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LESSONS OF PRUDHOE BAY

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COMMENT
LESSONS OF PRUDHOE BAY: PROPOSED REGULATIONS AND LEGISLATION ON LOW-STRESS LINES

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I. Introduction

Large pipeline leaks caused the shut down of the BP oil pipeline in Prudhoe Bay, Alaska in March 2006 influencing many regulators and legislators to examine the causes of the leaks in an effort to determine how similar interruptions can be avoided in the future.¹ BP America’s Chairman, Bob Malone

¹ See Infra notes 4–5.
characterized the shutdown as an unacceptable failure that has “fallen short of what the American people expect of BP and . . . fallen short of what we expect [of] ourselves.”

With the demand for oil continuing to rise, the United States possesses a strong interest in ensuring domestic supplies remain uninterrupted. As a result of these events, including the shutdown of the BP pipeline at Prudhoe Bay in Alaska,

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regulators\textsuperscript{4} and legislators\textsuperscript{5} are troubled by the lack of self governance and pro-active maintenance of certain oil pipelines’ infrastructures, including those in Prudhoe Bay. The Prudhoe Bay operations occurring in “the largest field in North America and the 18\textsuperscript{th} largest field ever discovered worldwide” are critical to U.S.

\textsuperscript{4} Thomas Barrett, head of the Transportation Department’s Pipeline and Hazardous Materials Safety Administration (PHMSA) said that “the maintenance of the BP pipelines was ‘well below the standard of care I would expect from a company like BP—regulations or not.’” Steven Mufson, Regulators Look to Plug Holes in Pipeline Rules, WASHINGTON POST, (August 16, 2006), D01, available at http://www.washingtonpost.com/wp-dyn/content/article/2006/08/15/AR2006081501108.html

\textsuperscript{5} Representative Joe Barton of Texas, Chairman of the House Energy and Commerce Committee characterized the most recent failure as “[y]ears of neglecting to inspect the most important oil-gathering pipeline in this country.” He went on to say that “if BP, ‘one of the world’s most successful oil companies,’ is incapable of conducting basic maintenance on the walls of some of the country’s most important oil pipelines, then regulators should ‘let someone else do it.’” Smith, supra note 2.
consumption.\(^6\) As such, the importance of the Prudhoe Bay operations are evidenced by the amount of oil produced (in 2004, approximately 475,000 barrels per day were being produced).\(^7\)

Rural, low-stress pipelines currently are exempt from federal pipeline safety requirements.\(^8\) Following the Prudhoe Bay spill, Peter T. Lidiak, Director of the pipeline segment of the American Petroleum Institute, noted that large low-pressure pipelines are responsible for approximately fifty percent of total oil spill volume nationwide.\(^9\) Shortly after the Prudhoe Bay spill and its subsequent

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\(^6\) With the production level of Prudhoe Bay, the shutdown that occurred had a potential to be devastating to the U.S. supply. According to a report compiled by the Energy Information Administration shortly after the shut down of the Prudhoe Bay operations, gasoline demand was “averaging nearly 9.6 million barrels per day, or 1.4 percent above the same period last year.” David Ellis, *Oil Falls Back Near $67 on BP Comments*, CNNMoney.com, (September 7, 2006), http://money.cnn.com/2006/09/07/markets/oil_eia/index.htm. *See also supra* note 5. The fact sheet included the statistics of Prudhoe Bay in exhibit 1 of the written testimony. S. Energy & Natural Resources Comm., 109th Cong. 27 (2006) (statement of BP America, Inc. Chairman and President, Robert A. Malone)

\(^7\) *Id.*

\(^8\) Low-stress pipelines are defined as hazardous liquid pipelines that operate at a stress level of twenty percent or less of the specified minimum yield strength (SMYS). 49 C.F.R. pt. 195.1(b)(3). The current regulatory gap in low-stress pipelines is speculated to be the direct cause for the Prudhoe Bay spill and unfounded corrosion. Mufson, *supra* note 4.

\(^9\) *Id.*
partial shutdown, the Pipeline and Hazardous Materials Safety Administration (PHMSA) and US Department of Transportation (DOT) proposed a new rule to close partially the regulatory gap.\textsuperscript{10} However, there are a number of legislators and environmentalists who feel betrayed by the lack of oversight and regulation and who believe the proposed rule does not go far enough. Rather, they are advocating for complete closure of the regulation gap on low-stress pipelines and for stringent safeguards to avoid similar situations in the future.\textsuperscript{11} With the 2002 Pipeline Safety Improvement Act set to expire soon, the legislature is left to weigh its options against proposed regulations from the PHMSA.\textsuperscript{12} This paper will further examine the proposed regulation and potential impacts.

II. An Examination of Existing Pipeline Legislation

The current regulatory scheme of pipeline safety has not always been a concern. It was not until 1968 that Congress passed the first statute to govern


\textsuperscript{11} See infra Part IV.

\textsuperscript{12} See infra Part II-A.
pipeline safety, the Natural Gas Pipeline Safety Act, later amended in 1976. In 1979, Congress added liquid pipeline requirements to the Pipeline Safety Act. Over the years, there have been a number of other bills that have brought us to our current legislative scheme, including “the Pipeline Safety Reauthorization Act of 1988, the Pipeline Safety Act of 1992, the Accountable Pipeline Safety and Partnership Act of 1996, and now, the Pipeline Safety Improvement Act of 2002.” The Pipeline Safety Act of 2002 is set to expire at the end of 2006 causing the House of Representatives to introduce The Pipeline Safety Improvement Act of 2006.

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16 Parker, supra note 14, at 255–56.

17 See Infra section IV.
A. 2002 Pipeline Safety Act

PHMSA did not require oil companies to inspect their pipelines for overall integrity prior to the passage of the 2002 Pipeline Safety Improvement Act.\textsuperscript{18} However, following a number of fatal and environmentally dangerous accidents, the public grew increasingly concerned about safety.\textsuperscript{19} Even though the accidents did not occur very often, their deadly impacts seriously damaged public confidence.\textsuperscript{20} Following the growing concern for safety, the National Transportation Safety Board (NTSB) investigated and made a number of


\textsuperscript{19} “A gasoline pipeline rupture contaminated a Dallas water supply; … a gasoline pipeline rupture in Michigan caused more than 1200 people to evacuate from their homes, several for more than three months; a fuel oil pipeline ruptured in Maryland, contaminated miles of the Patuxent River, and resulted in clean up costs of $71 million dollars.” \textit{Id.} at 244–45.

\textsuperscript{20} Parker, \textit{supra} note 14, at 246.
recommendations to the Office of Pipeline Safety (OPS). However, the NTSB’s recommendations were largely ignored and accidents continued to occur. For example, while the NTSB was investigating a pipeline accident that occurred in Bellingham, Washington in 1999, an accident occurred near Carlsbad, New Mexico killing twelve people. In the Carlsbad accident, “[t]he ensuing explosion set off seismographs 14 miles away, with 500-foot high flames that burned for almost an hour.”

21 Parker, supra note 14, at 247. There were a number of other accidents that caused the National Association of Pipeline Safety Regulators (NAPSR) to strongly suggest regulation of low-stress pipelines. Deanna Mirsky, US Dep’t. of Transp., Econ. Evaluation of Regulating Certain Hazardous Liquid Pipelines Operating at 20% or Less of Specified Minimum Yield Strength 2 (1992). The accidents took place over interstate lines which could not be regulated by the states. Id. One accident occurred in 1990 when approximately 500,000 gallons of oil spilled into the Arthur Kill near Staten Island and New Jersey. Deanna Mirsky, supra note 21, at 2. Corrosion leaks caused an earlier accident in Iowa and Nebraska which spilled around 5,000 gallons. Id.

22 Parker, supra note 14, at 247.

23 “Almost a quarter million gallons of gasoline spilled. The ensuing explosion killed three children, sent a fireball a mile and a half long through the heart of a city of 69,850 people, and created a mushroom cloud six miles high. Damage claims exceeded half a billion dollars.” Id. at 246.

24 Parker, supra note 14, at 248.
Fatal accidents with a significant magnitude continued to occur despite the NTSB warnings and safety suggestions.\footnote{Id. at 248.} However, the continued accidents and fatalities still did not garner enough pressure to motivate legislators to respond. Even though several legislators presented bills to address the issue, political maneuvering caused the votes to fall short.\footnote{Parker, \textit{supra} note 14, at 257–58.} It was not until after October 2001, when a drunk gunman in Alaska fired his rifle at the Trans-Alaska pipeline causing a serious leak and shut down of one-fifth of US oil production, that it became clear that pipelines must be kept safe in order to ensure public safety and also economic stability.\footnote{See \textit{supra} note 3.} This caused the US Congress to re-evaluate their earlier blocked efforts to protect the domestic oil supply. The Senate and House through compromise and hard negotiation finally passed legislation one day apart.\footnote{Parker, \textit{supra} note 14, at 260.}

With the passage of the Pipeline Safety Improvement Act of 2002, Congress “strengthened existing OPS initiatives, established substantial new requirements on the industry and the OPS that are accompanied by ambitious compliance deadlines and required pipeline operator compliance with statutory

\footnote{Id. at 248.}
\footnote{Parker, \textit{supra} note 14, at 257–58.}
\footnote{See \textit{supra} note 3.}
\footnote{Parker, \textit{supra} note 14, at 260.}
PHMSA contends that as a result of the existing regulations, “[t]he overall safety records [are] good and getting progressively better.” Additionally, PHMSA provides data that demonstrates the decline in the number of fatal pipeline incidents. However, low-stress pipeline spills go largely unreported as there is no reporting requirement for pipelines not regulated by PHMSA.

B. Regulatory exemptions on low-stress lines

Whereas the 2002 Act has proven fairly successful, the Federal Pipeline Safety Regulations currently exempt low-stress pipelines from the stringent

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30 BP Pipeline Failure: Oversight Hearing Before the S. Comm. on Energy and Natural Resources, 109th Cong. 6 (2006) (statement of Thomas J. Barrett, USCG (ret.), Administrator, PHMSA, US Dep’t of Transp.).

31 *Id.*

32 Lois Epstein, Lurking Below: Oil and Gas Pipeline Problems in the Cook Inlet Watershed at 19, n.39 (2002).

requirements other pipelines (primarily high-stress) must follow.\textsuperscript{34} The exemption has been rationalized as many believe that “low-stress pipeline transport of hazardous liquids does not present a danger to life, property, or the environment comparable to the dangers of high-stress operations.”\textsuperscript{35} Additionally, because reporting of incidents was not required, it was thought that low-stress lines had a very low accident history and because they operated at such low pressure, they posed very little risk to public safety.\textsuperscript{36} Awareness of the risks of low-stress pipelines has been growing and the number of exemptions continue to be reduced.\textsuperscript{37} However, risks associated with low-stress pipelines are significant therefore the exemptions should be completely removed to ensure environmental and public safety.\textsuperscript{38}

\begin{enumerate}
\item[\textsuperscript{34}] Federal and state regulations generally target oil pipelines that operate at higher pressure and highly populated areas. “Federal regulations require high-pressure oil pipelines to use diagnostic pigs at least once every five years.” Mufson, \textit{supra} note 4.
\item[\textsuperscript{35}] DEANNA MIRSKY, \textit{supra} note 21.
\item[\textsuperscript{36}] 2006 \textit{Proposed Rulemaking}, \textit{supra} note 10, at 52,508.
\item[\textsuperscript{37}] See Infra note 56 and accompanying text.
\end{enumerate}
Whereas low-stress pipelines enjoy exemption from regulation, they are not exempt from required corrective action orders imposed by the PHMSA. Following the Prudhoe Bay accident, PHMSA required BP to take a number of safety and corrective actions,\(^{39}\) once again illustrating PHMSA’s reactive nature by again waiting until the public outcry and another disastrous spill before proposing needed regulations. Ironically, many of the corrective and safety precautions BP was subjected to after its disastrous spill are exactly what are being suggested in the new proposed regulations, limited to Unusually Sensitive Areas (USA.)\(^{40}\)

\(^{39}\) The Corrective Action Order issued by PHMSA included a requirement to inspect pipelines internally using a pig, repairing all anomalies; implement a plan for internal inspections at regular intervals less than five years; implement a regular running of cleaning pigs; review and modify leak detection systems for pipelines in compliance with American Petroleum Institute standards; and implement internal corrosion management plans. 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. Available at: http://ops.dot.gov/regions/west/BP%205-2006-5015H%20-%20Final.pdf

\(^{40}\) U.S.A.s are defined in 49 C.F.R. § 195.6 as “drinking water or ecological resource area that is unusually sensitive to environmental damage from a hazardous liquid pipeline release.”
III. Pipeline and Hazardous Materials Safety Administration (PHMSA), US
Department of Transportation (DOT) Proposed Regulations

Shortly after the 200,000 gallon spill in Prudhoe Bay, Alaska, PHMSA began to work on closing the regulatory gap of low-stress lines. According to PHMSA, it uses a risk-based approach when formulating which portions of the regulatory gap to close. Whereas PHMSA does not intend to regulate all low-stress pipelines, it does however “intend to protect all lines that, in the event of a failure, pose the threat of significant environmental harm to unusually sensitive areas (USAs).” PHMSA goes on to explain that the “proposal addresses the most significant threats, corrosion and external damage, and applies a full range of protections known to be effective and appropriate against these risks to these lower pressure lines.”


43 Id. at 5.
some of the exemptions; conversely, the proposed regulations still ignore a significant portion of low-stress pipelines that do not fit into their categorization of significant threats.44

A. The need to regulate

In March 2006, the largest oil spill to date on the North Slope of Alaska was discovered.45 The pipeline exemptions caused more than 200,000 gallons of crude oil to spill.46 The low-stress pipeline was exempt from regulation as it “did not transport a highly volatile liquid (HVL), it was located in a rural area, and it was outside a waterway currently used for commercial navigation.”47 Investigators found that the pipelines had not been cleaned with a smart pig48 or tested since 1992.49 According to legislative investigators, BP began to use pig tests in 1999 but never completed the process.50

44 Peter Van Tuyn, supra note 41, at 24.
45 Epstein Testimony, supra note 38, at 8.
46 Id.
47 Epstein Testimony, supra note 38, at 1.
48 “‘Smart Pigs’ are cylinder-shaped electronic devices used by the oil pipeline industry to detect loss of metal and in some cases deformations in the pipeline.” Pipeline Integrity at 1. Available at: https://www.piersystem.com/posted/888/Pipeline_Integrity_detail_Final_Aug_28.57638.pdf
Although PHMSA would like to think that companies like BP have a higher standard of care, regulations should still be in place to ensure protection of the environment, human safety and oil supplies. Furthermore, it should not have been any surprise that the major spill occurred; employees of BP have been complaining to company officials since 2001 of being “so understaffed and lacking in routine maintenance that [pipelines] are leak-prone and vulnerable to explosions.” Despite the repeated warnings and concerns, Bob Malone, then regional president of BP United States, expressed his belief that “Prudhoe Bay is

50 Id.

51 “In January 2001, corrosion problems again were among the items identified by concerned BP North Slope technicians, and relayed to BP Chairman Lord John Browne by Charles Hamel…who serves as a conduit for the health, safety and environmental concerns of North Slope workers.” The letter specifically indicated that BP was “way behind on [its] corrosion inspection and repair.” Peter Van Tuyn, supra note 41, at 6. Other complaints included a 2004 letter written by Hamel to “BP board environmental safety subcommittee chair Walter Massey to warn of ‘cost cutting, causing serious corrosion damage’ that contribute to worker fears of ‘a catastrophic event.’” Id. at 8. Finally, in 2005, “Hamel sent a letter to Senator Ted Stevens discussing BP’s [] (sic) other safety problems on the North Slope.” Peter Van Tuyn, supra note 41, at 8. He went on to describe the concerns as ‘Russian Roulette’ type risks taken in the interest of saving money; risks that could ultimately jeopardize the North Slope crude deliveries. Id. at 8-9.

safe and that BP has always had as [its] number one priority the safety of its
employees and contractors and the integrity of the North Slope system."\textsuperscript{53}

Therefore, PHMSA should not rely on corporate beliefs but rather regulate and
verify their safety efforts.

Many attempts to pass low-stress regulation failed due to a lack of
pressure from the legislature and general public.\textsuperscript{54} An abbreviated timeline as
provided in recent testimony before the Energy and Natural Resource Senate
Committee demonstrates the serious lack of attention to the low-stress line issue:

* 1969: All low-pressure pipelines exempted from regulation
* 1988: National Association of Pipeline Safety Representatives
(state pipeline regulators) sends the U.S. DOT a resolution asking
that the low-pressure exemption be eliminated.
* 1990: U.S. DOT asks for comments on ‘whether and what to
extend’ to remove the low pressure exemption from its regulations.
* 1992: Congress passes the Pipeline Safety Act of 1992 and
directs U.S. DOT not to exempt pipelines from its regulations
‘only because the facility operates at low internal stress.’
* 1993: Notice of Proposed Rulemaking applying pipeline
standards to low pressure transmission pipelines that traverse a
populated area or a navigable waterway. U.S. DOT deferred a
decision on regulation of low-pressure lines in environmentally
sensitive areas awaiting its development of a definition of
environmentally sensitive areas.
* 1994: Final rule applying pipeline standards to low pressure
transmission pipelines located in non-rural areas and areas
currently used for commercial navigation.\textsuperscript{55}

\textsuperscript{53} Id.

\textsuperscript{54} Parker, \textit{supra} note 15, at 257–58.

\textsuperscript{55} Peter Van Tuyn, \textit{supra} note 41, at 18–19.
Generally, regulations are only passed following fatal accidents that stir emotion and public sentiment.\textsuperscript{56} There is no data or reason to believe that the current unregulated low-stress lines would be less vulnerable to the problems the highly regulated pipelines encounter.\textsuperscript{57} In fact, PHMSA observed that the leading causes of low-stress line accidents are very similar to those of pipelines that are already regulated.\textsuperscript{58} Moreover, due to the numerous exemptions, one could argue that the lines are actually more vulnerable as they have not undergone safety testing and reporting.\textsuperscript{59} Whereas, low-stress lines are thought to be less dangerous due to the low pressure, they account for approximately half of the total oil spilled from pipelines nationwide.\textsuperscript{60} Therefore, based on their own statements in the proposed

\begin{thebibliography}{10}
\bibitem{56} When PHMSA removed the HVL within 220 yards of populated areas, it was found that the proposed regulation was a direct result of accidents that had occurred shortly before the proposal. DEANNA MIRSKY, \textit{supra} note 21, at 1.


\bibitem{58} \textit{Id.}

\bibitem{59} \textit{Pipeline Safety: US DOT PHMSA, supra} note 57, at 6.

\bibitem{60} Mufson, \textit{supra} note 4.
\end{thebibliography}
regulations and studies, it is puzzling as to why PHMSA would still allow for any exemption of low-stress lines.  

**B. Proposed definitions and safety requirements**

PHMSA is proposing many changes to the Federal Pipeline Safety Regulations. First, PHMSA has proposed extending safety rules for “low-stress lines that are within 440 yards of an unusually sensitive area (USA).” However, the proposed definition as to which low-stress pipelines would be subject to the regulation is extremely prohibitive. Whereas the proposed definition would

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61 “U.S. Representative James Oberstar of Minnesota, the committee’s ranking Democrat, said the BP pipeline fiasco in Alaska exposed ‘a corporate culture of neglect’ on safety and questioned why U.S. regulation shouldn’t cover all of the lines - not only those that run through environmentally sensitive of heavily populated areas. ‘The rest of them don’t count?’ Oberstar asked Barrett.” *US Legislators Doubt Oil Pipeline Rules Enough to Avoid Corrosion Problems*, Canadian Press, Sept. 14, 2006, available at http://www.canada.com/topics/news/world/story.html?id=2a76a72e-4af2-47a2-9d91-0ee167ca0b4c&k=53313


63 *Pipeline Safety: US DOT PHMSA, supra* note 57, at 1. U.S.A. are defined in 49 C.F.R. § 195.6 as “drinking water or ecological resource area that is unusually sensitive to environmental damage from a hazardous liquid pipeline release.”
minimize the greatest risk, it does not address the other risks that are apparent in low-stress pipelines.\textsuperscript{64}

Next, PHMSA found in its study that the U.S. economy would be impacted by any interruption in supply and interruption would result in businesses and consumers paying increased prices.\textsuperscript{65} Further, their study found that interruptions in supply would result in increased importation of foreign oil creating national security implications.\textsuperscript{66} However, a disruption could take place outside of the unusually sensitive area and under PHMSA’s proposed regulation, it would not be covered.\textsuperscript{67} Additionally, this approach does not address the potential movement of spilled oil by flowing water or downward flows within watersheds.\textsuperscript{68} Therefore, it would be beneficial economically\textsuperscript{69} as well as

\begin{itemize}
  \item \textsuperscript{64} See supra notes 57-60 and accompanying text.
  \item \textsuperscript{65} Pipeline Safety: US DOT PHMSA, supra note 57, at 19.
  \item \textsuperscript{66} Id.
  \item \textsuperscript{67} 2006 Proposed Rulemaking, supra note 10.
  \item \textsuperscript{68} E-mail from Lois N. Epstein, Senior Engineer and Oil & Gas Industry Specialist, Cook Inlet Keeper (Oct. 23, 2006, 19:57 CST) (on file with author).
  \item \textsuperscript{69} See supra note 3.
\end{itemize}
environmentally\textsuperscript{70} to implement such regulations on all low-stress lines, not just those in unusually sensitive areas.

Finally, PHMSA is also proposing a number of safety measures that are very similar to regulations of other pipelines. The additional regulations include:

higher-risk rural onshore low-stress lines in a new definition of ‘regulated rural onshore low-stress lines,’ require operators of ‘regulated rural onshore low-stress lines’ to follow safety rules for design, construction, testing, and maximum operating pressure; . . . protect those pipelines from corrosion and excavation damage; . . . install and maintain line markers; . . . report accidents and safety-related conditions and to make annual reports; . . . establish an integrity assessment program; . . . [and] establish a leak detection program based on American Petroleum Institute’s standard.\textsuperscript{71}

With the additional proposed regulations on only certain low-stress pipelines, it is impractical to believe that a pipeline operator would manage an integrated pipeline that would fall under multiple regulatory schemes; or only have a portion of the pipeline be excluded from other regulations. Therefore, it is

\textsuperscript{70} Pipeline leaks raise a number of environmental concerns. Several of these concerns include: contamination of water and wildlife, release of greenhouse gases and injury and death from explosions and fires. Epstein, \textit{supra} note 32, at 3. These potential environmental concerns are not limited to the Cook Inlet Watershed but are of concern where any pipeline leaks could occur. Additionally, there are a number of other problems that arise from leaks as “it is essentially impossible to restore contaminated groundwater to a pre-contamination condition, oil pipeline releases frequently diminish property values. Likewise, the impacts of oil and natural gas pipeline releases can reduce an area’s attractiveness to tourists.” \textit{Id}. at 4.

\textsuperscript{71} \textit{Pipeline Safety: US DOT PHMSA, supra} note 57, at 2.
more practical to require similar testing and safety requirements on all pipelines to avoid the problems that have shown to occur absent regulation.\textsuperscript{72} In order to adequately evaluate the safety measures, the impacts and benefits of the proposed regulations should be examined and are further discussed in the subsequent sections of this paper.

1. Design, Construction, Testing, and Maximum Operating Pressure (MOP)

Currently, the low-stress pipelines are not mandated to undergo the intensive initial testing similar to other regulated pipelines. Under the proposed regulations, PHMSA evaluated the implementation cost of other safety measures as proposed for design, construction, testing and maximum operating pressure (MOP).\textsuperscript{73} Establishing the MOP is important to guard against potential accidents due to overutilization or over pressurization of the pipeline.

Whereas establishing the MOP could slightly delay bringing the pipeline online, existing regulated pipelines already undergo similar testing. PHMSA estimates the cost to be minimal as maximum operating pressure does not require work along the pipeline.\textsuperscript{74} PHMSA also notes that “safety requirements addressing design, construction, and testing . . . similar to those in the proposed

\textsuperscript{72} See supra note 4.

\textsuperscript{73} Pipeline Safety: US DOT PHMSA, supra note 57, at 25–26.

\textsuperscript{74} Id.
regulatory change are included in ASME B31.4, a consensus standard followed widely throughout the hazardous liquid pipeline industry.\textsuperscript{75} Therefore, PHMSA speculates that the cost would therefore be assumed to be zero dollars as they believe it is likely the standards are already being used.\textsuperscript{76}

2. Corrosion and Excavation Damage Protection

The most significant requirement of the new regulation deals with required corrosion and excavation damage protection. The current regulatory scheme does not require low-stress pipelines to undergo any protections. Even if no other portion of the regulation is passed, this is one requirement that is paramount as corrosion is responsible for approximately twenty-four percent of all pipeline accidents, by far the most common cause.\textsuperscript{77} PHMSA also believes that the primary cause of accidents on low-stress lines are tied to corrosion and excavation damage.\textsuperscript{78}

There are two main purposes for corrosion protection, environmental and economic. Environmentally, corrosion can cause serious leaks and ruptures that can result in contamination of drinking water, damage wildlife and result in

\textsuperscript{75} Pipeline Safety: US DOT PHMSA, \textit{supra} note 57, at 26.

\textsuperscript{76} Id. at 26-27.

\textsuperscript{77} Parker, \textit{supra} note 14, at 255.

\textsuperscript{78} 2006 Proposed Rulemaking, \textit{supra} note 10 at 52,509.
explosions and fires.\textsuperscript{79} Economically, corrosion protection ensures the reliable delivery of oil.\textsuperscript{80} As the industry cannot completely be relied on to take such measures, as seen with BP in Prudhoe Bay, regulation is still needed. PHMSA goes on to speculate that operators “would [likely] not incur costs to install such protection as a result of this proposed rule.”\textsuperscript{81} Again, with this being the case, why would PHMSA not apply the same logic to the remaining low-stress lines outside of the unusually sensitive areas?

3. Accident and Safety Related Reporting

Currently, only regulated lines are required to report and disclose accidents that occur.\textsuperscript{82} Because low-stress lines are exempt from the current regulatory scheme, they are also exempt from the reporting requirements when accidents occur. Under the new regulations, the operators of “low-stress lines would need to report any accidents that occurred on their impacted lines, as well as any safety-related conditions.”\textsuperscript{83} The reporting of accidents and other safety-related conditions will provide information on spills and corrective action being

\textsuperscript{79} E-mail from Lois Epstein at 1. \textit{Supra} note 58.

\textsuperscript{80} \textit{Pipeline Safety: US DOT PHMSA, supra} note 57, at 22.

\textsuperscript{81} \textit{Id}.

\textsuperscript{82} See \textit{supra} note 32.

\textsuperscript{83} \textit{Pipeline Safety: US DOT PHMSA, supra} note 57, at 26.
taken as opposed to allowing pipeline operators to forgo reporting and “sweep it under the rug.” PHMSA has also expressed that costs should be nominal as the cost would generally only be incurred when an accident or other serious safety issue arose.\(^8^4\) Therefore, the strong public policy of increased disclosure provides a strong argument for full disclosure and required reporting.

4. Leak Detection

PHMSA speculates that the cost to establish a leak detection system will be minimal.\(^8^5\) Leak detection systems are another piece to reduce the probability of another large spill such as what occurred in Prudhoe Bay. There are a number of leak detection systems which are described and defined in the American Petroleum Institute’s publication, API 1130, ‘Computational Pipeline Monitoring’ which includes “good industry practice with respect to leak detection.”\(^8^6\) In 1998, a “rule was published requiring operators of hazardous liquid pipelines to use API 1130 in conjunction …[with other] leak detection systems.”\(^8^7\) As such, PHMSA believes the cost of fully implementing the leak detection on the new category of regulated pipelines will be very negligible as well.

\(^8^4\) Id.

\(^8^5\) Pipeline Safety: US DOT PHMSA, supra note 57, at 29.

\(^8^6\) Id.

\(^8^7\) Pipeline Safety: US DOT PHMSA, supra note 57, at 29.
5. Integrity Assessment

Currently, regulated pipelines require integrity testing to be completed on a regular basis. There are three general methods in which operators can establish an integrity assessment program: (1) hydrostatic testing, (2) in-line inspection, and (3) direct assessment. However, the PHMSA proposed regulation, “does not require the low-stress pipeline meet the proven technical requirements that other [regulated] oil pipelines must meet.” The regulation specifically states that operators “may” choose to perform such testing but fails to require any testing.

The first opportunity to perform testing on the pipeline is once it has been manufactured and then installed. “Hydrostatic testing is used to conduct strength tests on new pipes while in the manufacturing process, as well as at the completion of pipeline installation in the field prior to being placed in service.” Hydrostatic tests are the most reliable and “the preferred integrity assessment method when the pipeline is not capable of being internally inspected or if defects are suspected that may not be detectable by internal inspection smart pigs.”

88 Pipeline Integrity, supra not 48, at 1.
89 E-mail from Lois Epstein at 1. Supra note 58.
90 Peter Van Tuyn, supra note 41, at 24.
91 Pipeline Integrity, supra note 48, at 3.
92 Id.
However, the hydrostatic tests are generally not used once the pipeline has been brought into service as it “requires filling each segment of the pipeline with water and pressurizing it to determine whether it will hold pressure.” 93 The pressure used is generally greater than the normal pressure of the pipeline and is done over a period of time. If problems are suspected, such as corrosion cracking, the pressure is increased for up to an hour.94

In-line inspection tools generally refer to “smart-pigs.” 95 Whereas the smart-pigs cannot find all defects, it can effectively detect problems “in a pipeline by creeping through the pipeline and using magnets and sensors to detect where the pipeline wall ‘leaks’ the magnetic force field. This leakage happens where the pipe wall has thinned due to corrosion.” 96 The smart-pigs provide data that allow the pipeline operator to evaluate and “make integrity decisions about the pipeline and to find and mitigate potential problem areas before they become a problem.” 97 Therefore, smart-pigs are highly effective when they can be used. However, there

93 Parker, supra note 14, at 253.
94 Pipeline Integrity, supra note 48, at 4.
95 See Supra note 48.
96 Parker, supra note 14, at 254.
97 Pipeline Integrity, supra note 48, at 1.
are some limitations as to where they can be used due to the size or path of the pipeline.\textsuperscript{98}

Direct assessment is the preferred method when a ‘smart pig’ cannot be used as hydrostatic testing can be costly as it completely interrupts service.\textsuperscript{99} “Direct assessment methods include various types of cathodic protection\textsuperscript{100} surveys, such as close interval surveys and physically uncovering the pipeline and examining the external coating as well as the steel pipe.”\textsuperscript{101} Direct assessment can provide as good of an evaluation as the smart-pig but is generally not as efficient.\textsuperscript{102}

Finally, integrity assessment also includes identification of potential threats. The management and future planning of potential risks requires pipeline

\textsuperscript{98} As the smart-pigs travel through the pipelines, if the pipeline is not straight, the pigs can get stuck. Most commonly, pipelines that have a “zig-zag” path are difficult to send the testing equipment through as they cannot maneuver through the turns in the pipeline and get stuck.

\textsuperscript{99} Parker, \textit{supra} note 14, at 254.

\textsuperscript{100} “Cathodic protection can be defined as a technique of reducing or eliminating the corrosion rate of metal by make (sic.) it the cathode of an elechochemical cell and passing sufficient current through it to reduce its corrosion rate.” M.A. Khazraef, Short history of cathodic protection for fixed offshore structures, \textit{JOURNAL OF CORROSION SCIENCE AND ENGINEERING}, (February 2006).

\textsuperscript{101} Pipeline Integrity, \textit{supra} note 48, at 1.

\textsuperscript{102} This method is not as efficient as it only tests a small sample of the pipeline as opposed to smart-pigging which can test the entire pipeline. Parker, \textit{supra} note 14, at 254.
operators to constantly assess the safety of their pipelines. There are several threats that must be considered: “1. time dependent threats such as internal corrosion, external corrosion, and stress corrosion cracking; 2. static or resident threats, such as fabrication or construction defects; 3. time dependent threats, such as third-party damage and outside-force damage; and 4. human error.”

Pipeline operators are required to review potential threats and assess risk in order to prioritize the potential for an accident.

C. Overall Cost Benefit Analysis

Improved regulation will most likely require some additional cost to implement the new requirements for testing and assurance of pipeline integrity. However, there is a slight cost, “the costs for compliance with a more comprehensive regulatory scheme would not be large, particularly in comparison to the high costs to society when pipelines fail.” The potentially fatal and environmental impacts far outweigh the slight increase in cost for oversight and increased safety assurances.

103 Zolet & Moore, supra note 29, at 119.
104 Id.
105 Peter Van Tuyn, supra note 41, at 24-5.
106 Id.
The cost to bring pipelines into compliance would likely be similar whether the PHMSA proposal is enacted or if a more stringent set of regulations are approved that would cover all low-stress pipelines. “PHMSA predicts that its proposal will cost operators only $17 million, a relatively small amount given the likely higher costs when pipelines fail.” The costs associated with a pipeline failure do not just include the shut down of the pipeline but also clean-up costs and any permanent damage suits that could arise from the accident.

PHMSA conducted an environmental assessment and indicated that most of the pipelines that would come under regulation are already being undertaken by the pipeline operators. The study also found that the “proposed rulemaking would require only limited physical modification or other work.” Again, with the potential benefit and low projected cost of implementation, it is puzzling as to why PHMSA has not proposed removing the exemption completely.

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107 Additionally, he goes onto point out that the companies are posting huge profits while neglecting their responsibility to provide a stable source of energy and to protect our citizens and the environment. Peter Van Tuyn, supra note 41, at 25.

108 Id. at 24.


110 Id. at 15.
A uniform pipeline regulation of all low-stress pipelines would provide an ease in management of requirements for both PHMSA as well as pipeline operators. If the proposed regulations that still contain exemptions are passed, a pipeline operator could be left with a pipeline that would be subject to different regulations, depending on the location and how close it is to a USA. It is unlikely that pipeline operators will actually construct or test a pipeline in different manners. Therefore, as a practical matter, pipeline operators are likely to adhere to the more stringent regulations for the entire pipeline rather than taking advantage of small exempt areas in the middle of their regulated pipeline. If the operators are likely to adhere to the more stringent regulations for their entire pipeline, based on the history of the volatility of the low-stress pipeline, one would think PHMSA would err on the side of caution to protect the environment and economic interests.

IV. Proposed Legislation

Following the BP spill in Prudhoe Bay, the general public was outraged at the negligence of BP. Following a year of record gas prices at the pump due to

\[\text{111 The existing statutory exemptions have been characterized by Lois Epstein, Senior Engineer and Oil & Gas Industry Specialist, as “piecemeal at best and confusing, difficult to implement and enforce, and inadequate at worst. E-mail from Molly Haining, Pipeline Practice Attorney, BNA Daily Environment Report, (Nov. 9, 2006, 07:03 CST) (on file with author).}\]
natural disasters and instability in the Middle East, many Americans feared the spill in Prudhoe Bay, and subsequent shutdown of the pipeline would again propel the prices at the pump back to record levels.112 When public sentiment grows wary, legislators pay attention, especially with the tenaciously political climate during an election year.113 The Pipeline Safety Act of 2002 was also set to expire

112 Hurricanes Katrina and Rita had a significant impact on US oil production. When the storm hit, it “knocked out about 1.4 million barrels a day of oil production, [and] other producers did not make up the difference” which caused “gasoline prices to soar.” Justin Blum, An Easily Threatened Oil Industry, WASHINGTON POST, September 21, 2005, D01, available at http://www.washingtonpost.com/wp-dyn/content/article/2005/09/20/AR2005092001791.html

“When the war [with Iraq] began, prices spiked as Iraq’s production of 2 million barrels a day—then about 3% of the world’s supply—was shut down.” Id. Americans feared that a decrease in the domestic supply would result in similar spikes as immediately after Katrina. Martin Zimmerman, BP Presents Bad News, Good News, LOS ANGELES TIMES, August 8, 2006.

113 Senator Charles Shumer characterized the spill as “the specter of lax maintenance in pipelines across the country, at a time when we simply cannot afford any more surprises in the oil markets, [and] accused the regulators of being asleep at the switch.” Id. While Americans were paying record amounts at the gas pump, oil companies were posting record profits; “[s]ome lawmakers—including . . . an industry ally—demanded to know whether BP, which recently posted $7.3 billion in second-quarter profit, neglected to invest in upkeep of its infrastructure.” Zimmerman, supra note 112.
at the end of 2006 and provided a stage upon which the new legislation could be set.\footnote{114 With the ensuing mid-term elections, legislators took notice of the potential impacts of a shortage of oil and potential increase at the pump. Therefore, as “congress pays attention to pipeline safety only when horrific accidents occur;” they had a perfect opportunity with the expiration of the 2002 Pipeline Safety Act to take action and consider increased regulations on low-stress pipeline. Parker, \textit{supra} note 14, at 278.}

For example, both the House and Senate immediately began to investigate and hold hearings on the causes of the disaster in Prudhoe Bay. Following the finding of the regulatory exemption on low-stress pipelines, the legislators began to evaluate how far the proposed legislation should go in providing safety and economic stability.\footnote{115 \textsc{Sam Bishop, House OKs Pipeline Regulations}, \textit{Fairbanks Daily News Miner}, (2006), http://newsminer.com/wp-content/themes/fdnm/single-print.php?post=2318}

Unlike PHMSA’s proposed regulations, the Senate bill, as introduced would require the PHMSA “Secretary [to] issue regulations subjecting low-stress hazardous liquid pipelines to the same standards and regulations as other hazardous liquid pipelines.”\footnote{116 Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006, S.3961, 109th Cong. § 3(1) (2006).} The bill also has a very aggressive timeline of requiring implementation within one year of passage. Finally, the bill provides for additional funding for additional pipeline inspectors and enforcement
personnel. The bill calls for an increase in staffing by fifty percent by the year 2010.

The House introduced a similar bill to address their concerns with the low-stress pipeline. However, in the initial bill marked up by the House Transportation and Infrastructure Committee, the language was very similar to the PHMSA proposed regulations. The bill was limited to low-stress pipelines located near USAs. The bill came up for a vote in the House Energy and Commerce Committee and passed an amended version of the bill which would require low-stress pipelines to be regulated similarly to high-stress pipelines by the US Department of Transportation. With a House Committee approving a bill very similar to the Senate bill, it is likely the bill, or a compromise bill, will eventually pass with a higher standard than as proposed by PHMSA.

The committee also debated whether specific safety measures should be explicitly included in the legislation. The bill that passed in Committee did not

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117 S.3961 at § 26(b).
118 The bill also sets a minimum staffing requirement tiered upward to the final implementation date of 2010. Id. at § 26(b).
120 Id. at § 5(1).
121 Bishop, supra note 115.
122 The safety measures that were debated in Committee and not passed were specific to integrity assessment measures. Infra Part B-5.
include any such provisions.\textsuperscript{123} One of the excuses presented to the Committee by DOT was that whereas most operators already comply with safety measures, they cannot be done on all pipelines as many contain bends and valves that prohibit their use.\textsuperscript{124} Although this may be the case, a better method would be to require the smart-pigging and then apply for exemptions from the requirement and to include the other testing measures that would still provide for the integrity of the pipeline and safety measures being taken.

V. Examination of Existing Penalty Assessments

The Pipeline Safety Act of 2002 increased the available fines that PHMSA could impose, however, PHMSA has been reluctant to impose such penalties.\textsuperscript{125} For example, “in 2003, PHMSA proposed only 32 civil penalties with an average proposed penalty of $32,000, but assessed only 19 civil penalties with an average assessed penalty of $19,000.”\textsuperscript{126} PHMSA’s lack of imposing and collecting

\textsuperscript{123} Bishop, supra note 115.

\textsuperscript{124} Id.

\textsuperscript{125} The 2002 Pipeline Safety Act increased penalties from $25,000 per day with a $500,000 maximum violation to $100,000 per day with a $1,000,000 maximum. 49 U.S.C. § 60122 (a)(1). While the fines have been available, PHMSA has not adequately imposed or enforced them. See Epstein Testimony, supra note 38, at 4.

\textsuperscript{126} Id.
penalties is further evidenced of the inadequacy of the current pipeline regulations.127

The lack of aggressive imposition of fines could also be a factor for lack of self-governance by pipeline operators.128 For example, BP’s history of problems with corrosion related accidents and continued warnings should give rise to the PHMSA penalties.129 However, based on the small number and amounts of civil penalties imposed by PHMSA, it is unlikely the threat of PHMSA penalties would have acted as a deterrent to prevent the accident at Prudhoe Bay.

On the other hand, the Environmental Protection Agency (EPA) continues to not only issue but also collect multi-million dollar penalties from pipeline

127 “The Bellingham, WA proposed penalty in 2000 was $3.02 million, which was negotiated down to $250,000 nearly five years later.” Id. at 4. See supra note 24. “The Carlsbad, NM proposed penalty in 2001 was $2.52 million; however, to date, no penalty has been collected.” statement of Lois N. Epstein, at 4. See supra note 25.

128 See supra note 4 and accompanying text.

129 See supra note 51.
companies. In 2003, the most significant civil penalty imposed on a pipeline operator was settled with the EPA and Department of Justice. Colonial Pipeline Company, the largest-volume pipeline transporter in the world, reached a settlement of $34 million for seven spills that resulted in 1.45 million gallons of oil being spilled in numerous rivers, streams, and wetlands. In addition to the penalty, Colonial also had to designate its entire domestic pipeline as affecting “high consequence areas.”

The first requirement of the agreement between the EPA and Colonial was an immediate inspection of the pipeline for corrosion and cracks and repair of any

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130 Several penalties include $5.5 million to Mobile E&P in 2004 for inadequate prevention and control; $15 million to Olympic Pipeline/Shell in 2003 for three fatalities and 230,000 gallons of gasoline spilled (not including the $21 million in criminal fines); and $34 million to Koch Industries, Inc. in 2000 for three million gallons of oil spilled due to corrosion. Epstein Testimony, supra note 38, at 5. See also Press Release, EPA, US Reaches Landmark Settlement with Colonial Pipeline for Oil Spills in Five States-- $34 million Civil Penalty Is the Largest Paid by a Company in EPA History, (April 1, 2003) available at http://www.epa.gov/compliance/resources/cases/civil/cwa/colonial.html


See also EPA, COLONIAL PIPELINE COMPANY CLEAN WATER ACT SETTLEMENT (2006) available at: http://www.epa.gov/compliance/resources/cases/civil/cwa/colonial.html
defects according to industry standards.\textsuperscript{132} This placed the entire Colonial pipeline under the purview of PHMSA regulations that included corrosion inspection along the entire pipeline every five years, repair standards for any corrosion or damage found and independent monitoring of the stipulations of the agreement.\textsuperscript{133} The consent decree also called for quarterly reports from the independent monitoring contractor to ensure Colonial’s compliance with the agreement.\textsuperscript{134}

Given the disparity between PHMSA and EPA enforcement of available penalties, the pending legislation should include a mandate to impose such sanctions rather than mere authorization to do so. One recommendation made to the House Committee on Transportation is to “require PHMSA to submit an annual report to Congress on civil and criminal pipeline safety enforcement, including penalty issuance, collection and reasons for significant penalty reductions.”\textsuperscript{135} Based on PHMSA’s lack of imposing penalties, the pending legislation should require PHMSA to be accountable to the legislature. Furthermore, in contrast to the opinions of the PHMSA proposal which the

\textsuperscript{132} Consent Decree 1:00-CV-3142 JTC (April 2003) at 12–13.

\textsuperscript{133} EPA Press Release, \textit{supra} note 131.

\textsuperscript{134} Consent Decree, \textit{supra} note 132, at 15–20.

\textsuperscript{135} Epstein Testimony, \textit{supra} note 38, at 5. This has not been considered by either the House or Senate Committees.
Pipeline Safety Trust does not believe will improve either pipeline safety or public perceptions and confidence in pipeline safety, the bills, as presented by the House Energy and Commerce Committee and Senate have garnered much more support by consumers, environmentalists and pipeline safety organizations.

VI. Conclusion

Due to its focus of regulation within the range of USAs, the rule proposed by PHMSA will have a limited impact on environmental and economic protection. Additionally, the new pipelines covered by the regulation do not go as far as other already regulated pipelines. PHMSA claims “17% of the unregulated gathering and transmission pipeline universe. . . and 14% of the unregulated transmission pipeline universe” will be covered by the new regulations. However, according to figures from the Volpe Center, “less than 5% of the low-stress transmission pipeline universe would be regulated under the [Notice of


137 E-mail from Lois Epstein at 1. Supra note 58.

138 Peter Van Tuyn, supra note 41, at 19–20.
Proposed Rulemaking.] Therefore, the legislators should require PHMSA to completely eliminate low-stress pipeline exemptions.

Although low-stress pipelines have been thought low risk, recent events have proven the need for increased regulation and oversight.140 Historically, the public, legislators and regulators react to major accidents by eliminating additional exemptions or requiring additional testing measures. It is now time for the government to “take the lead in ensuring the short and long-term viability and integrity of our energy production and delivery systems.”141 The associated cost with the increased regulation would be de minimis compared to the benefits of increased safety for the economy as well as the environment.142

Even though we cannot expect pipelines to be failsafe or leak proof, concentrated efforts must be made to avoid spills. PHMSA should be more aggressive in addressing the continued problems with pipelines by imposing regulations on all low-stress pipelines as well as imposing statutorily available

139 Peter Van Tuyn, supra note 41, at 20.

140 See supra part III-A.

141 Peter Van Tuyn, supra note 41, at 20.

142 Id. at 24.
civil and criminal penalties.143 Alternatively, the legislature should pass the pending bills specifically covering low-stress pipelines and possibly consider adding more stringent enforcement mechanisms to be imposed similar to the efforts by the EPA.144

143 The Proposed Rule comment period ended November 6, 2006 and received over forty comments that range from strong support to contention that all low-stress pipeline should be covered. Hanning, supra note 111.

144 S.3961 has been referred to the Committee on Commerce, Science, and Transportation. H.R. 5782 was passed as amended out of the House Energy and Commerce Committee. http://www.govtrack.us (follow “find legislation” hyperlink; then search follow using the bill number).