

**SHIFTING ACCIDENT, CLOSURE AND/OR  
POST-CLOSURE LIABILITIES TO THE PUBLIC SECTOR**

**CHAPTER 5**

The environmental and human health risks associated with different forms of energy vary in nature and magnitude. To address the risks posed by oil, production and transportation sites require decommissioning and cleanup once they are taken out of service. A substantial effort is also necessary to safeguard against accidental releases, such as oil spills, and to remediate contamination from spills that do occur. Both the procedures to manage risks and the costs of contamination impose financial liabilities. To the extent that these liabilities are absorbed by the general public, and not oil firms, they constitute subsidies to oil. These subsidies hide important information about the costs of oil and put cleaner forms of energy at a competitive disadvantage. Only by requiring oil companies to pay the full cost of oil-related risks can informed decisions and fair competition occur between oil and cleaner energy sources.

This chapter examines subsidies from three areas of oil-related liability in detail: oil well plugging and abandonment (including both onshore and offshore wells); oil spill liability; and pipeline decommissioning. We evaluate these liabilities to determine the extent to which they are internalized by the oil companies, and we estimate the value of risks that are shifted to the public sector.

These three examples speak to a much larger issue in the natural resource subsidy arena. Many industries commonly shift accident, closure, and post-closure liabilities to the state. Business enterprises are focused on the short-term: putting a plant in operation, meeting payroll, and selling what they have produced. It is often easy for oil companies to overlook the gradual build-up of environmental liabilities because most contamination does not affect immediate operations. Output is not reduced, and insurance rates do not rise, because firms generally do not have insurance for environmental contamination.<sup>91</sup>

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<sup>91</sup> The availability of environmental insurance for chronic releases remains extremely limited within the U.S. See Bruce McKenney and Doug Koplow, *Improving Access-to-Capital, Site Transition, and Brownfield Redevelopment Through More Effective Environmental Risk Management*, Cambridge, MA: Industrial Economics, Inc., prepared for the U.S. Environmental Protection Agency, February 1998.

Lenders may worry that the contaminated property can no longer serve as collateral for loans; however, many of the small operations that pose the largest risks may not receive financing through banks anyway.

Accident liabilities are generally more difficult to hide. While small oil leaks may continue undetected over time, large spills attract attention. Nevertheless, firms may be able to save money by purchasing lower levels of insurance coverage than necessary. We examine the issue of oil spill liability in greater detail below.

Closure and post-closure liabilities fall into two categories. The first involves a backlog of contamination caused before environmental regulations were instituted or properly functioning. These liabilities represent subsidies to past oil producers rather than to present ones, though the environmental problems associated with them are very real. The second category involves firms' present methods of controlling their closure and post-closure liabilities. While we examine both issues of liability below, we count only subsidies to current producers in our subsidy totals.

Governments have recognized that, without action, they could well inherit the messes oil firms leave behind. Over the past twenty years, both the federal government and many states have taken increasing precautions to ensure that environmental liabilities are not ignored by operating businesses and potentially transferred to the public. Oil shippers must purchase certificates of financial responsibility, guaranteeing a pre-set level of financial coverage in case of an oil spill. A number of state and federal taxes provide supplemental oil spill funds. Certain types of processing operations are required to set aside closure and post-closure trust funds. Oil lease holders must post bonds that require a third party to pay for remediation if the lease holder itself is insolvent. Many states also levy taxes on new oil production to finance abandoned well plugging funds that help pay reclamation and remediation costs associated with defunct oil production sites. Finally, governments can use environmental litigation to recover additional costs and damages resulting from improper closure and remediation.

Despite these important steps, substantial public liabilities remain with respect to properly closing oil wells. These arise from insufficient collections to address the backlog of abandoned well sites, and from insufficient bonding levels to adequately protect the public sector from having to use general tax revenues to address future site closure and reclamation. The adequacy of financial coverage for oil spills is uncertain, as there are a number of court cases pending that could greatly affect the portion of oil spill liability borne by the general taxpayer in the event of a large spill. The liabilities associated with pipeline decommissioning are poorly characterized and did not permit a subsidy estimate.

## **5.1 OIL WELL PLUGGING AND ABANDONMENT**

Oil is extracted from underground reserves by drilling from the surface into the oil reserve. As oil is extracted, well pressure tends to drop. Well operators often reinject fluids or natural gas into the ground to keep the well pressure up and the oil flowing. A single oil extraction well may be supported by a number of reinjection wells. All of these wells must be

properly plugged at the conclusion of drilling activity in order to prevent migration of hydrocarbons or contaminated brines into drinking water resources.<sup>92</sup> In addition to requiring plugging, offshore wells are generally supported by an offshore platform of some sort that must be dismantled and removed at the end of production.

From the perspective of oil well operators, dismantling offshore rigs, plugging wells, and remediating any environmental damage caused during drilling are economic burdens requiring cash outlays at a time when the sites are no longer producing oil. For large oil companies, the costs are relatively insignificant. However, many wells are sold by the large companies to smaller operators as production and returns decline. The responsibility for proper closure is transferred as well. While Federal agencies will not approve a lease transfer without believing that the new owner is financially capable of properly closing the site, our analysis of existing data suggest that comprehensive financial assurance for these new owners is often lacking.

As noted above, federal agencies and most state governments require oil well operators to purchase some form of bond prior to commencing drilling activity. The bonds (or other similar financial assurance mechanisms) guarantee that the costs of properly closing wells will be paid up to the bond limit by a third party (such as an insurance company) if the original well operators are financially insolvent. Unfortunately, the effectiveness of the financial assurance requirements is hindered both by the large number of wells drilled before the rules took effect and by required levels of assurance that are too low to cover the real cost of well closures. When financial assurances are inadequate, the public bears the excess liability, a cost that is not reflected in current petroleum prices.

### **5.1.1 Plugging and Remediating Onshore Oil Wells**

The scale of unfunded oil well closure liabilities is substantial. The owners of many oil wells are small and financially strapped. Often, they have purchased wells (and their associated closure liability) from major oil companies as well production declined.<sup>93</sup> Many of these owners are unlikely to have the financial resources to properly close their sites.

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<sup>92</sup> There are a number of known cases of contamination from oil wells. See U.S. General Accounting Office, *Drinking Water: Safeguards are not Preventing Contamination from Injected Oil and Gas Wastes*, GAO/RCED-89-97, July 1989.

<sup>93</sup> Within the State of Texas, for example, major oil companies sell wells to large independent producers when production falls to 10 barrels per day. The large independents, in turn, sell to “mom and pop” operators when production falls to 3 barrels per day. Thus, as revenues fall and the time for closure approaches, the financial stability of the owners actually decreases. David Garlick, former head of the Oil and Gas Division of the Texas Railroad Commission, personal communication, March 13, 1998.

The Interstate Oil and Gas Compact Commission (IOGCC) estimates that 2.7 million oil and gas wells have been drilled since state-level well regulations were instituted.<sup>94</sup> Of this amount, IOGCC estimates that 63,400 are abandoned with no known operator (referred to as orphan wells). IOGCC estimates that, in the “unlikely” event that all of the orphan wells had to be plugged and abandoned (P&A), the cost to the public sector would be \$343 million, or an average of \$5,400 per well.<sup>95</sup> In fact, at some point these wells will have to be plugged and abandoned, and it is unclear who other than the public sector will do so.

The IOGCC data provided a starting point for our estimate of residual on-shore well liabilities. We believe IOGCC's data understate the liabilities by a large margin due to the following weaknesses:

- **Cost Data Incomplete.** Properly closing an oil well involves not only plugging and abandoning it, but also assessing and remediating any on-site contamination. In addition, full costing of this process for orphan wells includes both the payments that governments make to contractors for services and the direct equipment and personnel costs the government itself incurs to run the program. IOGCC's estimate of \$5,400 per well represents a simple average of reported costs, but many states report *only* the funds paid to P&A contractors.<sup>96</sup> The estimate misses remediation costs and public-sector costs associated with P&A program oversight. For the subset of states within the IOGCC survey that did incorporate remediation costs into their reported data, the average full cost of well closure was between \$9,500 and \$19,200.<sup>97</sup> These costs provide a reasonable minimum target for bonding requirements at on-going operations.<sup>98</sup>

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<sup>94</sup> See Interstate Oil and Gas Compact Commission, Ad Hoc Idle Well Committee, *Produce or Plug: The Dilemma over the Nation's Idle Oil and Gas Wells*, December 1996, p. 5 (cited as “IOGCC, 1996”).

<sup>95</sup> The cost estimate for plugging a well represents the average spending per well by state funds developed to plug abandoned wells. (IOGCC, 1996, 43). Data reported by the states are somewhat inconsistent, and many do not include costs of site assessments, site remediation, or the public sector's full personnel and equipment costs for overseeing these programs.

<sup>96</sup> This discrepancy is exemplified by the State of Texas. While IOGCC's data for Texas show average well closure costs of only \$4,300, further evaluation found that this figure includes only the funds paid to vendors for P&A services. Rough estimates for other related costs for any well requiring remediation suggest a fully costed average of over \$14,000 per well. U.S. Bureau of Land Management, Oil and Gas Program, *Bonding/Unfunded Liability Review*, March 1995, p. E-16; John Tinterra, Texas Railroad Commission, personal communication, March 6, 1998; Garlick, personal communication, March 13, 1998.

<sup>97</sup> The subset of states comprises Pennsylvania, Ohio, and California. These states were identified based on a conversation with James Erb, Chairman of the IOGCC Ad Hoc Well Committee that prepared the *Produce or Plug* report, October 21, 1997.

<sup>98</sup> In 1995, BLM's Bonding/Unfunded Liability team recommended increasing the bonding level at wells on federal property to \$20,000 per well. U.S. Bureau of Land Management, March 1995, p. ES-1.

- **Well Universe Incomplete.** The focus of IOGCC’s analysis is on orphan wells only. Public liabilities are also affected by a host of other types of sites. For example, there are hundreds of thousands of “pre-regulatory” wells with no bonding drilled prior to the development of state regulations. The condition of many of these is poorly characterized, and it is likely that some may require additional public funding in order to address incomplete remediation or abandonment activities. In addition, there are nearly 600,000 operating or idle oil wells that appear to have bonding levels below the expected cost of full well closure<sup>99</sup>. For each of these wells, the public sector is acting as a *de facto* insurer.

Our estimate for the public liability for plugging and remediating onshore wells (shown in Exhibit 5-1) involves a number of steps. First, we estimate a more realistic average value for the full cost of oil well closure; this value sets the floor for appropriate bonding levels. Second, we adjust IOGCC figures for the number of wells requiring or receiving public subsidy to include both a small fraction of the pre-regulatory wells and idle and operating wells with inadequate bonding. Third, we develop a weighted average value for current bond coverage, which allows us to calculate how much higher existing bonding coverage needs to be to reach the average full cost of closure. Finally, we calculate the cost of purchasing this additional coverage in the surety market.

Throughout our analysis, we have pro-rated all IOGCC data on oil and gas wells to reflect the oil subsector only. In addition, we have separated inadequate collections to close past abandoned sites from the annual subsidy that results from unrealistically low bonding levels today. The values shown for residual liabilities on past operations have already been credited with user fees levied in many states on oil producers for well plugging and abandonment (“plugging funds”).<sup>100</sup> Although we report liabilities for past operations, we do not count them in our subsidy totals because they represent a past benefit to producers.

Our estimates for under-bonding for existing onshore wells are likely to be too low for a number of reasons. First, we calculate existing bonding levels using the state bonding requirements for the deepest wells. Shallower wells will have lower bonding requirements, in which case we have overstated their current bonding levels. Second, we use a premium rate for on-shore bonds that is lower than the actual losses incurred on on-shore policies during the 1989 to 1993 period for which we have data. To remain viable, surety companies must collect enough in premiums to cover losses and earn a profit, which suggests they charge bonding rates higher than the 5.5 percent premium we have assumed for the average firm. Third, we use *average* liabilities as our target for an appropriate bonding level when, in fact, surety requirements

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<sup>99</sup> David Garlick notes that many of these operators may be too financially weak to obtain or pay for bonding even if they wanted to. Garlick, personal communication, March 13, 1996.

<sup>100</sup> The contribution of these funds appears inadequate to fully address the total well liability. Only 13,000 wells had been plugged since the start of the funds through the end of 1994, a period of 10 to as many as 40 years depending on the state. Meanwhile, IOGCC estimates the known plugging backlog at nearly 38,000 wells. (IOGCC, 1996, p. 43).

Exhibit 5-1

PUBLIC LIABILITY FOR UNBONDED AND UNDER-BONDED ONSHORE OIL WELLS

	Well Count and Cost Data (Note 1)		Public Liability (\$Millions)	
	Low Estimate	High Estimate	Low Estimate	High Estimate
<b>Estimated Full Average Cost to Close an Oil Well</b>				
Estimated plugging, abandonment, and remediation costs per well (Note 2)	\$9,584	\$19,246		
<b>Historical Legacy of Abandoned Wells - No Bonding, No Current Owner</b>				
Orphaned wells, state jurisdiction	34,147	34,147	\$327	\$657
Orphaned wells, federal jurisdiction (Note 3)	136	136	\$1	\$3
Pre-regulatory wells				
Total	425,242	559,812		
Estimated to require public funds	5%	<u>21,262</u>	<u>\$204</u>	<u>\$539</u>
Total Orphan Wells with no bonding or known owner	55,546	62,274		
<i>Total Public Liability for Past Well Activity</i>			\$532	\$1,199
Annual cost, with remediation spread over ten years			\$53	\$120
Less annual state collections in plugging funds (Note 4)			(\$9)	(\$9)
<b>Net Annual Shortfall for Past Oil Activity</b>			<b>\$44</b>	<b>\$111</b>
<b>Bonding Shortfall for Existing Stock of Oil Wells</b>				
<b>No Bonding</b>				
Idle wells without state approval	37,934	37,934		
Bonding Shortfall per well	\$9,584	\$19,246		
<i>Bonding Shortfall, total, wells with no bonding</i>			\$364	\$730
<b>Partial Bonding</b>				
Idle wells with state approval	81,102	81,102		
Idle wells, federal jurisdiction (Note 3)	5,633	5,633		
Active wells, state jurisdiction	<u>500,628</u>	<u>500,628</u>		
<i>Total Oil Wells with Partial Bonding</i>	587,364	587,364		
Weighted Average Bonding Level Across Oil Producing States (Note 5)	\$6,532	\$6,532		
Estimated average bonding shortfall per Well	\$3,052	\$12,714		
<i>Total Underbonding</i>			<u>\$1,793</u>	<u>\$7,468</u>
Total Bonding Shortfall, Partial and No Bonding			\$2,156	\$8,198
Estimated Cost of Bonding (Note 6)	5.5%	5.5%		
<b>Net Subsidy</b>				
<b>Annual Subsidy to Existing Well Stock Due to Inadequate Bond Coverage (Note 7)</b>			<b>\$119</b>	<b>\$451</b>
<i>Annualized Cost of Remediating and Plugging Orphan Wells (Not included in aggregate estimate)</i>			\$44	\$111
<b>Total Annual Shortfall in Collections</b>			<b>\$163</b>	<b>\$562</b>

Notes:

- Data on oil and gas wells have been pro-rated to oil based on the ratio of historic oil versus gas plugging activity.
- IOGCC estimates for average plugging and abandonment costs do not include remediation for many states. Values shown in this table represent an average high and an average low P&A plus remediation costs for the states within the IOGCC survey that were identified by the study's coordinator as including all necessary cost elements.
- The well count has been scaled to eliminate double-counting of an estimated 10 percent of wells under federal jurisdiction that are also under state oversight.
- The plugging fund offset was calculated using the average annual spending on well plugging and abandonment by state funds based on data in the IOGCC survey.
- Bonding levels vary across states. Using IOGCC survey data, we calculated the weighted average bonding level for oil producing states. The level shown represents an upper bound for two reasons. First, it assumes the highest bonding level, though in reality this level applies only to the deepest wells. Second, many operators will have a blanket bond, translating to a much lower level of coverage per well than is assumed here.
- Bonding rates vary by state and producer, with a range of between 1 and 10 percent according to BLM's *Bonding/Unfunded Liability Review*. We have used a simple average in our estimates, which probably understates the average premium cost. Actual national statistical data on onshore bonding losses between 1989 and 1993 shows a loss ratio of 10 percent. Long-term premiums must at least equal loss ratios plus a minimum profit margin if the industry is to remain viable. See Surety Association of America.
- We count only the bonding shortfall on *current* operations in our subsidy total figures, as our goal is to measure subsidies to existing operations. For industry to cover remediation and plugging costs at past sites as well, user fees would need to rise an additional \$50 to \$100 million per year.

Sources:

- U.S. Bureau of Land Management, Oil and Gas Program, *Bonding/Unfunded Liability Review*, March 1995, pp. E-16, F-18, F-20.
- Interstate Oil and Gas Compact Commission (IOGCC), Ad Hoc Well Committee, *Produce or Plug: The Dilemma over the Nation's Idle Oil and Gas Wells*, December 1996.
- James Erb, Chairman, IOGCC Ad Hoc Well Committee, personal communication, October 21, 1997.
- The Surety Association of America, "Countrywide Classification Experience Report, 1989-1993," in BLM, *Bonding/Unfunded Liability Review*, pp. F-13 - F-15.

normally aim to protect against above average losses.<sup>101</sup> Nonetheless, we estimate a shortfall in onshore bonding coverage for the current well portfolio of between \$2.1 and \$8.2 billion per year, which would require an additional \$120 to \$450 million per year in bonding premiums.

The wide difference between our high and low estimates is driven by the range we use for the total cost of well closure. By including this bonding shortfall in our calculation of federal subsidies, we are making the implicit assumption that the federal government is the insurer of last resort.

### **5.1.2 Closure of Offshore Oil Platforms**

As noted above, the problem with oil platforms is similar to that of onshore wells: operators may not have the funds or the desire to incur substantial costs to properly shut down operations at the end of a facility's operating life. As with many onshore wells, this potential problem is exacerbated by the steady transfer of offshore leases from major oil companies to independents as production declines.<sup>102</sup>

As with onshore wells, possible public liability remains despite bonding requirements for offshore operators. The General Accounting Office conducted a detailed study in 1993 examining offshore drilling platforms in the Gulf of Mexico. These operations are overseen by the Minerals Management Service (MMS), the federal agency responsible for the Outer Continental Shelf (OCS) drilling program. GAO's estimates for the full cost of dismantling platforms and plugging wells under the OCS program ranged from \$4.2 to \$4.4 billion. Yet, GAO found that the surety bonds in place covered only 1.6 percent of this prospective liability. According to MMS, total offshore liability has since risen to approximately \$5.5 billion, of which approximately \$1 billion is covered by surety bonds.<sup>103,104</sup> Although the coverage ratio has risen from only 1.6 to 18 percent over the past four years, the potential public exposure tops \$4.5 billion.

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<sup>101</sup> Setting bonding at the average level of losses means that the public sector will inherit liabilities in a substantial fraction of the closures.

<sup>102</sup> Between 1983 and 1992, the number of independent firms operating offshore leases grew from 38 to 92, and their share of total operators grew from 61 to 77 percent. See U.S. House of Representatives, House Committee on Natural Resources, Democratic Staff Report, "Offshore Benefits," in *Taking from the Taxpayer: Public Subsidies for Natural Resource Development*, August 1994, obtained from <http://www.house.gov/resources/105cong/democrat/subsidy.htm>, October 1997.

<sup>103</sup> Both the GAO and the MMS estimates for closure are in nominal rather than net present value terms. Insurance premiums are based on nominal values as well. Expectations regarding the fraction of wells likely to be abandoned in a given year are reflected in the premium rates.

<sup>104</sup> The total liability includes \$1.5 billion in borehole liability, \$3.4 billion in platform removal liability, and \$650 million in site clearance costs. Totals do not sum due to rounding. Carrol Williams, U.S. Minerals Management Service, personal communications, October 15 and October 28, 1997.

Discussions with the Minerals Management Service suggest that one reason the coverage appears so low is because many of the offshore leases are held by large, multinational oil companies. These firms, due to their financial strength, are able to self-insure for the risks associated with lease abandonment. Although they are not counted in the bonded coverage category, they pose virtually no risk of lease abandonment.

MMS does not adjust its bonding numbers for this factor, but we have tried to do so here. According to MMS, the total number of active leases is a reasonable proxy for the share of total liability held. Statistics for the 1990-96 period show that major oil companies held 1,670 of 4,862 total leases, or 34 percent.<sup>105</sup> Pro-rating total liabilities in the Gulf (the location of the vast majority of offshore activity) suggests that \$1.9 billion of total liability is held by the majors, and assumed to be self-insured. Combining bonding levels with self-insurance suggests a total coverage of \$2.9 billion and a net shortfall of nearly \$2.7 billion.

Unlike the onshore wells, most of the offshore wells continue to operate. Thus, increasing the bonding requirements for owners that are unable to cover the full liability through their financial strength can address nearly all of the public offshore exposure. The cost of offshore bonding varies based on a number of factors, including the number of wells, the age of the drilling equipment, the reserves left underneath the well, the amount of collateral, and the financial strength of the owners. The cost of coverage ranges from one to four percent of the bonded amount depending on these factors. However, the one percent cost applies only to financially strong operators with full collateral for the coverage. A two percent rate is the realistic minimum for the independents.<sup>106</sup> These are the firms likely to make up the bulk of the unfunded liability in the Gulf. Based on a premium rate of two to four percent, addressing the liability shortfall would cost existing producers \$53 to \$106 million per year (see Exhibit 5-2). Currently, the federal taxpayer bears this liability, and the shortfall constitutes a subsidy to oil. It is unclear how new bonding requirements that took effect at the end of 1997 will affect the level of residual subsidy.<sup>107</sup>

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<sup>105</sup> Data on lease counts were reported by MMS based on information assembled by J.M. Dodson, Inc., an independent firm that analyzes data on offshore leases. According to MMS, the share owned by the major oil firms includes all leases with *any* percentage of ownership by the majors. Joint and several liability provisions enable MMS to recover up to 100 percent of the closure and remediation costs from any owner. Williams, personal communications, October 15 and 28, 1997.

<sup>106</sup> Roy Die, Underwriters Indemnity Company, personal communication, November 4, 1997.

<sup>107</sup> MMS published a final rule stipulating higher surety bond coverage on offshore leases. It was supposed to take effect by December 1997. See U.S. Minerals Management Service, "Surety Bond Requirements Amended: MMS Issues Final Rule," May 21, 1997, obtained from <http://www.mms.gov/omm/gomr>, October 24, 1997.

**Exhibit 5-2**

**PUBLIC LIABILITY FOR OFFSHORE DRILLING  
(Millions of Dollars)**

<b>Total Liability for Offshore Operations</b>					
Borehole liability		1,500			
Platform removal liability		3,400			
Site clearance cost		<u>650</u>			
	<i>Total Liability</i>	5,550			
<b>Estimated Current Bonding</b>		<u>1,000</u>			
	<i>Apparent Public Exposure</i>	4,550			
<b>Estimated Role of Self-Insurance by Majors</b>					
Lease Count, 1990-1996					
Major Oil Companies		1,670			
Independents		2,770			
Others		422			
Majors as a percent of total oil companies		<u>34.3%</u>			
	<i>Prorated Liability for Majors</i>	1,906			
<b>Public Sector Residual Liability</b>					
Total Liability for the Gulf		5,550			
Coverage through bonding		1,000			
Coverage through self-insurance		<u>1,906</u>			
	<i>Residual public liability</i>	2,644			
<b>Cost for Liability Insurance</b>	<b>Low</b>	<b>High</b>			
Annual premium costs for independent producers	2.0%	4.0%			
<table border="0"> <tr> <td>Estimated cost of covering residual public liability through increased bonding</td> <td align="center">53</td> <td align="center">106</td> </tr> </table>			Estimated cost of covering residual public liability through increased bonding	53	106
Estimated cost of covering residual public liability through increased bonding	53	106			

**Sources:**

- (1) Carrol Williams, Minerals Management Service, personal communications, October 15 and 28, 1997.
- (2) Roy Die, Underwriters Indemnity Company, personal communication, November 4, 1997.

## 5.2 OIL SPILLS

Oil is a globally traded commodity with millions of barrels moved every day. Oil pipelines sometimes leak, and shipping vessels sometimes fail due to human error, natural events, or age.<sup>108</sup> The resulting spills (almost 14,000 are reported in the U.S. each year) contaminate the surrounding ecosystems.<sup>109</sup> While accidents are unlikely to be eliminated entirely, governments can at least ensure that the private entities profiting from the movement and sale of oil bear full liability for any spills that do occur.

The Oil Pollution Act of 1990 (OPA), passed in the wake of the large Exxon Valdez spill, establishes the primary federal requirements for oil spill-related financial assurance and liability. OPA clarified responsible parties' liability, making them directly liable for oil spill cleanups and damages to natural resources. Strict liability limits for tanker vessels were increased to eight times the previous requirements, and tankers operating in U.S. waters were required to purchase a Certificate of Financial Responsibility (COFR), demonstrating their ability to pay potential spill-related costs. While the law clarified issues of liability, it also placed limits on that liability, raising the possibility that liability caps might be too low to cover reasonably expected costs of a spill.

OPA established a two-tiered system of financial responsibility for spills. The first tier includes the COFR, with limits for any particular shipper based on the size of the ship (see Exhibit 5-3 below). Larger vessels are required to have higher coverage because they can cause larger spills. This coverage is strictly limited to the shipper regardless of fault; cargo owners are not held liable for oil spills.<sup>110</sup> The Coast Guard's National Pollution Funds Center administers the Certificate of Financial Responsibility program to certify vessels that provide the necessary financial assurance and to take enforcement actions against violators.

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<sup>108</sup> An estimated 85 percent of all tanker accidents resulting in oil spills are due to human error. See Odd Auken Hassel, "Smooth Sailing or Rough Waters? The Tanker Industry and the Environmental Challenges," Cambridge, MA: Cambridge Energy Research Associates, 1990, p. 8.

<sup>109</sup> U.S. Environmental Protection Agency, Oil Spill Prevention Preparedness & Response Program, August 26, 1996, obtained from <http://www.epa.gov/superfund/oerr/er/oilspill/response.htm>, July 14, 1997.

<sup>110</sup> Nina Sankovitch, et al., *Safety at Bay: A Review of Oil Spill Prevention and Cleanup in U.S. Waters*, New York: Natural Resources Defense Council, December 1992, p. 58.

<b>Exhibit 5-3</b>		
<b>VESSEL AND OFFSHORE OPERATIONS LIABILITY LIMITS ESTABLISHED BY OPA</b>		
<b>Vessel Type</b>	<b>Vessel Size (gross tons)</b>	<b>Liability Limit (whichever greater)</b>
Tanker	300<vessel weight<3,000	\$2 million or \$1,200/gross ton
Tanker	vessel weight>3,000	\$10 million or \$1,200/gross ton
All Other Vessels	vessel weight>300	\$500,000 or \$600/gross ton
Offshore Facilities	Not applicable	\$35 million
<b>Sources:</b>		
(1) U.S. Coast Guard, National Pollution Funds Center, <i>National Pollution Funds Center 1996 Annual Report</i> .		
(2) Independent Petroleum Association of America, "America's Oil and Gas Producers Praise Reform of Oil Pollution Act," September 30, 1996, obtained from <a href="http://www.ipaa.org/departments/communications/1996_press_releases">http://www.ipaa.org/departments/communications/1996_press_releases</a> , October 29, 1997.		

COFR premiums have cost private shipping interests approximately \$70 million annually.<sup>111</sup> However, this first tier coverage restricts their liability to a maximum of \$296 million on any single spill.<sup>112</sup> A vessel the size of the Exxon Valdez would have a vessel liability limit of only \$142 million on any single spill, far less than the billions of dollars of costs caused by a spill of the Valdez magnitude.<sup>113</sup>

The second tier of coverage is in the form of the Oil Spill Liability Trust Fund (OSLTF). OSTLF incurs cleanup, assessment, and restoration costs in excess of a vessel's liability limit. It also funds immediate work on a spill, allowing a rapid response despite potential problems with collecting funds from responsible parties. OPA established the Oil Spill Liability Trust Fund by

<sup>111</sup> Premium statistics are from U.S. Coast Guard, National Pollution Funds Center, *National Pollution Funds Center 1996 Annual Report*, p. 30. Despite strong concerns by industry that they would be unable to obtain COFR's due to the insurers' fears of unlimited liability, most tankers were able to obtain insurance in advance of the deadline. See Adrian Ladbury, "No crisis in OPA deadline: Alternative markets fill pollution coverage void for ships," *Business Insurance*, December 26, 1994, p. 1.

<sup>112</sup> The largest tankers are 247,000 gross tons, which translates to a liability limit of \$296 million (\$1,200 per gross ton). Jeff Friedel, COFR Examiner, U.S. Coast Guard, National Pollution Funds Center, personal communication, November 12, 1997.

<sup>113</sup> Dana Compton, U.S. Coast Guard, National Pollution Funds Center, personal communication, November 12, 1997; Darrel Niele, Chief of Financial Management, U.S. Coast Guard, National Pollution Funds Center, personal communication, October 26, 1997.

consolidating several related precursor funds and instituting a temporary five cents per barrel tax on oil produced in or imported to the United States.<sup>114</sup> The tax was suspended in 1993 once the fund reached its statutory limit of one billion dollars.

The fund may be used for a host of spill-related purposes, including removal, remediation, damage assessments, administration of OPA and the fund, oil spill research and development, and payments of residual damages not recovered from responsible parties. OPA stipulates that expenditures from the fund are limited to one billion dollars for any one incident, with a cap of \$500 million on damage assessments and claims. While the fund clearly provides intra-industry cross-subsidies (i.e., the costs of a spill from one transporter in excess of its liability are borne by taxes collected from other parties), it does provide a mechanism for ensuring that the second tier of coverage is provided by the oil industry as a whole rather than by the taxpayer.

The key question from our perspective is whether the combined liability limits for both tiers are sufficient to cover the costs associated with spills. If not, the public sector may bear significant residual risks. The answer to this question depends on the likelihood that a spill will exceed the cap and whether the cap will actually be enforced.

### **5.2.1 Likelihood of a Spill Exceeding OPA Liability Caps**

In addition to financial assurance provisions, OPA included the following elements that have helped to reduce the likelihood and severity of spills.

- **Increased Penalties.** OPA substantially increased administrative, civil, and criminal penalties for oil spills.<sup>115</sup>
- **Improved Tankers.** OPA requires new vessels carrying oil in U.S. waters to have double hulls by 2015.<sup>116</sup>

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<sup>114</sup> Congress created OSLTF in 1986, but did not provide the authorization necessary for it to collect or use funds. OSLTF was inactive until Congress granted the necessary authorization following the Exxon Valdez spill. U.S. Coast Guard, National Pollution Funds Center, *National Pollution Funds Center 1996 Annual Report*, p. 13.

<sup>115</sup> Administrative penalties can reach \$125,000. The mandatory civil penalty was increased from \$5,000 per offense to \$25,000 per day and up to \$1,000 per barrel of oil disposed. Criminal penalties reach as high as \$25,000 per day of violation and/or imprisonment for up to a year. Knowingly discharging oil has penalties of up to \$50,000 per day of violation and 3 years imprisonment. (Sankovitch et al., p. 59).

<sup>116</sup> Implementation issues such as the strength of the hull, the space between the hulls, and the allowed single hulling of areas carrying fuel for the ship have reduced the actual protection provided. Sankovitch et al., pp. 15-17.

- **Improved Cleanup Response.** Oil shippers must contract for oil spill cleanup equipment to be positioned and readied at various points around the country, with requirements stipulated in terms of the size of spill that can be addressed in a first, second, and third wave response.

While all of these factors help to reduce the likelihood of spills exceeding the available liability coverage, it does not eliminate the possibility. The Exxon Valdez spill cost \$2 billion to clean up, with an additional damage award of billions more.<sup>117</sup> While the costs of an oil spill vary widely, even a much smaller spill than the Valdez could exhaust both the COFR coverage and the entire collection of the Oil Spill Trust Fund.<sup>118</sup> While OPA originally allowed the NPFC to petition Congress for borrowing authority from the U.S. Treasury if the costs incurred for a spill exceeded the capacity of the fund, this authority expired in 1994. Darrel Nieley, NPFC's Chief of Financial Management, was uncertain what would happen currently in such an event.<sup>119</sup> Some risk remains that a portion of the costs of larger spills will be borne by the taxpayer due to the caps on both the liability coverage and the Oil Spill Trust Fund.

### **5.2.2 Definitiveness of Vessel Liability Caps**

A second central issue affecting whether OPA confers residual liabilities to the public sector involves the stringency to which the vessel liability limits are adhered. One industry trade publication noted that while OPA established liability limits, it "severely restricted the limits' applicability."<sup>120</sup> Since the liability limits are not applicable to spills resulting from a violation of a federal regulation or safety standard, industry anticipates that "most spills will breach OPA's defenses."<sup>121</sup> Fears of unlimited liability associated with spills have led to a reduction in lease financing of tankers and other lending for tanker purchases.<sup>122</sup> Up to a point, a higher effective

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<sup>117</sup> U.S. Congressional Research Service, June 17, 1992, pp. 55, 58. Olivia Stewart-Liberty, "[OPA]: A Legacy of Confusion," *Asset Finance & Leasing Digest*, May 1995, pp. 24-27.

<sup>118</sup> Based on an analysis by Anderson and Talley, cleanup costs per ton of oil range from \$1,610 to \$40,880 (1995 dollars). Environmental damage costs add an additional \$1,660 to \$11,610 per ton spilled (also 1995 dollars). The costs per ton for the Valdez spill appear to have exceeded the upper range value in Anderson and Talley by a wide margin. While the two tiers of liability coverage appear sufficient for most spills, larger releases of over two million gallons (there have been at least five since 1976) risk depleting all available funds. Eric Anderson and Wayne Talley, "The Oil Spill Size of Tanker Barge Accidents: Determinants and Policy Implications," *Land Economics*, Vol. 71, No. 2, May 1995, pp. 216-28.

<sup>119</sup> Darrel Nieley, personal communication, October 26, 1997.

<sup>120</sup> "Tanker Owners Cope with OPA," *Oil and Gas Journal*, July 27, 1992, p. 38.

<sup>121</sup> "Tanker Owners Cope with OPA," *Oil and Gas Journal*, July 27, 1992, p. 38. Oil spills caused by gross negligence, willful misconduct, or a violation of a federal safety, construction, or operating regulation; or failure to report a spill, all result in the loss of the liability cap. Joanne Wojcik, "U.S. Oil Spill Law Rocks the Boat," *Business Insurance*, October 19, 1992, p. 16.

<sup>122</sup> Olivia Stewart-Liberty, "[OPA]: A Legacy of Confusion," *Asset Finance & Leasing Digest*, May 1995, pp. 24-27.

cap could reduce the residual liability borne by the public. However, if concerns over unlimited liability become too severe, insurers may pull out of the market, leaving the public with a much larger exposure than before.

Several spills have exceeded the responsible party's maximum liability. In these cases, the government has tried to recover the full costs of the spill from the oil shipper or its insurer. For example, the federal government has incurred costs of \$82 million thus far for a 1994 spill near San Juan, Puerto Rico; however, the liability limit for the responsible vessel was only \$10 million.<sup>123</sup> NPFC has attempted to recover the full costs incurred by the government for this and other spills, including costs in excess of the responsible vessels' liability limits. These cases are currently in litigation. Their outcomes may affirm the limitations on financial risk set by OPA or invalidate those limitations, at least under certain circumstances.

State oil spill regulations also play a role in the ultimate liability borne by the private sector. OPA allows states to implement their own liability limits. Using this authority, 30 states have their own oil pollution liability laws, and as many as 19 states impose strict *unlimited* liability on shippers. In addition, although the federal government restricts liability to shippers, some states impose liability on cargo owners and charterers as well.<sup>124</sup>

The impact of state laws on the federal caps also remain to be determined through litigation. A recent court decision seemed to uphold both the priority of federal liability limits over state, and the liability caps established by OPA.<sup>125</sup> If this ruling delineates a trend, large spills, especially if caused by independents with little market visibility and less to lose from adverse publicity following a spill, will likely be borne in part by the general taxpayer. However, given the uncertainty associated with the various ongoing cases, we assume there is no residual public liability from oil spills, and estimate the subsidy to oil to be zero.

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<sup>123</sup> Darrel Nieley, personal communication, October 26, 1997.

<sup>124</sup> State rules seem only to apply in state waters. Sankovitch, p. 59; "Tanker Owners Cope with OPA," *Oil and Gas Journal*, July 27, 1992.

<sup>125</sup> *National Shipping Co. of Saudi Arabia v. Moran Trade Corp. of Delaware* affirmed that the shipping company's liability was capped at \$500,000 based on OPA, and that the OPA cap could not be bypassed by state laws that allow greater recovery. See "Cleanup Damages for Spills Limited to Those Available Under OPA, Court Says," *Environment Reporter*, September 26, 1997.

### **5.3 PIPELINE ABANDONMENT<sup>126</sup>**

Due to the hazardous material they transport, crude oil pipelines are potential sources of environmental contamination. Current regulations specify response and reporting requirements for contamination events such as oil spills; however, natural resources along pipeline routes may be contaminated from events that pre-date current regulations or from the gradual accumulation of small, unnoticed incidents. State and federal regulatory agencies have requirements for properly closing pipelines so that they do not pose continuing threats to the environment after they are abandoned. However, it is not clear that abandonment regulations fully address possible site contamination or the permanent removal of the lines.<sup>127</sup> Nor do they address the potential problems that may arise when operators are unable to pay for proper closure procedures.

Pipelines are regulated either by state or federal agencies. The U.S. Department of Transportation's Office of Pipeline Safety has regulatory jurisdiction over interstate pipelines, and state agencies regulate pipelines that do not cross state boundaries. Within states, pipeline regulation may fall under the responsibility of more than one agency. For example, two separate offices within the Texas Railroad Commission regulate pipelines in the State of Texas. The Pipeline Safety Office has responsibility for major lines (greater than eight inches in diameter), and the Oil and Gas Office regulates pipelines less than eight inches in diameter, which are typically gathering lines further upstream (i.e., closer to the production sites).

While cases of abandonment involving interstate and major intrastate pipelines are likely to be less common, smaller, upstream gathering pipeline systems are more dynamic, with individual lines closing as wells dry up and production shifts to other locations. We called state and federal agencies responsible for regulating oil pipelines to assess not only their pipeline abandonment requirements, but their provisions for ensuring that operators, and not taxpayers, finance closure and remediation costs. The answer from all levels of the regulatory bureaucracy was that pipeline operators must develop and provide details about their operation and maintenance procedures, including procedures for abandonment. Operators' abandonment procedures must address the issues of safely disconnecting, purging, and sealing pipelines. However, it was not clear whether states and the federal government require environmental site assessments to ensure that possible contamination is identified and remediated at the time of closure, or whether they have guidelines governing the complete removal of defunct pipelines.

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<sup>126</sup> Information contained in this section was gathered from telephone conversations with the following people: (a) Bill Dase, Pipeline Safety Office, Railroad Commission of Texas; (b) Buck Furrow, U.S. Office of Pipeline Safety; (c) Marty Mathessen, American Petroleum Institute; (d) Paul McKey, Public Affairs, Federal Energy Regulatory Commission; and (e) John Tintera, Site Remediation Group, Railroad Commission of Texas. Conversations were held on November 6-7, 1997.

<sup>127</sup> The Office of Pipeline Safety (Department of Transportation) does not require pipeline operators to do site assessments and any necessary remediation at the time of abandonment; it is unclear whether some other regulatory body makes these requirements. Linda Dougherty, Compliance Office, U.S. Office of Pipeline Safety, Compliance Office, personal communication, November 10, 1997.

In the event that an operator fails to follow proper abandonment procedures, our contacts agreed that their offices would pursue operators in court, but they were generally unclear what would happen if legal action failed because the operator was insolvent or defunct. In the case of oil spills, pipeline operators must develop and demonstrate their capability to carry out response plans. However, neither the federal government nor the State of Texas requires that operators demonstrate their ability to pay future closure costs with financial assurances such as insurance or bonds. Some states, like Texas, may impose taxes on oil production to finance trust funds capable of paying cleanup and closure costs that are shifted to the state. It is not clear whether the federal government and all states have such mechanisms for shielding taxpayers from pipeline cleanup and closure liability.

Our conversations indicate that the issue of public liability associated with pipeline abandonment is poorly characterized. While regulatory agencies have procedural requirements, they apparently do not have specific financial provisions to ensure that any closure and cleanup costs remain in the private sector. The magnitude of the problem, the historical cost of contamination from pipelines, and the current availability of general trust funds to finance remediation at abandoned or insolvent sites are all unknown.

#### **5.4 SUMMARY**

Governments have implemented a number of new requirements over the past ten years to reduce the likelihood that the taxpayer will have to pay for oil-related accidents or facility closures. These are positive steps that should be continued in order to eliminate the remaining liability subsidies. For example, state and federal bonding requirements for offshore well abandonment and remediation costs should be raised to cover the remaining shortfall in coverage. Attention should be given to ongoing litigation that may have impacts on the public's exposure to oil spill liabilities, and the poor characterization of potential liabilities associated with pipeline decommissioning should also be addressed to ensure that environmental liabilities are being adequately internalized.

**FUELING GLOBAL WARMING:  
FEDERAL SUBSIDIES TO OIL IN  
THE UNITED STATES**

By:

Douglas Koplow and Aaron Martin  
Industrial Economics, Incorporated  
2067 Massachusetts Avenue  
Cambridge, MA 02140

Prepared for:

Greenpeace  
1436 U Street, NW  
Washington, DC 20009

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