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Dennis M. O'Connell

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CONTINENTAL SHELF OIL DISASTERS: CHALLENGE TO INTERNATIONAL POLLUTION CONTROL

Recent oil spillage from an offshore oil well in the Santa Barbara Channel gave headline significance to a potentially major source of ocean pollution. Oil spillage threatens not only the adjacent shores; the economic and aesthetic interests of neighboring states and the common interests of the world community in freely navigable seas, plentiful food resources, clean air and water, and the survival of rare species of wildlife lend international dimensions to pollution dangers. While the solution for licensing states is obvious—those states can impose appropriate regulatory measures—no protection is afforded the other parties in interest. New international action may be needed to protect the world community from the increasing dangers of oil pollution.

I

THE BACKGROUND

A. *The Channel Oil Spill*

The commercial exploitation of oil and gas reserves in the Santa Barbara Channel¹ was record-setting. The sale by the federal government of petroleum leases—many for tracts wholly or partly beyond the 600-foot and 1,200-foot bathymetric lines in deep water previously considered unexploitable—brought the largest total amount,² the largest amount for a single tract,³ and the highest per-acre price⁴ ever received

¹ The islands delineating the Santa Barbara Channel are approximately 30 miles offshore. See maps in Armstrong, *Santa Barbara Channel Action Continues at Brisk Pace*, 66 OIL & GAS J., April 29, 1968, at 119; *Channel Sale Swamps Offshore Records*, 66 OIL & GAS J., Feb. 12, 1968, at 66 [hereinafter cited as *Channel Sale*].

² The high bids finally accepted by the federal government as an aggregate sales price totaled \$603,204,284. The total amount of money that was offered in the bidding was \$1,293,601,113. The highest previous total of offers was \$1.6 billion for Gulf of Mexico leases the previous year, which were finally sold for \$93,125,000 (for 158 tracts as opposed to 75 in the Santa Barbara Channel). *Channel Sale* 66. The total value to the federal treasury in 1968 of rentals, royalties, and bonus payments on the channel concessions was reportedly \$1.6 billion. TIME, Feb. 14, 1969, at 23.

³ The lease was awarded to a 4-company group of bidders, headed by Union Oil Company, for a record-setting \$61,418,000, nearly twice the amount of the previous high bid for a federal lease. *Channel Sale* 66. The same group paid \$56,378,000 for another lease in the vicinity. Many other tracts in the offering brought 8-figure prices; some exceeded \$40,000,000. *Id.* See also Christy, *Marine Resources and the Freedom of the Seas*, 8 NATURAL RESOURCES J. 424, 427 (1968).

⁴ *Channel Sale* 66.

for an offshore lease-sale. The Secretary of the Interior had not heeded the warnings of local conservationists⁵ who were concerned for the Channel's natural beauty and troubled by the area's unique geological formations, including a thrust fault through Tract 402.⁶ On January 28, 1969, during the withdrawal of a drill bit to replace a worn part, the premier successful well on Tract 402 suffered a severe blowout.⁷ Although the initial blowout was capped by forcing drilling "mud" down the hole, the intense pressure forced both oil and gas through fissures into the sea.⁸ A drilling moratorium imposed by the Secretary of the Interior⁹ was brief,¹⁰ and a new leak emerged in the vicinity of

⁵ TIME, Feb. 14, 1969, at 23. Their concern increased when oil slicks began to appear along the coast after drilling commenced. The Secretary of the Interior refused a proposed extension of the 2-mile drilling buffer zone contiguous to state waters, to which the government had already agreed; had this zone been created, Tract 402 would have been in it.

Such delays of the lease date as the Secretary deemed necessary to placate the local conservationists created disgruntled opposition among the prospective offshore operators. Armstrong, *Leasing Delay Hurting Offshore California Industry*, 65 OIL & GAS J., Nov. 20, 1967, at 150. This article noted the growing anxiety among oil men about losses in revenues while a 60-day delay permitted a thorough study of the area by complaining conservationists. *Id.* at 150-53. See also *Added Santa Barbara Sale Curbs Rapped*, 65 OIL & GAS J., Dec. 4, 1967, at 40. Noting the loss of \$100 million in bonuses in the 2-mile buffer zone and the \$500 million "sacrifice" in future royalties, it was asserted that Secretary of Interior "Udall has gone the second mile with local protestants . . ." *Id.*

⁶ Armstrong, *supra* note 1, at 119. This problematical physical structure of the subsoil was to figure prominently in the difficulty in controlling the blowout and resulting pollution.

⁷ "[A] drill had cut a hole into a high-pressure deposit of oil and gas. Withdrawing the drill to renew the worn bit was like pulling a cork out of a bottle." N.Y. Times, Feb. 2, 1969, § 1, at 54, col. 2.

⁸ *Id.* See also TIME, Feb. 14, 1969, at 24.

Following an inspection, the Secretary of Interior concluded that there was a "lack of sufficient geological knowledge about the area." 67 OIL & GAS J., Feb. 17, 1969, at 43. Normally, safety standards of the crews would have controlled the situation; however, the channel is unique. "Here, faults and folds have created a crazy-quilt pattern of geology. Some of the shallow sands outcrop on the ocean floor, and oil seeps are not uncommon." *Huge Channel Oil Spill Blows Up Storm*, 67 OIL & GAS J., Feb. 10, 1969, at 50. See diagram in N.Y. Times, Feb. 9, 1969, § 4, at 2, col. 5.

⁹ N.Y. Times, Feb. 4, 1969, at 1, col. 2. The Secretary did not order a total suspension, although he had the authority to do so. Instead, he preferred to handle the problem on a voluntary basis with the industry. Noting compliance with federal standards by the drillers, he observed that the pollution was "as much the fault of the Government as anyone." *Id.* at 78, col. 1. He admitted that tighter drilling regulations had not been promulgated despite the knowledge that geological conditions were unstable. N.Y. Times, Feb. 9, 1969, § 1, at 1, col. 3.

¹⁰ Resumption of drilling brought a storm of protest in opposition to the leases. "[R]esidents . . . expressed great concern that the continental shelf exploitation—of little local economic value—would besmirch the renowned beauty of the affluent beach community . . ." N.Y. Times, Feb. 2, 1969, § 1, at 1, col. 2. Rage at the runaway well, which covered 40% of the 200-square-mile channel with oil in 5 days, generated threats to burn oil credit cards. *Id.* A county official called the brief drilling moratorium "tokenism in its worst form" and recalled that Department of Interior officials "hell bent" on leasing the

Platform A on Tract 402.¹¹ Vast oil slicks washed ashore,¹² covering white sand beaches with a two-inch thick layer of crude oil. The harbor and marina in Santa Barbara were fouled, and 750 small boats were soiled.¹³

B. *The Promise of the Shelf*

The potential recovery of mineral and biological wealth from ocean waters and the seabed offers significant opportunities and rewards.¹⁴ Although many minerals—such as phosphorite and manganese—are not presently well-situated for economic exploitation,¹⁵ offshore deposits of oil and gas are becoming increasingly accessible. Submarine areas near land masses will rapidly become important sources of world petroleum.¹⁶

Although undersea petroleum recovery is currently unprofitable in the deeper areas and represents only a small percentage of on-land production, rapid progress in offshore developments in the past two decades¹⁷ has markedly increased that share as concern over the even-

tracts had given assurances that there was no danger of pollution. N.Y. Times, Feb. 6, 1969, at 19, col. 1.

¹¹ N.Y. Times, Feb. 14, 1969, at 50, col. 2. The seepage was reported to be a bleeding-off from oil-saturated sands on the bottom. *Id.*

¹² The oil coated 400 square miles of the ocean's surface and stained 40 miles of frontage along some of the area's finest shoreline. *See* map, TIME, Feb. 14, 1969, at 24.

¹³ TIME, Feb. 14, 1969, at 23-25; N.Y. Times, Feb. 6, 1969, at 1, col. 2.

The Office of the Attorney General of the State of California announced that it would sue on behalf of all damaged parties. TIME, Feb. 14, 1969, at 24. A \$500 million claim was filed with the Department of Interior against the Federal Government, and a \$560 million damage suit was instituted in Santa Barbara Superior Court against the Union consortium. N.Y. Times, Feb. 19, 1969, at 1, col. 3. The Secretary of Interior announced that oil companies would be held responsible for cleaning up pollution from offshore drilling, regardless of the absence of any showing of fault. In this first major regulatory step since the incident, he announced that the federal government would police oil spills when private companies failed and recover the costs in federal court. N.Y. Times, Feb. 18, 1969, at 1, col. 2.

¹⁴ R. CARSON, *THE SEA AROUND US* 193 (1961).

¹⁵ *See* THE AMERICAN ASSEMBLY, *USES OF THE SEAS* 33, Table 2 (1968) [hereinafter cited as *USES OF THE SEAS*].

¹⁶ M. McDOUGAL & W. BURKE, *THE PUBLIC ORDER OF THE OCEANS* 631, 632 (1962) [hereinafter cited as *McDOUGAL & BURKE*]. Estimates of submarine oil reserves range from 1,000 billion barrels (*id.* at 570) to 1,400 billion barrels. N.Y. Times, June 9, 1968, § 3, at 1, col. 4. It is possible the United States continental shelf may contain 100 billion barrels and the Gulf of Mexico shelf alone 22 billion barrels. Compare this with one estimate of world on-land reserves of 50 billion barrels. *McDOUGAL & BURKE* 570-71.

It has been suggested that atomic energy will eventually replace other fuel sources. As of 1970, however, this source is expected to account for only 1% of world energy requirements. *Id.* at 631 n.210.

¹⁷ The world value of sea-floor production of selected minerals in 1964 was \$3.8 billion, 10% of the value of the same minerals produced on land and about 5% of on-land production of all minerals. *USES OF THE SEAS* 33. In the same year United States off-

tual depletion of land reserves has mounted. Scientific advances are already making exploitation operations possible at depths of up to 6,000 feet of water,¹⁸ and manned underwater stations are potentially useful for drilling and exploring sites in shallower areas.¹⁹ In a single decade the United States petroleum industry has invested \$7 billion domestically and \$3 billion in foreign operations in underwater development; estimates for the next decade run as high as \$25 billion.²⁰

Areas where oil has been found or is likely to be found which have been opened or projected for commercial exploration are increasing rapidly.²¹ At present, the major areas of production are the Persian Gulf, the Gulf of Mexico off Louisiana, and Lake Maracaibo in Vene-

shore oil and gas production was \$800 million as opposed to \$10,500 million on-land production; world offshore recovery was \$3.6 billion as opposed to \$27.5 billion on-land production. *Id.* at Table 2. Offshore production in the United States had increased more than 35% to \$1100 million 2 years later. *Id.* at 2. This, it must be remembered, was still prior to the Santa Barbara leases.

¹⁸ In 1967 a platform was used in the North Sea that was capable of sinking a drill 15,000 feet into the bottom while floating in 600 feet of water. Oil reserves in deeper water of the continental slope may eventually be drilled with underwater robots and deep saturation diving. *Id.* at 2.

Some consider drilling possible in water up to 5,000 feet, and the Department of Interior has granted exploration permits at depths exceeding that on the continental slope and has indicated an interest for lease purposes in depths off California of as much as 6,000 feet. *NPC to study leasing beyond Shelf*, 66 OIL & GAS J., Feb. 5, 1968, at 112.

In 1968 in two and a half miles of water the oceanographic ship *Glomar Challenger* discovered that some of the Gulf of Mexico sediments forming the deepest part of the sea floor known as the "abyssal plain" were oil-bearing. The discovery is believed to be the first at depths greater than those of the continental shelf. The find, approximately halfway between Louisiana and the Yucatan Peninsula, may have opened up a "very important petroleum province." *N.Y. Times*, Sept. 1, 1968, at 45, col. 3.

¹⁹ *N.Y. Times*, June 9, 1968, § 3, at 1, col. 4. Manned stations under the sea may be able to pump oil into "massive dirigible-shaped, flexible skin undersea barges" for transport to the surface or shore. For an artist's conception of an underwater train of such barges, each of which could hold 80-120 million barrels of oil, see M. CAIDIN, *HYDROSPACE* 107 (1964). As to the potential effect of these innovations on the danger of pollution:

This eliminates the necessity of pipelines that must lead to the surface—and also frees the operations from most of the problems that would be encountered, such as high waves, storms, winds, temperature extremes, positioning and holding the vessels on the surface to receive the oil, and so forth.

Id. at 105.

One of the major United States oil companies has tested "Mobot," an underwater robot that can swim, hear, see, and work deep on the ocean floor. The robot can be directed to turn on a valve and regulate the flow of oil or make repairs. Using Mobot and a surface drilling rig, the company discovered a natural gas well off the Santa Barbara area. Machinery and pipes for bringing the gas ashore were set up by remote control. P. BRIGGS, *WATER THE VITAL ESSENCE* 107 (1967).

²⁰ MCDUGAL & BURKE 570; *USES OF THE SEAS* 44.

²¹ See map, *USES OF THE SEAS* 43, Figure 3; Gardner, *Offshore oil industry big, getting bigger*, 66 OIL & GAS J., April 22, 1968, at 133.

zuela, each of which produces nearly one million barrels per day.²² Other areas include Australia, which has limited production on land,²³ Saudi Arabia,²⁴ and the coast of the Portuguese West African enclave of Cabinda.²⁵ The State of Alaska has leased or soon will lease much of its continental shelf;²⁶ Argentina has granted exploration permits for large blocks in offshore areas;²⁷ and the Netherlands has leased a substantial number of tracts for offshore drilling in its segment of the North Sea shelf.²⁸

C. *The Torrey Canyon and Other Factual Precedents*

The drilling mishaps on the continental shelf exploded in a context of increasing domestic and international concern with ocean pollution. The Channel incident raised the specter of a notorious marine disaster that occurred two years earlier, the grounding of the giant oil tanker *Torrey Canyon* off the southwest tip of Cornwall, England.²⁹ The grounded ship eventually broke in two and lost large quantities of her immense cargo of oil,³⁰ which, driven by storm winds, eventually polluted 140 miles of coast. The British Government, alarmed at the continuing influx of petroleum on the waves, dispatched several planes from the Royal Air Force to bomb the broken hull and set the oil afire.³¹

The *Torrey Canyon* was the largest ship ever to run aground,³² but the pollution problem in ocean transport is not limited to major

²² USES OF THE SEAS 44.

²³ *Id.*

²⁴ McDUGAL & BURKE 571.

²⁵ N.Y. Times, Sept. 20, 1967, at 61, col. 5.

²⁶ 65 OIL & GAS J., July 3, 1967, at 44. Federal areas to be leased are in 3,000 to 6,000 feet of water and range from 30 to 90 miles from the coast.

²⁷ 66 OIL & GAS J., March 11, 1968, at 68.

²⁸ *Three areas hog Dutch bidding*, 67 OIL & GAS J., Nov. 27, 1967, at 62; Gardner, *Dutch award North Sea blocks*, 66 OIL & GAS J., March 11, 1968, at 65.

²⁹ See generally J. MABIRE, *LA MARÉE NOIRE DU TORREY CANYON* (1967); Nanda, *The "Torrey Canyon" Disaster: Some Legal Aspects*, 44 DENVER L.J. 400 (1967). The *Torrey Canyon* is a law professor's examination question dream because of the jurisdictional issues involved. The ship was of Liberian registry, owned by an American corporation, chartered by a British corporation, and piloted by an Italian captain. The wreck took place on the high seas outside the territorial limits of the United Kingdom. See Nanda, *supra*, at 401.

³⁰ The British navy estimated that 36 million gallons, or half of the original cargo of 118,000 tons of oil, were released. N.Y. Times, March 28, 1967, at 1, col. 5.

³¹ The detonations set the sea ablaze for a mile around. The dilemma of the final disposition of any pollutant was illustrated by the mile-high column of smoke that arose over the wreck, raining soot-like particles on the ocean surface. N.Y. Times, March 29, 1967, at 1, col. 3.

³² N.Y. Times, March 25, 1967, at 1, col. 7; *id.* March 27, 1967, at 1, col. 6.

wrecks. Less publicized accidents occur frequently,³³ and the total volume of world tanker tonnage, as well as the size of individual vessels, continues to grow.³⁴ Furthermore, although much pollution does result from accidents, a great deal of it is the consequence of deliberate or negligent spillages from washing or "ballasting" of tanks by both tankships and passenger and dry cargo vessels.³⁵ Much of this oil, regardless of origin, finds its way to shorelines, where, especially in cold climates, it may persist for years.³⁶

³³ The breakup of the tanker *Tampico* off Southern California in 1957 poured 59,000 barrels of oil into the sea with disastrous consequences for marine life in the area. *TIME*, Feb. 14, 1969, at 23. The ruptured tanks of the Liberian-registered *World Glory* spilled 46,000 tons of oil that formed a 70-mile-long slick 10 miles off South Africa. Aircraft fought the slick with chemical dispersants. *N.Y. Times*, June 17, 1968, at 77, col. 8. The Japanese Maritime Safety Agency reported 16 accidents involving tankers of 10,000 tons or more between 1962 and 1967, 7 in Tokyo Bay. *N.Y. Times*, July 26, 1967, at 77, col. 3.

Replacement of tanker shipment with pipelines, which expose the surrounding waters to pollution from escaping oil in event of damage from internal and external causes, is an additional source of concern. In 1967 the 34,593-ton Liberian-registered *Constantine*, while waiting in an English harbor to unload 52,000 tons of Kuwait crude oil, struck a jetty and ruptured nearby pipelines, causing tons of crude oil to cascade into the Mersey River. *N.Y. Times*, July 12, 1968, at 62, col. 7. Almost concurrently with the Santa Barbara Channel disaster, the Union Oil Company was accused of dumping 1,500 barrels of crude oil into a river after a mud slide broke a pipeline. *TIME*, Feb. 14, 1969, at 23, 24. One writer noted of a planned 30-mile pipeline that will carry 150,000 barrels per day that "[t]he prospect of a break in a high pressure submerged oil pipeline where offshore winds prevail is enough to make any coastal nation uneasy, particularly in view of the Torrey Canyon disaster." Luce, *The Development of Ocean Minerals and the Law of the Sea*, *NATURAL RESOURCES LAW*, July 1968, at 29, 32. Such pipelines will probably become common fixtures in areas of massive offshore operations such as those in the Gulf of Mexico and the Santa Barbara Channel.

³⁴ World tonnage more than tripled from 1946 to 1966. *N.Y. Times*, May 14, 1967, § 6 (Magazine), at 24. Future projections are:

1973:	1554 million long tons
1983:	3354 million long tons
2003:	6061 million long tons

66 *OIL & GAS J.*, Aug. 26, 1968, at 41.

³⁵ As a ship's tanks empty through fuel consumption, the ship takes on water in the tanks as ballast to maintain balance and seaworthiness. As the ship approaches port, the ballast, no longer needed, is ejected, and an oily mixture is spread upon the water. F. GRAHAM, *DISASTER BY DEFAULT* 156 (1966).

³⁶ *Id.* at 154. Some members of the industry have sought refuge in allegations that broken hulls of sunken allied tankers of World War II produce oil slicks along the Atlantic Coast. *Id.* at 156. The magnitude of any pollution threat posed by these vessels is probably exaggerated, however. *Id.* See also the results of a Coast Guard sampling of sunken tankers, in *N.Y. Times*, Aug. 16, 1967, at 82, col. 1; *id.* Aug. 18, 1967, at 65, col. 7; *id.* Aug. 23, 1967, at 89, col. 5. In fact the source of many slicks can never be traced with finality. See *WATER CONTROL NEWS*, June 5, 1967, at 1; *N.Y. Times*, Aug. 12, 1967, at 29, col. 4; *id.*, June 3, 1968, at 5, col. 3.

D. *Pollution's Threat to the Environment*

The most serious impact of ocean pollution is its harmful effect on the life-giving abilities of the sea upon which man must increasingly depend. Oil-stained beaches make unaesthetic, malodorous, and unpleasant recreation grounds; oil slime on pleasure boats and piers is a costly nuisance. These inconveniences, however, can be remedied. It is the often lasting and unpredictable toll on the sea's living resources that is the crippling outcome of pollution.³⁷

The Santa Barbara Channel was renowned as a haven for birds and mammals. Their continued existence was imperiled by the thick oil scum which spread over the surface and by the chemicals employed to fight the oil.³⁸ Sea birds diving for food in the slick often either failed to surface or floated ashore to die,³⁹ their feathers soaked with oil. There was apprehension that the oil would endanger hundreds of grey whales that swim through the channel annually en route to their breeding lagoons in Baja, California.⁴⁰ The excessive accumulation of oil and chemicals, even if broken up or sunk, will create residual long-term damage to the ecological balance of the entire area.⁴¹

More perilous than the harm suffered by a single species of wildlife is the possibility that interruption of the food chain in the oceans could destroy generations of marine life.⁴² Many minor plant

³⁷ Early reports of the confrontation after the Santa Barbara disaster between the president of Union Oil Company and investigating senators had the executive saying, "I'm amazed at the publicity for the loss of a few birds." N.Y. Times, Feb. 6, 1969, at 19, col. 1. The statement was later denied. An Assistant Secretary of Interior for Fish and Wildlife has suggested a permanent moratorium on "worn-out interrogatory phrases such as 'What's more important—ducks or people?' In defending human values in natural resources, he said, 'I am not here today to represent salmon, whooping cranes, or redwood trees. When I voice concern for fish and wildlife I am representing people.'" WATER CONTROL NEWS, July 16, 1968, at 8.

³⁸ "The fouled waters threatened thousands of rookeries on the Santa Barbara Islands, haven for the sea elephant, the Guadalupe fur seal (once thought extinct) and the rare sea otter." TIME, Feb. 14, 1969, at 23. See also LIFE, June 13, 1969, at 22. But see TIME, June 13, 1969, at 21.

³⁹ TIME, Feb. 14, 1969, at 23. Birds encumbered with sticky oil cannot fly; those that clean their feathers swallow it and are poisoned. N.Y. Times, March 29, 1967, at 1, col. 4.

⁴⁰ Nearly 30 of the 40-foot long animals were sighted surfacing in the tainted water attempting to breathe. N.Y. Times, Feb. 5, 1969, at 46, col. 1 (city ed.).

⁴¹ N.Y. Times, Feb. 2, 1969, § 1, at 1, col. 2.

⁴² "[R]esearch done by scientists after Britain's oil tanker disaster in March [1967] showed that spilled oil killed about 30 percent of the tiny organisms on which fish feed. The detergents used to remove the oil were even worse, killing 96 percent of these creatures." *Water Pollution—1967*, pt. 1, *Hearings on S. 1591 and S. 1604 Before the Subcomm. on Air and Water Pollution of the Senate Public Works Comm.*, 90th Cong., 1st Sess. 10 (1967) [hereinafter cited as *Water Pollution Hearings*].

and animal species not directly exploitable by man support higher forms of life which can be fished or raised commercially.⁴³ Commercial fishermen in the Santa Barbara area, for instance, claim that fishing in the channel might be ruined for years because the sludge will kill anchovies, which act as bait to draw larger predatory species of fish and other marine life into the grounds.⁴⁴ Changes in the environment of the oceans may affect man even more drastically. The world may find itself increasingly turning to the sea for portions of its water supply,⁴⁵ and the earth's atmosphere may be adversely affected by changes in the oceans' plant population. Tiny plants in the seas produce more than seventy percent of the oxygen present in the atmosphere at any one time, and continuing pollution of the oceans may be a major factor in oxygen depletion.⁴⁶

II

EXISTING APPROACHES TO REGULATION AND THEIR LIMITATIONS

A. *United States Efforts*

The United States has had federal legislation covering oil spillage since the end of the last century.⁴⁷ The laws are strictly enforced;⁴⁸

⁴³ The basic building blocks of the food chain are the plankton, microscopic forms of animal and plant life that are the basic food upon which all higher forms depend. These organisms thrive in the coastal and estuarine waters of the continental shelf. The shallow waters are spawning grounds for shellfish and crustaceans as well as many species of fish and a feeding ground for still other species. It is on the shallow, relatively well-lighted shelves that the basic biology of the sea is created, rather than in the dark and forbidding depths. "Plant life in the sea never extends below an average depth of 300 feet, the approximate limit of sunlight sufficient to allow the process of photosynthesis [I]t is in the thin upper level that life is established. . . ." CAIDIN, *supra* note 19, at 147.

⁴⁴ N.Y. Times, Feb. 2, 1969, at 1, col. 2.

⁴⁵ Rienow & Rienow, *The Oil Around Us*, N.Y. Times, June 4, 1967, § 6 (Magazine), at 24, 111 [hereinafter cited as *The Oil Around Us*].

⁴⁶ "Suppose [the *Torrey Canyon*] . . . had been carrying a concentrated herbicide instead of petroleum. Would it have stopped photosynthesis in the North Sea?" WATER CONTROL NEWS, Jan. 2, 1968, at 5.

⁴⁷ The earliest of these was the Refuse Act, section 13 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 407 (1964). The Refuse Act is administered by the Corps of Engineers; the Oil Pollution Act of 1961 is administered by the Secretary of Transportation; the Oil Pollution Act of 1924 is administered by the Secretary of Interior.

⁴⁸ In *United States v. Standard Oil Co.*, 384 U.S. 224 (1966), the Court ruled that accidental discharge of aviation gas into a navigable river violated Section 13 of the Rivers and Harbors Act of 1899, 33 U.S.C. § 407 (1964), despite defendants' contention that commercially valuable oil products could not be termed "refuse" within the terms of the section. A comparably broad construction of the section was employed to impose liability for spillage from a tank farm on land into coastal waters, despite defendant's objections

however, the major statute, the Oil Pollution Act of 1924,⁴⁹ provides insufficient protection. Under amendments contained in the Clean Waters Restoration Act of 1966,⁵⁰ the term "discharge"—originally intended to cover any escape of oil—is defined as "grossly negligent, or willful spilling"⁵¹ of oil. Because of its wording, the 1924 Act is extremely difficult to enforce.⁵² Another statute, the Oil Pollution Act of 1961,⁵³ provides more stringent regulation but applies only to sea-going ships of American registry.⁵⁴

that the statute did not apply to sources so remote from the sea. *United States v. Esso Standard Oil Co. of Puerto Rico*, 375 F.2d 621 (3d Cir. 1967).

In interpreting the Oil Pollution Act of 1924, the court in *United States v. LeBeouf Bros. Barge Co.*, 368 F.2d 221 (5th Cir. 1966), ruled that the unavoidable accident defense (43 U.S.C. § 433 (1964)) should be narrowly construed and held that where a history of leakage and unseaworthiness was demonstrated, even small amounts of spillage would be sufficient to create responsibility. 368 F.2d at 222.

⁴⁹ Ch. 316, § 7, 43 Stat. 605 (1924), as amended, 33 U.S.C. § 433(a) (Supp. III, 1968).

⁵⁰ Section 211(a) of the Oil Pollution Act of 1924, as amended, forbids:

[e]xcept in case of emergency . . . or unavoidable accident, collision, or stranding . . . any person to discharge or permit the discharge from any boat or vessel of oil . . . into or upon the navigable waters of the United States, and adjoining shorelines. . . .

33 U.S.C. § 433(a) (Supp. III, 1968). See Sweeney, *Oil Pollution of the Oceans*, 37 *FORDHAM L. REV.* 155, 182-83 (1968).

⁵¹ 33 U.S.C.A. §§ 432, 433 (Supp. 1969) [emphasis added].

⁵² *WATER CONTROL NEWS*, May 22, 1967, at 2. Participants in the 1967 hearings called to explore means of dealing more effectively with pollution from vessels were on notice of the lack of enforceability inherent in the Senate-passed definition of the word "discharge." *Water Pollution Hearings* 1. According to the Department of Justice, the language, which in effect exempted accidental spillage, made prosecutions under the Act virtually impossible. *WATER CONTROL NEWS*, Dec. 18, 1967, at 1. See also Edwards, *The Legislative Approach to Air and Water Quality*, *NATURAL RESOURCES LAW*, Jan. 1968, at 58, 65, 66. In fact, between enactment of the provision by the 89th Congress and water pollution hearings by the 90th there were no cases under the Act. *Water Pollution Hearings* 249.

The difficulty in obtaining effective enforcement of the limited existing international control measures has in some instances been employed as an argument against more stringent United States legislation. The argument has been that no useful purpose is served by American adherence to higher standards in view of the lack of observance and enforcement by other nations, and that voluntary arrangements by industry suffice. Nanda, *supra* note 29, at 410. In fact the United States for years delayed enacting the Oil Pollution Act of 1961, 33 U.S.C. §§ 1001-15 (1964), the implementing legislation of the IMCO agreement created at the London Conference of 1954.

⁵³ 33 U.S.C. §§ 1001-15 (1964).

⁵⁴ It contains a general prohibition against discharge of oil or oily mixtures (33 U.S.C. § 1002 (1964)) with the exception of certain discharges chiefly relating to securing the safety of the ship, preventing damage to the ship or its cargo, the saving of life at sea, or unavoidable leakage. 33 U.S.C. § 1003 (1964). Penalties may be levied against both the ship and the responsible parties. 33 U.S.C. § 1005 (1964). An oil record book is provided to each vessel; in it must be logged all discharges, as outlined in the section. 33 U.S.C. § 1010 (1964). Provision is included for examination of these books (in practice by the Coast Guard) and for forwarding of complaints or reports of violations by foreign ships to the country of registry. *Id.* See *Water Pollution Hearings* 258.

A bill introduced in the 1969 congressional session⁵⁵ could serve as an example of effective national legislation and possibly as a model for future international agreements. The bill prohibits "any spilling (or other dispersal)"⁵⁶ of oil and establishes stiffer penalties than existing legislation for willful or negligent violation; problems of enforcement are simplified by making the origination of oil in or around an offshore installation a prima facie case against the owner.⁵⁷ When discharged oil reaches the shorelines of the United States, the offending party must either remove it or cause it to be removed or reimburse the United States for the cost of removal.⁵⁸ A revolving fund would be established for cleanup costs, and any sums collected by the United States as compensation for cleanups would be paid into it.⁵⁹

B. *International Approaches*

1. *Partial Success in Curbing Tanker Pollution*

Jurisdiction over activities on the high seas has traditionally been vested in the state of flag. This allocation of authority affords little protection against pollution, since the state of flag may be untroubled by pollution and may appreciate the advantages laxity of regulation gives it in shipping circles.⁶⁰ Jurisdiction by state of registration also raises the danger that a state threatened or damaged by tanker spillage outside its territorial waters will resort to extreme measures of self-help. For example, after Great Britain bombed the hull of the *Torrey Canyon*,⁶¹ Prime Minister Wilson announced, "We are certainly not going to wait for international agreement on the question of approaches to our shores. The old concept of territorial waters is not enough."⁶²

⁵⁵ Water Quality Improvement Bill of 1969, S. 7, 91st Cong., 1st Sess. (1969). The bill incorporates the major provisions of 2 earlier bills that were defeated. Senator Muskie, the sponsor of all 3 bills, blamed the defeat of the first 2 bills on the lobbyists. See N.Y. Times, Oct. 25, 1968, at 46, col. 1. *But see* an industry statement to the effect that the American Petroleum Institute supported the bills' core proposals, such as criminal penalties for willful or grossly negligent spillage, severe civil penalties for any discharge except one caused by Act of God, and the granting of authority to the federal government to recover cleanup costs from owners and operators. The industry allegedly demurred at "hastily drawn" amendments never discussed in hearings. N.Y. Times, Nov. 21, 1968, at 46, col. 8.

⁵⁶ S. 7, 91st Cong., 1st Sess. § 12(a)(2) (1969) (emphasis added).

⁵⁷ *Id.* §§ 12(i)(1), (2).

⁵⁸ *Id.* §§ 12(e), (f), (I).

⁵⁹ *Id.* § 12(k)(2).

⁶⁰ See *The Oil Around Us* 112.

⁶¹ There is uncertainty as to whether the British action was justified under customary international law. There was at least the possibility of a claim by the owners against the United Kingdom for damages. N.Y. Times, March 29, 1967, at 1, col. 3.

⁶² N.Y. Times, April 4, 1967, at 12, col. 4.

Steps toward international regulation of high seas activities were taken in 1954, when the London Conference promulgated the International Convention for the Prevention of the Pollution of the Sea by Oil.⁶³ Signed by twenty nations, the Convention established a number of prohibited zones in which dumping is forbidden; amendments added in 1962 enlarged some of the critical zones, expanded the classes of ships covered,⁶⁴ and reinforced the penalties and enforcement procedures.⁶⁵

The Convention is a salutary step forward in international cooperation, but it is not an effective means of combatting dumping at sea. Detection of spills in close enough proximity to a ship to implicate it is difficult.⁶⁶ In addition, the enforcement procedure is awkward; violation reports must be forwarded through diplomatic channels to the state of flag,⁶⁷ and if no settlement is agreed upon, the only resort is to litigation in an international forum. Finally, the Convention suffers a weakness common to all measures arrived at by individual states: it applies only to ships registered by the signatories and is unenforceable outside their territorial waters.

2. *Inadequacies of Continental Shelf Regulation*

Problems associated with the definition of the continental shelf make it difficult to posit standards under which states may protect themselves from pollution or responsibility be assigned for its control. Unilateral occupation of the shelves by coastal states⁶⁸ prompted the United Nations Conference on the Law of the Sea to draft the Geneva Convention on the Continental Shelf⁶⁹ in 1958. The Con-

⁶³ See McDUGAL & BURKE 1089.

⁶⁴ The tanker size limit, for example, was lowered from 500 tons to 150 tons. *Water Pollution Hearings* 130, 158.

⁶⁵ *Id.* at 138-39, 165-67.

⁶⁶ Ships avoid compliance out of self-interest. "This pollution has a simple economic base: Tankers must clear their tankers [sic] and the oily scum which is removed must be put somewhere." *WATER CONTROL NEWS*, Sept. 25, 1967, at 1, 5.

⁶⁷ *Water Pollution Hearings* 258-59.

⁶⁸ For example, the United States claimed title to its continental shelf under the Truman Proclamation of 1945. Proclamation 2667, September 28, 1945 (59 Stat. 884). By 1956, 20 nations had made claims similar to that of the United States, and 88 states signed the 1958 convention which accorded general recognition to the concept. Hearn, *The Role of the Navy in the Formulation of Federal Policy Regarding the Sea*, *NATURAL RESOURCES LAW.*, June 1968, at 23, 28. See generally Morris, *Oil and Gas Legal Problems on the North Sea Continental Shelf*, *NATURAL RESOURCES LAW.*, Jan. 1968, at 1.

⁶⁹ [1964] 1 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311. Three other conventions were drafted at the Conference: the Convention on the Territorial Sea and the Contiguous Zone, [1964] 2 U.S.T. 1607, T.I.A.S. No. 5639, 516 U.N.T.S. 205; the Convention on the High Seas, [1962] 2 U.S.T. 2313, T.I.A.S. No. 5200, 450 U.N.T.S. 82; and the Convention on Fishing and Conservation of the Living Resources of the High Seas, [1966] 1 U.S.T. 139, T.I.A.S. No. 5969, 599 U.N.T.S. 285.

vention attempted to codify and lend some international legislative recognition to the movement for occupation; its so-called "exploitability test,"⁷⁰ however, is fast becoming inadequate.

Technological advances may soon make every part of the seabed exploitable.⁷¹ The United States, for example, has already granted a substantial number of leases lying outside the Geneva Convention's alternate limit of the 200-meter bathymetric contour line.⁷² One danger of the exploitability test is that it enables technologically advanced states to make extensive claims at the expense of the less developed states.⁷³ Another problem is the lack of any means to resolve a conflict if an area of seabed may legitimately be claimed to lie off the shore of more than one state and each is able to exploit it. Arguably, some conflicts could be resolved on the basis of the disputed area's greater geographical unity with one claimant's shelf area,⁷⁴ but this principle is embodied in neither the Convention nor customary international law.⁷⁵

⁷⁰ [T]he term "continental shelf" is used as referring (a) to the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of such areas

[1964] 1 U.S.T. 471, 473, T.I.A.S. No. 5578, 499 U.N.T.S. 311, 312.

⁷¹ Belman, *The Role of the State Department in Formulating Federal Policy Regarding Marine Resources*, NATURAL RESOURCES LAW., June 1968, at 14; Goldie, *The Exploitability Test—Interpretation and Potentialities*, 8 NATURAL RESOURCES J. 434, 437 (1968).

⁷² USES OF THE SEAS 80; see Christy, *Marine Resources and the Freedom of the Seas*, 8 NATURAL RESOURCES J. 424, 427, 431 (1969). For lists and maps of leased tracts in California grouped according to whether they are located above, partly below, or entirely below the 600-foot bathymetric contour line, see Goldie, *supra* note 71, at 462-76.

The Secretary of Interior has refused no leases on the grounds that the depths were too great or the area too far from shore. As to the ultimate limits of jurisdiction, the Solicitor of the Department of Interior has said:

You may want to know whether the Department has decided on a line beyond which it will not lease, or whether it has decided to lease as far out as anyone might suggest. The answer on both counts is no.

Barry, *The Administration of the Outer Continental Shelf Lands Act*, NATURAL RESOURCES LAW., July 1968, at 38, 47. It was suggested that cases would be approached on an individual basis. *Id.* To date, United States sales of leases for actual recovery, as opposed to exploratory work, have all been on the West Coast, perhaps due to the fact that extension of seabed sovereignty even to Hawaii might not present an international problem; the United States has been wary of granting exclusive oil and gas claims in the Gulf of Mexico. Goldie, *supra*, at 453.

⁷³ Goldie, *supra* note 71, at 437.

⁷⁴ See *id.* for a criticism of the exploitability test on the ground it bears no "verisimilitude to geographical facts."

⁷⁵ The United Kingdom, however, recognizes continental shelf rights in Norway beyond the deep Norwegian trench separating shallower areas of the North Sea from the mainland. *Id.* at 465.

Even if definitional problems could be cleared away, it is not clear that national control over shelf operations is a viable solution to the pollution problem. National control makes the safety of other states depend on the willingness of the licensing state to safeguard itself from pollution, and the licensing state may well consider that interest outweighed by other factors. The revenues, balance of payments advantages, and other values accruing from petroleum exploitation may make a state only too eager to encourage offshore operations without regard to anti-pollution precautions.

Moreover, national control does not assure an adequate balancing of interests in exploitation of the seabed and uses of the superjacent high seas. The Convention on the Continental Shelf and the Convention on the High Seas recognize both the "sovereignty" of the coastal state over its continental shelf and a principle of non-interference by the coastal state with the uses of the high seas,⁷⁶ but this is an unrealistic position.⁷⁷ Offshore operations with permanent and quasi-permanent installations will inevitably create some disruption of other uses of the seas. The North Sea, for example, covers a large underwater oil field, contains sea lanes to Europe's major ports, and

⁷⁶ "The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources." Convention on the Continental Shelf, *supra* note 69, art. 2, § 1. "The rights of the coastal State over the continental shelf do not affect the legal status of the superjacent waters as high seas, or that of the airspace above those waters." *Id.* art. 3. The Convention specifically warns against interference with navigation, fishing, conservation of the living resources of the sea, or oceanographic or scientific research aimed at adding to the world's store of publicly available literature. *Id.* art. 5, §§ 1, 7. Article 24 of the Convention on the High Seas, *supra* note 69, contains parallel provisions.

A stronger position, urged upon the International Law Commission but not adopted, suggested establishment of a contiguous zone of 200 sea miles adjacent to every coastal state within which that state would be empowered to enforce regulations to protect the resources of its adjacent seas from oil pollution. 1955 Y.B. INT'L L. COMM'N, U.N. Doc. A/CN.4/Ser.A/1950, at 78. The proposal that was incorporated in the final report called upon all states to draw up regulations to prevent discharge of fuel oils from ships. *Id.* Later changes substituted "oil" for "fuel oil" and added exploitation resulting in pollution and pollution from radioactivity. 1956 Y.B. INT'L L. COMM'N, Vol. I, U.N. Doc. A/CN.4/SER.A/1956/Add. 1, 58, 59, 59-63.

For a history of League of Nations and United Nations work dealing with pollution of the sea by oil, see generally United Nations Conference on the Law of the Sea. Official Records, Pollution of the Sea by Oil (Prep. Doc. No. 8) U.N. A/CONF. 13/8.

⁷⁷ See, e.g., 1955 Y.B. INT'L L. COMM'N, Vol. I, *supra* note 76, where the special rapporteur contended that the article dealing with water pollution was comparable to those dealing with maritime safety and the use of signals in that it was highly technical. It would be impossible for the Commission to examine all the problems in detail but rather conceivable only that the ILC lay down general guidelines. *Id.* at 49.

is one of the world's most valuable fishing zones.⁷⁸ Mineral exploration threatens to pollute the fishing grounds and obstruct navigation. The issue to be resolved is what degree of interference can be tolerated, and it is not clear that the coastal state will give appropriate weight to the interests of other nations.

CONCLUSION

Existing systems of regulation provide inadequate protection against pollution because they vest control in the state having the least interest in anti-pollution measures. Governments have been needlessly miserly in their willingness to surrender either a measure of their autonomy or a part of their fiscal resources to obtain the long-range benefits of clean seas and shores.

One answer to the pollution threat from tanker operations might be further to broaden the discretion of the coastal state to exercise its jurisdiction under the objective territorial theory of international law.⁷⁹ Expansion of contiguous zones such as the International Maritime Consultative Organization (IMCO) safety zones⁸⁰ and creation of authority in a state to take direct action against a source of pollution at sea⁸¹ would enable it better to safeguard its shores and territorial waters.⁸² Because this proposal casts the coastal state as the

⁷⁸ See map delimitation of the various national shelf boundaries in the North Sea of the United Kingdom, Denmark, the Netherlands, Germany, and Norway in Morris, *supra* note 68, at 8.

⁷⁹ See note on bases of jurisdiction in W. BISHOP, INTERNATIONAL LAW 463-68 (1962).

⁸⁰ See notes 63-65 and accompanying text *supra*.

⁸¹ *Water Pollution Hearings* 206. There was some doubt expressed as to whether the United States, under existing international law, could impose liability on a foreign vessel 50 to 100 miles offshore even though these prohibited zones were established by IMCO in the 1962 Convention. The jurisdiction of the United States to enact legislation covering accidental spillage would probably be strictly confined to its 3-mile territorial waters or a 12-mile contiguous zone. *Id.* The International Law Commission's Commentary to Article 27 of the Convention on the High Seas (*supra* note 69) which defines freedom of the high seas, reads that "[N]o state may subject any part of the high seas to its sovereignty; hence no state may exercise jurisdiction over any stretch of water." The conclusion that absence of jurisdiction follows from absence of the broader authority of sovereignty is, however, a *non sequitur*. McDUGAL & BURKE 84. The result of this "conceptual rigidity" is to ignore the relativity of all uses and interests in the sea and to remove flexibility in dealing with legitimate claims of states to apply authority for limited purposes over non-territorial seas. *Id.*

⁸² *Water Pollution Hearings* 12, 205. A tanker could, for example, be required to receive a certificate showing that it had cleaned its tanks in port in order to clear the port. Although the United States could probably establish such a procedure unilaterally, a preferred approach would be to seek strengthening amendments to the IMCO Convention. *Id.* at 11.

victim and the high seas user as the offender, however, it cannot be extended to shelf operations; when shelf exploitation goes awry and pollutes the superjacent waters and surrounding shores, it is the coastal state and its licensees that create the damage and the other littoral states and high seas users that suffer the loss. Stricter international control by treaty, on the other hand, is a solution applicable to either tankers or shelf operations.

Any viable system of regulating shelf operations presupposes an answer to the difficult policy problem of preserving all uses of the seas to the maximum extent possible consistent with "reasonable measures of exploitation."⁸³ The approaching meeting of the IMCO⁸⁴ provides a unique opportunity for consideration of these questions under the aegis of a United Nations agency. The IMCO should, therefore, expand its area of concern beyond tanker pollution to encompass the existing and impending problems of the continental shelf.

One option logically open to the IMCO is to prohibit offshore drilling altogether. In a world where oil reserves are relatively plentiful and food supplies increasingly scarce, such a move would be farsighted; the economic stakes involved, however, make it politically impractical.⁸⁵ A more realistic expectation is that the conference will define international standards of liability for offshore accidents⁸⁶ and establish an international agency⁸⁷ to enforce regulations and award compensation for pollution damage. To insure compensation, both the private

⁸³ McDUGAL & BURKE 691. See also Young, *Offshore Claims and Problems in the North Sea*, 59 AM. J. OF INT'L L. 505, 518-22 (1965), for a discussion of the problems of competing uses and the concept of "unjustifiable interference."

⁸⁴ The IMCO is the smallest of the United Nations specialized agencies and has an operating budget of approximately \$1 million, which is funded by the maritime states on a pro rata basis. The 69 member nations with interests in world maritime affairs consider such items as international conventions, ship design, safety, transport facilitation, and safety of navigation. N.Y. Times, Oct. 27, 1968, at 80, col. 3.

⁸⁵ Such a decision is not unheard of on a unilateral basis, however. The Ohio Department of Natural Resources deferred indefinitely plans for leasing of underwater acreage in Lake Erie because of the danger that seepage would add to the already polluted condition of the lake. The decision was made despite the expectation that annual state revenues from the project would have run as high as \$1 million. WATER CONTROL NEWS, March 11, 1968, at 11.

⁸⁶ As to liability at customary international law for pollution injury to a neighboring state, see BISHOP, *supra* note 79, at 343-45: "[D]uties grounded in the exclusive jurisdiction of States . . . [include] the obligation to prevent . . . its territory from causing economic injury to neighboring territory . . ." *Id.* at 344. A leading international law case upholding recovery for the United States for air pollution from a Canadian smelter is Trail Smelter Arbitral Tribunal, 33 AM. J. INT'L LAW 182 (1939).

⁸⁷ See Nanda, *supra* note 29, at 406.

companies and the licensing state should be held accountable to nations and private parties injured by pollution;⁸⁸ holding the licensing government responsible is consistent with its heavy financial interest in offshore drilling.⁸⁹

A central issue will be whether strict liability should be imposed on continental shelf activities.⁹⁰ The United States oil industry has argued that imposition of such "onerous liability" in the absence of fault is "contrary to the fundamental tenets of Anglo-American jurisprudence."⁹¹ The rigors of strict liability would be mitigated, however, if the nations developing their offshore lands established an insurance fund or an "international tax" on recovery of minerals from the seabed. This could be used to underwrite cleanup costs and as a fund to compensate injured parties.⁹² The windfalls to national treasuries resulting from the opening of the underwater domain of the continental shelves should make a farsighted international community willing to dedicate a portion of these monies on a national pro rata basis to an international insurance fund.⁹³

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⁸⁸ A satisfactory international solution could be modeled upon some of the provisions of the United States Water Quality Improvement Bill of 1969. See notes 55-59 and accompanying text *supra*.

⁸⁹ For example, it was determined that, in reporting a \$6 billion spending reduction ordered by Congress, a \$300 million "savings" that was included was accounted for by an unexpectedly large flow of royalty payments from offshore oil leases which count as an offset against expenditures. N.Y. Times, Sept. 12, 1968, at 1, col. 3 and *id.* at 26, col. 5. The Government of the Netherlands was expected to take such a large percentage of the revenues from North Sea fields through direct participation (40%), royalties (8-16%), and taxes that only the large fields might prove to be profitable. See Gardner, *supra* note 28, at 66.

⁹⁰ The leading common law case imposing strict liability for the escape of dangerous substances is *Rylands v. Fletcher*, L.R. 1 Exch. 265 (Ex. 1866). *But see* the equally famous *Overseas Tankship (U.K.) Ltd. v. Morts Dock & Eng'r Co. (The "Wagon Mound Case")*, 1 All E.R. 404 (P.C. 1961), applying the "foreseeability" test. For a discussion of these and other common law and admiralty decisions, see Nanda, *supra* note 29, at 415-18; Sweeney, *supra* note 50, at 164-81.

⁹¹ *Water Pollution Hearings* 19.

⁹² A limited program of self-insurance has already been initiated by a private group of oil tanker operators. OIL & GAS J., Nov. 18, 1968, at 108. Although these private efforts are commendable, the amounts in controversy in damage claims after a major disaster may far outrun the ability of private concerns to spread the loss. The coverage would be \$100/gross registered ton for tanker spillage, up to a maximum of \$10 million per ship per accident. N.Y. Times, Jan. 23, 1969, at 93, col. 1.

⁹³ There is some domestic precedent for such contribution. Conservationists were successful in their fight to tap a substantial portion of federal revenues from offshore lands for conservation purposes. N.Y. Times, July 13, 1968, at 17, col. 1. The revolving fund proposed for cleanup costs in the Water Quality Improvement Bill of 1969 also seems to accord with the philosophy of this proposal. S. 7, 91st Cong., 1st Sess. § 12(k)(2) (1969).