

BP North Slope Spill Reveals A History of Substandard Environmental Performance

A Preliminary Report
to the
Alaska Forum for Environmental Responsibility
by
Richard A. Fineberg

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record suggests that BP does not operate the nation's largest petroleum production complex in a safe and environmentally sound manner. All too often, BP's management culture appears to place undue emphasis on cost-cutting, while favoring rhetoric over reality. Similar problems have been documented on the Trans-Alaska Pipeline System (TAPS), of which BP is the largest owner.

British Petroleum (BP), a global energy group employing over 100,000 people and operating in over 100 countries, is one of three major oil companies that control over 90% of the oil production on Alaska's North Slope and a similar share of the 800-mile Trans-Alaska Pipeline from the North Slope to Valdez, Alaska. (Web site: <http://www.bp.com>.)

The Alaska Forum for Environmental Responsibility is a Valdez, Alaska-based non-profit organization dedicated to holding industry and government accountable to the laws designed to safeguard the environment, provide a safe and retaliation-free workplace, and achieve a sustainable economy in Alaska. (Web site: <http://www.alaskaforum.org>.)

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I. The Spill: First Reports

At 5:45 a.m. on the morning of March 2, 2006, a worker driving a deserted stretch of road in the Prudhoe Bay oil field – the nation’s largest – noticed a strong petroleum odor, stopped and discovered what turned out to be by far the biggest oil spill in nearly three decades of petroleum operations on Alaska’s North Slope. This analysis reviews initial spill reports in the context of Prudhoe Bay operator BP’s troubled North Slope history.¹

The leak was apparently coming from a 34-inch diameter pipeline next to the road that carries oil between the two operating gathering centers in the western half of the Prudhoe field. The gathering centers treat the oil produced from the Prudhoe Bay reservoir, 8,000 feet beneath the frozen ground surface, by removing gas, water and impurities to prepare the oil for shipment through the Trans-Alaska Pipeline System (TAPS).

In the bitter cold, workers began shutting down the leaking pipeline and more than 200 wells feeding the remote gathering center. Emergency crews were called in to start moving snow to find out how far the oil had spread. It turned out to be covering approximately two acres, extending over the edge of one of the many frozen lakes that dot the flat North Slope landscape. According to press reports, toxic fumes from the spilled oil also hampered response efforts.

At first, BP could not say how much oil was out there, exactly where the oil was coming from, how long the line had been leaking or what caused the leak. The source of the leak was not found for three days. Workers eventually reported a ¼-inch hole where the pipeline dips into a culvert to allow caribou to pass over.

¹ This section is based on press releases issued by the Joint Information Center (BP, the Environmental Protection Agency, the Alaska Department of Environmental Conservation and the North Slope Borough; accessed at: http://www.dec.state.ak.us/spar/perp/response/sum_fy06/060302301/060302301_index.htm), and on press accounts (see, for example: Wesley Loy, “Workers Respond to Prudhoe Spill – NORTH SLOPE: Leak may be one of largest in 29 years of production,” *Anchorage Daily News*, March 4, 2006; Rachel D’Oro (AP), “Location of Prudhoe Bay pipeline leak found,” *Seattle Post-Intelligencer*, March 5, 2006; Rachel D’Oro, “Brutal cold challenges spill cleanup – PRUDHOE BAY: 58,590 gallons of crude, snow have been recovered,” *Anchorage Daily News*, March 9, 2006).

The size of the spill was not estimated for more than a week. During the initial period, the press reported that the spill was at least 21,000 gallons – the amount of oil separated from the snowy, frozen muck during the first 36 hours of the cleanup. That amount of oil would have made the spill the sixth largest in nearly three decades of North Slope operations – nearly half the size of the largest spill on the Slope and only a small fraction of the estimated 11,000,000 gallons of North Slope crude the tanker *Exxon Valdez* unleashed on Prince William Sound when it ran aground in 1989.

In fact, the spill is now estimated to be ten times the initially reported volume – more than three times larger than any spill ever reported on the North Slope. A layer of thick, black crude oil approximately seven inches thick spread across an area slightly larger than a football field, presently resting on a cold mantle of ice and snow, potentially sullies not only the North Slope tundra and lake system of, but also the oil industry's carefully nurtured image of its northern operations as safe and environmentally benign.

Questions about how, when and where the spill began, how fast the pipeline was losing oil and how much oil leaked clearly pointed to the failures of two key elements that are supposed to ensure safe operations – BP's corrosion monitoring program and its field pipeline leak detection system. The former is supposed to prevent a pipeline from springing a leak; the latter is the electronic monitoring device that is supposed to alert operators to ensure prompt response when a spill occurs.

II. Anti-Corrosion and Leak Detection Programs: Are They Working?

BP and ConocoPhillips, the two major operators on the North Slope, are fighting an ongoing war against corrosion that relentlessly attacks the hundreds of miles of pipes that crisscross the North Slope oil fields.² It is not surprising, therefore, that BP acknowledged, even before the exact point of the leak was found, that corrosion could have caused the spill. Although BP told reporters that corrosion problems had caused BP to operate the line between the gathering centers at reduced pressure, BP hadn't sent a corrosion "pig" – a device that travels through the pipeline to inspect its condition – through that line since 1998.³ In light of the fact that BP knew it had a corrosion problem on the pipeline between the gathering centers:

- Why hadn't BP dispatched a corrosion "pig" through that pipeline for more than seven years?

² See: BP Exploration (Alaska), Inc., Corrosion, Inspection and Chemicals (CIC) Group, *Commitment to Corrosion Monitoring, Year 2004*, March 2005 (http://www.piersystem.com/posted/1112/BP_ADEC_2004_Final_Report.112664.pdf).

³ Wesley Loy, "Workers respond to Prudhoe spill -- North Slope: Leak may be one of the largest in 29 years of production," *Anchorage Daily News*, Mar. 4, 2006.

- Why didn't BP order workers to inspect the line daily to make sure things were okay, as an Alaska Department of Environmental Conservation (ADEC) engineer had recommended in 2003?⁴
- Why, when the leak was finally located, found, did BP spokesman Daren Beaudo profess surprise that there was a problem at the caribou crossing that sprung a leak?⁵

The ongoing war with corrosion on the North Slope increases the importance of ensuring that the leak detection system is effective. But over the last decade BP has consistently argued for less stringent leak detection requirements on the North Slope, while delaying installation of a state-of-the-art system that might have alerted field operators to the problem before the spill turned into the largest in North Slope history.

For example, on March 8, the *Anchorage Daily News* reported that the Alaska Department of Environmental Conservation had fined BP \$300,000.00 in 2002 for failure to comply with leak detection requirements and ordered it to install a better leak detection system by the end of 2002. BP complied, the story continued, "adding equipment designed to alert field workers whenever the daily flow of oil through a pipeline dips by 1 percent or more, suggesting a possible leak." According to the *Daily News*, the system was working in 2002, but it is not clear whether it was operational when the spill was discovered March 2.⁶

According to ADEC records, in December 2002 the system on the line between the gathering centers failed its first two tests and passed the third time only after the test crew spent five hours setting up a stable flow. Under these carefully arranged conditions, the system triggered an alarm 13 hours after 0.5% of the line's throughput was removed.⁷ But pipeline flow is seldom stable. Therefore, to assess a leak detection system's effectiveness at a given detection rate, it is important to know how many hours a day the system is actually capable of detecting a leak at the desired leak warning level. Details like these are critical to understanding how the 1% minimum detection level – a state regulatory requirement⁸ – actually works.⁹

⁴ Sam Saengsudham, "GPB Leak Detection Test – Dec. 02" (email to Bill Hutmacher and Lydia Miner), April 1, 2003.

⁵ Wesley Loy, "Oil leak escaped monitor – Prudhoe Bay: Spill estimate due by Thursday; output down \$6 million a day," *Anchorage Daily News*, March 8, 2006.

⁶ "Oil leak escaped monitor – Prudhoe Bay: Spill estimate due by Thursday; output down \$6 million a day."

⁷ See: "Leak Test Results" in enclosures to letter from Mike Bronson (Crisis Management Coordinator, BP Exploration [Alaska], Inc.) to Bill Hutmacher (ADEC), "RE: In the Matter of: State of Alaska, Department of Environmental Conservation v. BP Exploration (Alaska) Inc., Consent Order No. 02-138-10, Compliance Order by Consent," Dec. 23, 2002.

⁸ Alaska Administrative Code, at 18 AAC 75.055.

⁹ For general discussion of pipeline leak technology, see: Richard A. Fineberg, "Leak Detection," in *Pipeline in Peril: A Status Report on the Trans-Alaska Pipeline* (Alaska Forum for Environmental Responsibility, 1996), Ch. 7 and "Leak Detection System," in *The Emperor's New Hose: How Big Oil Gets Rich Gambling with Alaska's Environment* (Alaska Forum for Environmental Responsibility, 2002), pp. 27-28 (<http://www.alaskaforum.org/>).

The line between the gathering centers that was discovered leaking March 2 has a delivery rate of approximately 90,000 barrels per day (bpd).¹⁰ Therefore, in rough terms, to satisfy a 1% requirement for this segment, the leak detection system does not have to alarm for any leak smaller than 900 bpd. In other words: At the required level of sensitivity, the line could have leaked the entire estimated volume lost in six days without triggering the leak detection alarm.¹¹

BP believes the pipeline linking the gathering centers may have been leaking for five days prior to the discovery of the leak. In making this disclosure 12 days after the leak was discovered, BP senior vice president and manager of Prudhoe Bay operations Maureen Johnson said the performance of the field pipeline leak detection system was “not acceptable” to BP.¹² Her comment stands in marked contrast to the documentary history of BP’s resistance to regulatory agency efforts to require BP to improve the field pipeline leak detection system. For example:

- In 2001, BP argued that the 1% detection level applies to the entire Prudhoe Bay network, not to the pipeline segment between gathering centers.¹³ Under this interpretation, if the Prudhoe Bay system were capable of carrying 1.0 million barrels, the 1% minimum leak detection requirement for the pipeline between gathering centers where the leak occurred would increase from 900 bpd to 10,000 bpd.
- While BP wanted to roll back the field pipeline leak detection requirement, ADEC believed that it was possible to cut the 900 bpd minimum leak detection alarm level in half by installing more accurate, state-of-the-art turbine meters at both ends of the gathering center line. At least some ADEC administrators believed that a newer regulation mandating industry use of best available technology (BAT) enabled ADEC to require this modification.¹⁴ But BP rejected this improvement, in part because of procurement and installation costs. According to the company’s 2000 estimate, new turbine meters would cost approximately \$10 million for the entire Prudhoe Bay system and production would be halted for four days during installation, deferring production of approximately 2.2 million barrels of oil.¹⁵ Only a fraction of this cost – presumably, less than 20 percent – would have been attributed to the line between the Western Area gathering centers where the leak occurred. Nevertheless, BP proposed to

¹⁰ “GPB Leak Detection Test – Dec. 02” and “Leak Test Results.”

¹¹ One barrel = 42 gallons; 201,000 gallons / 42 = 4,786 barrels reported spilled; 900 x 6 = 5,400 barrels.

¹² Felicity Barringer, “Large Oil Spill in Alaska Went Undetected for Days,” *New York Times*, March 15, 2006.

¹³ BP Exploration (Alaska), Inc., *Oil Discharge Prevention and Contingency Plan – Greater Prudhoe Bay, N. Slope, Alaska*, Oct. 2001, pp. 4-15.

¹⁴ The BAT requirement for field pipelines is found in the Alaska Administrative Code at 18 AAC 18.75.425(e)(4)(A)(iv).

¹⁵ *Oil Discharge Prevention and Contingency Plan – Greater Prudhoe Bay, N. Slope, Alaska*, pp. 4-13, 4-16 and 4-18.

attain the 1% level under the old regulation with less expensive fixes that did not affect production.

- But after BP repeatedly failed to meet its timelines for the weaker requirements, in May 2002 ADEC issued the \$300,000 fine as part of a Compliance Order by Consent, which required BP to demonstrate that it could achieve the 1% target by the end of 2002.¹⁶ While the Compliance Order set an automatic, court-enforceable timeline, it also accepted the lower (1%) environmental standard advocated by BP. Moreover, since BP had installed the more accurate turbine meter system at its Northstar field,¹⁷ some might wonder how ADEC concluded that the less accurate fix BP proposed for Prudhoe Bay constituted compliance with the state's BAT requirement.
- In 2005, BP again rejected ADEC's effort to lower the field pipeline leak detection threshold to 0.5%. In addition to its previous arguments about cost, BP argued that changes in elevation, fluid properties, flow, process dynamics and throughputs below design levels adversely affect accuracy and can result in false alarms.¹⁸ This argument for a 1% threshold does not seem to reflect the experience of the Trans-Alaska Pipeline, in which BP owns a 47% share. Although TAPS crosses three mountain ranges on its 800-mile journey from the North Slope to Valdez, the TAPS leak detection system threshold ranges from 0.2% of throughput in some sections to 0.95% in the most difficult mountain location.¹⁹

III. BP North Slope Worker Safety Problems

Although BP's skirmishes with regulators over North Slope pipeline leak detection system requirements generated little public notice, worker safety issues in BP-managed North Slope fields have garnered occasional headlines. For example, in July *U.S. News & World Report* wrote about BP employee complaints that corporate budget cuts were forcing them to work with worn-out and dangerous equipment; in that article, BP spokesman Ronnie Chappell insisted BP's operations were safer than ever.²⁰ Early in 2002, through the auspices of worker safety advocate Chuck Hamel of Alexandria, Virginia, veteran

¹⁶ Alaska Department of Environmental Conservation, "Compliance Order by Consent," (In the Matter of: State of Alaska, Department of Environmental Conservation, Complainant, vs. BP Exploration [Alaska] Inc., Respondent), Consent Order No. 02-138-10, May 2002, p. 3.

¹⁷ BP Exploration (Alaska), Inc., *Northstar Oil Discharge Prevention and Contingency Plan* (Rev. 0), March 2002, p. 4-10.

¹⁸ Letter from Ed Thompson (Director, Crisis Management Unit, BP Exploration [Alaska], Inc.) to Craig Wilson (Spill Prevention and Response Division, ADEC), June 30, 2005, "Attachment," p. 4.

¹⁹ Alyeska Pipeline Service Co., "Leak Detection System Performance Report," March 2000, p. 2 ("Median Thresholds for Each Time Period [in BPD]") and Joint Pipeline Office, Draft 8-hour Median Threshold Data for 2000 (untitled data sheet showing average minimum alarm settings monthly by pipeline segment), circa Feb. 15, 2001.

²⁰ Kim Clark, "Danger in the oil patch: Workers say BP is violating probation," *U.S. News & World Report*, Aug. 6, 2001, p. 21.

North Slope workers expressed similar complaints to Congress. According to the testimony of one BP worker, "If you look at the direction BP and the state of Alaska are going -- with exposed outdoor well-pad modules, breakdown maintenance and a skeleton workforce -- there is no doubt that cost-cutting and profits have taken precedence over safety and the environment."²¹

The complaints against BP took on added significance in August 2002, when an explosion and fire at a Prudhoe Bay well house put a veteran worker in the hospital with serious burns. BP initially claimed the proper well integrity inspections had been conducted prior to the blast, but later admitted that this claim was false and agreed to improve its field monitoring and prevention program. The Alaska Oil and Gas Conservation Commission eventually fined BP \$1.3 million for safety violations in this incident, then added another \$100,000 penalty for failures to execute the new procedures.²² Safety concerns about BP operations continued to build later in that year when a welder at Prudhoe Bay was killed by a plug that blew out of a high-pressure line he was repairing.²³

IV. Illegal Reinjection of Hazardous Wastes

For BP, another legal problem has loomed over the North Slope worker safety and pipeline leak detection controversies summarized above: Between February 2000 and February 2005, BP was on criminal probation stemming from the illegal re-injection of hazardous wastes at Endicott, an oil production facility on a man-made island 18 miles northeast of Prudhoe Bay.²⁴ The background to BP's criminal conviction at Endicott provides additional information about the nature of North Slope operations:

During the summer of 1995, a worker with Doyon Drilling, BP's contract driller at the Endicott field, wrote in his diary that he had received threats from fellow workers after he refused to carry out orders to bury hazardous wastes with non-toxic drilling muds. The re-injection rules were clear: nothing was to be re-injected that did not originate there, and nothing toxic was to be re-injected. Nevertheless, barrels of toxic substances kept showing up at the Endicott site and the worker was given orders to re-inject these fluids beneath the ice.²⁵ BP

²¹ Sheila McNulty, "Well testing is cold comfort for Alaskan staff," *Financial Times*, Aug 27, 2002 (see also: Tony Hopfinger, "The Puppeteer: Chuck Hamel pulls all strings to keep oil giant BP honest," *Anchorage Daily News*, March 24, 2002).

²² See: Sheila McNulty, "Well testing is cold comfort for Alaskan staff," *Financial Times*, Aug 27, 2002 and "BP admits test lapse at Alaskan well," *Financial Times*, Sept. 11, 2002; and Wesley Loy, "BP to pay \$ 1.4 mm for safety violation cases," *Anchorage Daily News*, Jan. 8, 2005.

²³ Ben Spiess, "Welder struck by plug, killed -- PRUDHOE BAY: Victim, 2 others were working on water pipeline," *Anchorage Daily News*, December 22, 2002.

²⁴ See: "Joint Application for Modification of Conditions of Probation with Consent of the Offender" and "Declaration in Support of Petition," in United States District Court, District of Alaska (Case No. A99-0141-0111 CR [JKS]), Dec. 23, 2002. (The federal probation officer cited alleged problems with BP's fire and gas suppression, safety valve and leak detection systems for seeking court authority for access to BP's North Slope facilities, without prior notice, to verify BP's compliance with federal, state and local health and safety laws and regulations; the court granted access.)

²⁵ Eric Nelson, *Poisoning the Well: Whistleblower Disclosures of Illegal Hazardous Waste Disposal on Alaska's North Slope*, The Alaska Forum for Environmental Responsibility, January 1997 (<http://www.alaskaforum.org/reports.html>).

attempted to portray the ongoing, secret practice of illegally re-injecting hundreds of barrels of hazardous wastes into the frozen soil beneath Endicott as two isolated incidents.²⁶ But the company's own investigation confirmed that

used glycol and potentially used paint thinners had been disposed of . . . from some time in 1993 until August of 1995 . . . it is possible some of these wastes were hazardous when discarded. Injection was intermittent over a two-year period, with some loads received in batches of 20 to 30 55-gallon drums and other drums managed one at a time This practice was reported to occur only at night.²⁷

As a result of the illegal practices at Endicott brought to light by an intrepid worker's complaint, BP, its drilling contractor Doyon Drilling and three Doyon Drilling workers paid a total of \$1.55 million and were placed on probation for criminal violations of the Oil Pollution Act of 1990 and the Clean Water Act. As part of the settlement, BP also paid \$6.5 million in civil penalties and the two companies also agreed to spend an additional \$17 million to improve their environmental compliance programs as part of their probation.²⁸

V. Conclusions

The analysis presented here suggests that the failures of BP's corrosion and field pipeline leak detection programs played a major role in causing the North Slope's largest oil spill. In this regard, it is noteworthy that BP, which now calls the performance of its North Slope leak detection system "not acceptable," steadfastly refused to replace that system with best available technology turbine meters that might have provided faster and more accurate detection and notification of the spill. One reason BP gave for its opposition to placing turbine meters on the pipeline that leaked was the cost of the replacement project. In addition to the estimated turbine meter price of \$10

The Alaska Forum has withheld the name of the Doyon Driller to spare this whistleblower's family unwanted public attention. The Doyon Driller, a 22-year veteran of Alaska's oil fields in 1995, ended his career when he went to authorities after his employer denied his request to curtail the illegal practice.)

²⁶ Richard C. Campbell (President, BP Exploration [Alaska], Inc.), "URGENT — Response to Alaska Forum Release" (e-mail communiqué to all BP employees), Jan. 29, 1997.

²⁷ BP Exploration (Alaska), Inc., "Endicott Development, Doyon Rig 15, Waste Disposal Investigation Report," September 25, 1995, p. 4 (quoted in *Poisoning the Well*).

²⁸ BP pleaded guilty to a felony charge and paid a maximum \$500,000 criminal fine. The oil company paid another \$6.5 million in civil penalties and agreed, as part of its probation, to spend \$15 million to improve its environmental compliance program in Alaska and the Lower-48 (see: Maureen Clark [Associated Press], "BP to pay \$22 million for dumping on slope," *Fairbanks Daily News-Miner*, Sept. 24, 1999; see also *Wall Street Journal* [Dow Jones Newswires], Sept. 23, 1999).

Doyon Drilling pleaded guilty and paid \$1 million to settle 15 criminal misdemeanor violations of the Oil Pollution Act of 1990. As part of its probation, Doyon Drilling agreed to spend \$2 million to set up a model environmental program. In related charges, two Doyon Drilling employees pleaded guilty and paid \$25,000 to felony charges and a third Doyon Drilling employee pleaded guilty and paid \$25,000 to settle two criminal misdemeanor charges (U.S. Dept. of Justice, "North Slope Driller Admits Illegal Disposal of Hazardous Waste; \$3 Million Plea Agreement Announced" [United States Attorney, District of Alaska at Anchorage; press release], April 30, 1998). One of the three individuals was sentenced to confinement at his home in Wyoming for four months and all three were placed on probation for five years (Sheila Toomey, "No jail time: Doyon worker could serve in halfway house," *Anchorage Daily News*, Nov. 14, 1998).

million for the entire Prudhoe Bay field (only a fraction of which would have been attributed to the line between the gathering centers where the leak occurred), installation would have required the operators to defer approximately 2.2 million barrels of oil production during a four-day shutdown. To avoid these costs, BP apparently tried to get by with less expensive modifications to its antiquated and less accurate system.

Many of the public comments of BP officials suggest that BP's approach to problems is often based on appearance, rather than substance. In the case of the recent spill, two BP pronouncements stand out in this regard:

- BP now believes the pipeline began leaking five days before a worker driving by smelled petroleum, stopped and discovered the leak. While acknowledging that the pipeline was operating at reduced pressure due to corrosion, BP spokesman Beaudou's claimed surprise that corrosion caused a breach in the line at a low spot. Under the circumstances, it is difficult to take his professed surprise seriously. What is more surprising is that BP was not inspecting that pipeline daily for leaks, as recommended by ADEC in 2003.
- Acknowledging the failure of the field pipeline system's leak detection system, BP vice president and Prudhoe Bay manager Maureen Johnson termed that system's performance is "not acceptable." Her statement flies in the face of the record in two key respects: (1) BP's documented, dollar-driven resistance to applying significantly higher requirements to both the regulatory standards and the hardware for field pipeline leak detection; and (2) BP's failure to test that system again after a shaky test in 2002 that was performed under a Compliance Order issued by state authorities.

This report's brief review of BP's North Slope worker safety problems and the company's handling of disclosures about the re-injection of hazardous wastes contains similar indications of a management culture too often driven by the bottom line and too often willing to countenance a gross disconnect between its rhetoric and reality. Previous Alaska Forum reports have provided extensive documentation of similar tendencies on TAPS, of which BP is the largest owner, with a 47% share. It is too soon to tell whether the good fortune of cold weather will enable spill responders to keep this spill out of the North Slope's tundra and lake system. In any event, this unfortunate episode makes one thing clear: If BP remains unwilling to alter its tendencies, it is only a matter of time before the North Slope experiences a catastrophic event that could rival the 1989 *Exxon Valdez* spill.



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