OPS required BP to immediately take a number of corrective actions with respect to the PBWOA, PBEOA, and Lisburne pipeline systems. Among other actions, the CAO required BP to:

- Inspect the pipelines internally using a pig, repairing all anomalies;
- Record differences between inline inspection data and "as found" data for all anomalies and integrate that data in future analyses;
- Implement a plan for internal inspections at regular intervals (not to exceed five years) and a schedule for the repair of anomalies;
- Implement a plan to regularly run cleaning pigs on the pipelines;
- Review and modify, as necessary, the leak detection system for the pipelines in compliance American Petroleum Institute standards;
- Implement an internal corrosion management plan, and
- Perform infrared aerial surveys for the entirety of the pipelines.<sup>21</sup>

The OPS also asserted its authority under 49 U.S.C. § 60122 and 49 C.F.R. § 190.223 to fine BP up to \$100,000 per day and refer the company to the Attorney General for noncompliance with its order.<sup>22</sup>

**OPS Corrective Action Order Amendment 1.** On July 20, 2006, the OPS issued to BP an amendment to its CAO of March 15, 2006 requiring the company to take additional corrective actions at its North Slope pipelines based on findings after the initial CAO.<sup>23</sup> Among other findings in the amendment, the OPS determined that BP's predecessor, ARCO, had suspended cleaning of the PBEOA pipeline in 1992 when solid deposits clogged strainers on the Trans Alaska Pipeline System (TAPS). In May, 2006, BP performed external gamma ray scans to determine the volume of accumulated sludge inside the PBEOA and PBWOA pipelines since 1992. BP cleaned and internally inspected the Lisburne pipeline with pig devices in June 2006, although the inspection results were still pending. BP had also initiated, but not completed, cleaning of the PBEOA pipeline with pig devices in July, 2006. The OPS also found that BP did not have its own large volume tanks to store solids displaced by cleaning pigs, and had not made agreements to use non-BP tanks available on the TAPS system. Finally, the OPS found that the approximately three-mile long segment of the PBWOA pipeline originally closed after the March 2 leak had not yet been drained, still contained approximately 17,000 barrels of oil, and posed an ongoing threat of additional leaks.<sup>24</sup>

Based on the findings above and its earlier CAO findings, the OPS amendment to its CAO concluded that BP had "failed to meet its continuing responsibility to pursue all available options" for satisfying several requirements of the March 15, 2006 CAO, and had failed to address risks associated with shutdown of PBWOA

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<sup>21</sup> Ibid. pp. 4-5.

<sup>22</sup> Ibid. p. 5.

<sup>23</sup> Pipeline and Hazardous Material Safety Admin. (PHMSA). Memorandum to BP Exploration (Alaska), Inc. RE: CPF #5-2006-5015H, Amendment No.1 to Corrective Action Order. July 20, 2006. [[http://ops.dot.gov/regions/west/CPF\\_NO5-2006-5015H.pdf](http://ops.dot.gov/regions/west/CPF_NO5-2006-5015H.pdf)]

<sup>24</sup> Ibid. pp. 1-3.

pipeline segment where the initial leak occurred.<sup>25</sup> Accordingly, the OPS further amended its CAO to require that BP perform the following additional actions, among others:

- Conduct additional gamma ray scans of the PBWOA, PBEOA, and Lisburne pipelines;
- Extract and analyze samples from the failed PBWOA pipe wall;
- Install facilities to handle solids from cleaning pig operations;
- Develop contingency plans to send solids directly into TAPS tanks;
- By August 1, 2006, develop a plan to remove the standing crude oil in the PBWOA pipeline by August 22, 2006, and
- Report within 30 days on actions and plans for replacing, abandoning, and/or restoring operation of the PBWOA pipeline.<sup>26</sup>

## Prudhoe Bay Oil Field Shutdown, August 2006

On August 6, 2006, BP reported “the discovery of unexpectedly severe corrosion and a small spill” at its Prudhoe Bay pipeline facilities following inspections mandated by the OPS in its CAO. To address these problems, BP announced its decision to completely replace the main North Slope pipelines (including PBWOA and PBEOA, but not Lisburne), approximately 16 miles out of a total 22 miles of pipeline. The urgent and comprehensive nature of the pipeline repair initially was expected to require the complete shutdown of the Prudhoe Bay oil field.<sup>27</sup> Such a shutdown would cut U.S. oil supplies by approximately 380,000 barrels per day (bpd), approximately 7.5% of U.S. domestic production and 2.6% of total U.S. supplies, including imports.<sup>28</sup> On August 12, 2006, after reviewing new inspection data with the OPS and state regulators, BP concluded that it did not need to immediately shut down production from the PBWOA, which accounts for approximately 200,000 bpd of supplies.<sup>29</sup> Subsequent actions by BP have sought to maintain additional supplies from PBEOA. As stated earlier in this report, BP restored production from Prudhoe Bay to nearly 100% of pre-shutdown levels by December, 2006 while conducting long-term pipeline repairs and replacement. BP did not release a specific schedule for repairing its North Slope pipelines, which have yet to be completed.

Oil companies began production from the Prudhoe Bay field in 1977. It is the largest and longest-producing oil field on the North Slope. As production from it has declined, adjacent smaller fields, such as the Badami and Kuparuk fields (**Figure 1**), have supplemented overall North Slope production. According to BP, half of North Slope oil is produced from fields outside the Prudhoe Bay area. Because these fields

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<sup>25</sup> Ibid. p. 4.

<sup>26</sup> Ibid. pp. 5-7.

<sup>27</sup> Malone, R., Chairman, BP America. “Prudhoe Bay Response.” Press conference. August 7, 2006.

<sup>28</sup> Energy Information Admin. “U.S. Crude Oil Supply & Disposition.” May 2006 data. Online database. [[http://tonto.eia.doe.gov/dnav/pet/pet\\_sum\\_crdsnd\\_adc\\_mbb1pd\\_m.htm](http://tonto.eia.doe.gov/dnav/pet/pet_sum_crdsnd_adc_mbb1pd_m.htm)]

<sup>29</sup> BP America, Inc. “Prudhoe Bay Alaska Update.” Press release. August 12, 2006.

use different pipelines to reach the market, not all were directly affected by the Prudhoe Bay shutdown.<sup>30</sup> Nonetheless, the operations (e.g., maintenance and materials) associated with the older infrastructure around the Prudhoe Bay oil field are, to some degree, integrated with subsequently developed North Slope fields, including connections to the Trans Alaska Pipeline System. Thus, the shutdown of BP's North Slope pipelines might ultimately affect oil transport from other North Slope fields as well.

**OPS Corrective Action Order Amendment 2.** On August 10, 2006, the OPS issued to BP a second amendment to its CAO of March 15, 2006.<sup>31</sup> Among other findings in the amendment, the OPS stated that BP's inspections under the CAO had identified 16 pipeline anomalies where the pipeline material had lost at least 70 percent of its thickness and at least 6 actual leaks at different locations in the company's Prudhoe pipeline system. The amendment also stated that BP had not yet completed cleaning or inspection pigging of the PBWOA or the PBEOA pipelines as of the date of the amendment, although the company had submitted an acceptable plan for removing the oil in the shutdown segment of the PBWOA pipeline still in place from the March incident.<sup>32</sup> Based on these and additional findings, the OPS further amended its CAO to impose on BP additional monitoring, testing, and information requirements and to set standards and deadlines for pipeline repair. The amendment also imposed requirements, such as removing standing oil, arising from BP's decision to shut down additional North Slope pipelines.<sup>33</sup>

**OPS Request for Repair Schedule Information.** The OPS sent a letter on December 7, 2006 to BP seeking additional information on the company's Prudhoe Bay area pipeline replacement and repair activities.<sup>34</sup> The OPS reportedly was seeking details of BP's plans and schedule to for its pipeline replacement as well as an inventory of materials necessary for the replacement. The agency also was seeking details of BP's inspection schedules, corrosion management, and maintenance of pipeline connectors installed to reroute the oil normally shipped through BP's damaged lines.<sup>35</sup> On January 10, 2007, BP provided the OPS with a detailed schedule for rebuilding the damaged portions of its Prudhoe Bay area oil pipeline network. The schedule called for the pipeline work to be completed by December 31, 2008. Upon review of these plans, the OPS concluded that BP's rebuilt pipeline system "should account for many of the known risks associated with

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<sup>30</sup> BP Exploration Alaska, Inc. "Alaska Corrosion Response: Frequently Asked Questions." August 10, 2006.

<sup>31</sup> Pipeline and Hazardous Material Safety Admin.. Memo to BP Exploration (Alaska), Inc. Re: CPF #5-2006-5015H, Amendment No.2 to Corrective Action Order. August 10, 2006. [[http://ops.dot.gov/regions/west/CPF\\_No\\_5-2006-5015%20Amendment-2.pdf](http://ops.dot.gov/regions/west/CPF_No_5-2006-5015%20Amendment-2.pdf)]

<sup>32</sup> *Ibid.* pp. 2-3.

<sup>33</sup> *Ibid.* pp. 5-8.

<sup>34</sup> Pipeline and Hazardous Material Safety Admin.. Memo to BP Exploration (Alaska), Inc. Re: CPF #5-2006-5015H, Amendment No.3 to Corrective Action Order. April 27, 2007. p. 3. [[http://ops.dot.gov/regions/west/2007/CPF\\_5\\_2006\\_5015H.pdf](http://ops.dot.gov/regions/west/2007/CPF_5_2006_5015H.pdf)]

<sup>35</sup> Dinesh, M. "Feds Ask BP Details Of Prudhoe Bay Pipe Replacement." *Oil Daily*. December 19, 2007.

BP's North Slope pipeline operations" and "improved risk assessment in the future should provide additional protection against known and unforeseen risks."<sup>36</sup>

**OPS Corrective Action Order Amendment 3.** On April 27, 2007, the OPS issued a third amendment to its CAO of March 15, 2006.<sup>37</sup> Among other provisions, the CAO required BP to submit monthly status reports on its rebuilding plan; required additional monitoring, testing, and data reporting for certain of BP's operation North Slope pipelines; set a schedule for de-oiling and abandoning pipelines to be removed from service; and required BP to report the safety improvement costs associated with the OPS's orders.<sup>38</sup>

## Regulatory Policy Issues

The recent safety problems at BP's North Slope pipeline facilities have raised questions about the adequacy of federal pipeline safety regulation. Members of Congress and other stakeholders have expressed concern, in particular, about federal oversight of low-stress pipelines and the adequacy of federal pipeline safety enforcement.<sup>39</sup> The disruption of North Slope oil supplies also highlights the relationship between pipeline safety and critical infrastructure reliability.

### Low-Stress Pipeline Regulations

Although the types of low-stress pipelines employed by BP on the North Slope at Prudhoe Bay are currently exempt from federal safety regulations, the OPS is in the process of developing new regulations for low-stress hazardous liquids pipelines.<sup>40</sup> On September 6, 2006, the OPS published in the Federal Register proposed rules for risk-based regulation of hazardous liquid low-stress pipelines located in USAs and currently exempted from its regulations under 49 C.F.R. § 195.<sup>41</sup> Underway since early 2005, the OPS accelerated its schedule for developing these regulations after the March 2006 BP oil spill. There is general agreement that the OPS can promulgate new low-stress pipeline regulations under its existing statutory authority under Section 49 of the U.S. Code. P.L. 109-648 requires the OPS to promulgate these regulations by December 31, 2007 (Sec. 4).

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<sup>36</sup> Pipeline and Hazardous Material Safety Admin.. April 27, 2007. p. 4.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid. pp. 8-10.

<sup>39</sup> See, for example: Randall, M.J. "DOT Administrator to Propose Greater Pipeline Oversight." Dow Jones. August 9, 2006.

<sup>40</sup> DOT. August 31, 2006; Hebert, H.J. "In Wake of Pipeline Trouble in Alaska, Government Renews Push for Regulations." Associated Press. August 10, 2006.

<sup>41</sup> Pipeline and Hazardous Materials Safety Administration (PHMSA). "Pipeline Safety: Protecting Unusually Sensitive Areas From Rural Onshore Hazardous Liquid Gathering Lines and Low-Stress Lines." *Federal Register*. Vol. 71. No. 172. September 6, 2006. pp. 52504-52519.

Members of Congress, the pipeline industry, and public advocates have long expressed support in principle for additional regulation of low-stress pipelines.<sup>42</sup> One key question, however, has been how broadly those regulations should apply. The OPS's proposed rules would regulate previously exempt low-stress pipelines within a quarter mile of a USA, which reportedly would cover approximately 1,600 miles out of approximately 5,000 miles of U.S. low-pressure pipelines.<sup>43</sup> Public and environmental advocacy groups have proposed regulation of nearly all low-stress pipelines, regardless of location.<sup>44</sup> Consistent with the latter approach, P.L. 109-468 would require that nearly all low-stress hazardous liquids pipelines be subject to the same regulations as other hazardous liquids pipelines (Sec. 4). Other advocates have proposed using the "high consequence" criteria in the OPS's existing integrity management regulations for determining which specific pipelines should be covered under OPS's new provisions. In reviewing the final criteria for low-stress pipeline regulation, Congress may consider the balance between the potential safety benefits and the potential costs of stricter safety programs in light of BP's pipeline problems and potential problems among similar pipeline systems elsewhere in the United States.

## Pipeline Safety Enforcement

The adequacy of the OPS's enforcement strategy has been an ongoing concern of Congress, particularly after a pair of fatal pipeline accidents in Bellingham, Washington in 1999 and near Carlsbad, New Mexico in 2000.<sup>45</sup> A report from the General Accounting Office in 2000 called into question fundamental changes in OPS's enforcement strategy at the time, such as sharply reducing the use of fines to enforce compliance with pipeline safety regulations.<sup>46</sup> Provisions in the Pipeline Safety Improvement Act of 2002 (P.L. 107-355) put added scrutiny on the effectiveness of the OPS's enforcement strategy and assessment of civil penalties (Sec. 8).

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<sup>42</sup> See testimony in: "Pipeline Safety: a Progress Report since the Enactment of the Pipeline Safety Improvement Act of 2002." Hearing before the House Committee on Energy and Commerce, Subcommittee on Energy and Air Quality. Serial No. 109-84. April 27, 2006.

<sup>43</sup> "Oversight of Pipelines May Increase." *Los Angeles Times*. August 18, 2006. p. C3.

<sup>44</sup> Epstein, L.N., Cook Inlet Keeper. Testimony before the House Committee on Energy and Commerce, Subcommittee on Energy and Air Quality hearing on Pipeline Safety Improvement Act Reauthorization and H.R. 5782, the Pipeline Safety Improvement Act of 2006. July 27, 2006.

<sup>45</sup> Hon. John D. Dingell. Statement before the House Commerce Committee, Energy and Power Subcommittee hearing on Reauthorization of the Natural Gas Pipeline Safety Act and the Hazardous Liquid Pipeline Safety Act. Serial No. 106-11. February 3, 1999. p. 9; Hon. John D. Dingell and Hon. Edward J. Markey. Statements before the House Energy and Commerce Committee, Energy and Air Quality Subcommittee hearing on Reauthorization of the Natural Gas Pipeline Safety Act and the Hazardous Liquid Pipeline Safety Act. Serial No. 107-87. March 19, 2002. pp. 5,8.

<sup>46</sup> General Accounting Office (GAO). *Pipeline Safety: The Office of Pipeline Safety Is Changing How It Oversees the Pipeline Industry*. GAO/RCED-00-128. May 2000. p. 22.

In response to Congressional concerns in 2000, the OPS has been steadily intensifying its enforcement activities. A 2004 Government Accountability Office (GAO) report re-examining OPS enforcement stated that the agency had made a number of changes in its enforcement strategy with the potential to improve pipeline safety. The report concluded, however, that the effectiveness of the strategy could not yet be determined because OPS's program had not incorporated "clear program goals, a well-defined strategy for achieving those goals, and performance measures linked to the program goals."<sup>47</sup> Acknowledging the GAO's findings, the OPS stated that it would better define its enforcement strategy, including the assessment of civil penalties, and identify new measures of enforcement performance before the end of 2005.<sup>48</sup> In March 2006 testimony before Congress, the GAO reported that the OPS had adopted measures that appeared to be responsive to the agency's earlier concerns, although the GAO had not reviewed the strategy nor its implementation in depth.<sup>49</sup> In April 2006, PHMSA testified before Congress that the OPS had institutionalized a "tough-but-fair" approach to enforcement, "imposing and collecting larger penalties, while guiding pipeline operators to enhance higher performance."<sup>50</sup> According to the agency, \$4 million in proposed civil penalties in 2005 was three times greater than penalties proposed in 2003, the first year higher penalties could be imposed under P.L. 107-355 (Sec. 8(a)).<sup>51</sup> Proposed penalties in 2006 totaled \$2 million.<sup>52</sup>

Notwithstanding the agency's efforts to change its pipeline safety enforcement strategy, some analysts have held that the OPS's enforcement actions have not been sufficiently transparent to the public, other government agencies, or industry.<sup>53</sup> P.L. 109-468 requires the agency to issue monthly summaries of OPS enforcement actions including violation and penalty information for each action, and provide a mechanism for pipeline operators to make response information available to the public (Sec. 6). To meet these requirements, the OPS has established an Internet portal with pipeline safety enforcement information.<sup>54</sup>

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<sup>47</sup> GAO. July, 2004. p3.

<sup>48</sup> Siggerud, K. Government Accountability Office (GAO). Testimony before the House Committee on Transportation and Infrastructure, Subcommittee on Highways, Transit and Pipelines hearing on Pipeline Safety and the Office of Pipeline Safety. 108-74. June 16, 2004. p10.

<sup>49</sup> Siggerud, K. Government Accountability Office (GAO). Testimony before the House Committee on Transportation and Infrastructure, Subcommittee on Highways, Transit and Pipelines hearing on Pipeline Safety. GAO-06-474T. March 16, 2006. p. 11.

<sup>50</sup> Gerard, S. L., Pipeline and Hazardous Materials Admin. (PHMSA). Testimony before the House Energy and Commerce Committee, Energy and Air Quality Subcommittee hearing on Pipeline Safety. Serial No. 109-84. April 27, 2006. p. 14.

<sup>51</sup> Ibid.

<sup>52</sup> OPS. May 15, 2007.

<sup>53</sup> Ibid. Epstein, L.N.. July 27, 2006.

<sup>54</sup> Office of Pipeline Safety (OPS). "PHMSA Pipeline Safety Program: Enforcement." Web page. May 15, 2007. [<http://primis.phmsa.dot.gov/comm/reports/enforce/Enforcement.html>].

## Pipeline Safety and Energy Supply Reliability

Losing a significant fraction of the nation’s crude oil supplies due to BP’s North Slope pipeline shutdowns highlights the relationship between pipeline safety and the reliability of U.S. energy supplies. Pipeline safety regulations administered by the OPS not only protect the public and the environmental from pipeline hazards—they may also help to ensure the availability of critical pipeline infrastructure.<sup>55</sup> This latter benefit, however, while potentially an important consideration in the OPS’s regulatory activities, is not an explicit part of the agency’s mission. The OPS’s authorizing legislation states that its purpose is “to provide adequate protection against risks to life and property posed by pipeline transportation and pipeline facilities” (49 U.S.C. § 61012(a)). Accordingly, the OPS’s regulations identifying, for example, “high consequence” areas (49 C.F.R. § 195.450) do not take into account the criticality of a pipeline asset itself.

To the extent that critical U.S. pipelines already fall under the OPS’s safety regulations, the dual objectives of pipeline safety and pipeline supply reliability may already be met. However, the unexpected shutdown of BP’s North Slope pipelines due to inadequate maintenance and regulatory exemption raises the question of whether the OPS should explicitly consider pipeline criticality as part of its regulatory oversight, and potentially hold critical pipelines to an even higher regulatory standard than other pipelines based on their importance to the U.S. economy. The Transportation Security Administration (TSA) within the Department of Homeland Security (DHS) has authority to regulate critical pipeline infrastructure for purposes of security under the Homeland Security Act of 2002 (P.L. 107-296) and other laws, but the agency’s activities have focused on physical and operational security rather than operational reliability.<sup>56</sup> Although Homeland Security Presidential Directive 7 (HSPD-7) instructs the DOT to “collaborate in regulating the transportation of hazardous materials by all modes (including pipelines)” (Par. 22h) with DHS, collaboration between the departments on pipelines has been limited in practice, and the directive otherwise does not change OPS regulatory authority.<sup>57</sup>

In the 109<sup>th</sup> Congress, the House Energy and Commerce Committee’s version of H.R. 5782 would have required the Department of Energy, in consultation with the DOT, to perform a study identifying reliability concerns among “critical” pipelines (Sec. 2(j)). Also in the 109<sup>th</sup> Congress, provisions in S. 1052 (Sec. 407(b) and S. 3961 (Sec. 23(b)) called for “inspection of the critical facilities of the 100 most critical pipeline operators” identified by the TSA. Provisions in P.L. 109-468 require periodic studies to “identify areas of the United States where unplanned loss of individual pipeline facilities may cause shortages of petroleum products or price

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<sup>55</sup> The USA PATRIOT Act of 2001 (P.L. 107-56) defines “critical” as “so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters” (Sec. 1016e).

<sup>56</sup> Transportation Security Admin. (TSA), Intermodal Security Program Office. Presentation to the DGC Homeland Security Conference. Alexandria, VA. December 7, 2005.

<sup>57</sup> For further information see CRS Report RL33347, *Pipeline Safety and Security: Federal Programs*, by Paul W. Parfomak.



disruptions and where shortages of pipeline capacity and reliability concerns may have or are anticipated to contribute to shortages of petroleum products or price disruptions” (Sec. 8(a)). The studies were also intended to determine whether these pipeline facilities are adequately regulated to prevent supply disruptions (Sec. 8(a)). Given the continuing uncertainty among industry and policy makers about what constitutes a “critical” asset, how federal agencies could develop a list of key or constrained pipeline facilities under P.L. 109-468 is unclear.

Introducing “criticality” (explicitly or implicitly) as a consideration in federal pipeline safety regulation as P.L. 109-468 implies would be a major change to the OPS’s traditional mission. Among other issues, criticality assessments would require complex analysis and assessment of pipeline commodity flows fundamentally different from “high consequence” assessments under the agency’s current regulations. Criticality assessments by OPS would also be complicated by the inherent conflicts between a public rule making process and security-sensitive pipeline information. This specific problem has hampered the siting approval of new liquefied natural gas (LNG) facilities and associated pipelines by the Federal Energy Regulatory Commission.<sup>58</sup> The OPS could potentially rely on pipeline criticality assessments from the DHS, and, indeed, might need to do so to avoid inconsistent assessments, but DHS’s criticality assessments have been controversial and might not be rigorous enough to support OPS regulations.<sup>59</sup> Given these challenges, incorporating critical asset reliability into the OPS’s safety mission may be questioned.

Whether or not OPS considers the criticality of the pipeline it regulates, the agency’s knowledge of pipeline operations and long-standing relationships with pipeline companies enables it to play a vital role in the restoration of pipeline service in the event of an accident, natural disaster, or deliberate attack. After hurricanes Rita and Katrina, for example, OPS deployed inspection staff to the field, participated in emergency planning, coordinated restoration resources, and took administrative actions to facilitate restoration of pipelines in the Gulf of Mexico.<sup>60</sup> The agency’s recent actions with respect to BP’s pipelines on the North Slope are similarly intended not only to address environmental hazards, but also to restore critical oil supplies as quickly as possible.

## Conclusions

The 2006 shutdowns of BP’s North Slope pipelines came as a shock to the general public and policy makers alike due to the extent of the pipelines’ corrosion problems and their impact on U.S. oil supplies. Legitimate questions may be asked

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<sup>58</sup> Kerr, B. “Information Just Too Hot to Pass Along.” *Providence Journal*. March 22, 2006.

<sup>59</sup> Dept. of Homeland Security (DHS), Office of Inspector General. *Progress in Developing the National Asset Database*. OIG-06-04. June 2006.

<sup>60</sup> Pipeline and Hazardous Materials Safety Admin. (PHMSA). “Pipeline and Hazardous Materials Safety Administration’s Response to Hurricanes Katrina and Rita.” Web page. August 17, 2006. [<http://www.phmsa.dot.gov/news/katrina.html>]

about the circumstances which led to these catastrophic and preventable failures. BP has admitted unequivocally the flaws in its maintenance models and, in retrospect, the inadequacy of its overall maintenance program for its North Slope operations.<sup>61,62</sup> Likewise federal policy makers and pipeline safety regulators have acknowledged that low-stress hazardous liquids pipelines like BP's North Slope pipelines should be under stricter federal oversight. The OPS is in the final stages of promulgating new regulations covering such low-stress pipelines. In the meantime, the agency has responded to BP's problems under its current regulations. The OPS's investigations and Corrective Action Orders since March, 2006 have brought to light the extensive corrosion problems throughout BP's North Slope operations, have likely prevented significant environmental damage from additional oil spills, and have facilitated BP's restoration efforts.

Given BP's ongoing response to the North Slope pipeline failures and the OPS's enforcement and rulemaking initiatives, many observers maintain that key Congressional concerns regarding federal oversight of low-stress pipeline safety are being addressed. As these activities continue, Congress may take action to ensure that both the North Slope pipeline restoration and OPS's related rule making remain on schedule. Although OPS must put in place new low-stress pipeline regulations in 2007, it is possible that findings from BP's ongoing restoration activities may unexpectedly complicate this regulatory process. Congress may continue to oversee this process to ensure it achieves an appropriate balance between safety benefits and implementation costs. Pipeline operators need clear and logical guidance on which additional pipelines will be regulated and why. Directing limited pipeline resources to low-stress pipelines may reduce their specific risk, but not overall pipeline system risk, if high-stress safety programs become less effective as a result. Finally, Congress may ensure that the OPS strictly enforces all its pipeline safety regulations so that incremental operating problems in particular pipeline systems do not accumulate and lead to major disruptions.

In addition to these issues, Congress may opt to assess how U.S. pipeline safety regulation fits together with the nation's overall strategy to ensure the reliability of critical energy infrastructure. For example, some assert that the overall social benefit of new pipeline safety regulations may be limited if certain critical pipeline assets remain exempt from regulation. Likewise, most observers would argue that protection of the pipeline assets from accidents or security risks should consistently reflect their criticality to the nation's energy supplies. Coordinating pipeline operation, regulation, and protection necessarily involves many groups: federal agencies, oil and gas pipeline associations, pipeline operators, and local communities. Reviewing how these groups work together to achieve common goals could be an oversight challenge for Congress.

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<sup>61</sup> Marshall, S., President, BP Exploration (Alaska) Inc. Comments to the Joint Alaska Senate and House Resources Committee. August 18, 2006; Malone, R., August 7, 2006.

<sup>62</sup> There is some controversy about the influence of budget constraints on BP's North Slope pipeline maintenance. See Representatives John D. Dingell and Bart Stupak, House Energy and Commerce Committee. Letter to Robert A. Malone, Chairman, BP America, Inc. May 11, 2007. [[http://energycommerce.house.gov/Press\\_110/110-ltr.051107.BP.Malone.pdf](http://energycommerce.house.gov/Press_110/110-ltr.051107.BP.Malone.pdf)]