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FULL SPEED AHEAD: INTERNATIONAL LAW CONCERNING MARINE POLLUTION AND THE UNITED STATES NAVY — STEAMING TOWARDS STATE RESPONSIBILITY AND COMPLIANCE

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Because there is an ocean, there is a Navy. The ocean is the single, fundamental difference separating navies from armies and air forces. Because of this, it is important to understand the maritime environment, so it can be described and predicted for development, deployment and employment of naval systems.¹

The very survival of the human species depends upon the maintenance of an ocean clean and alive, spreading all around the world.²

I. INTRODUCTION

An examination of the oceanic environment reveals a diverse ecology rich in marine life and precious natural resources. "It embraces an expansive array of biological communities, from estuaries and coastal wetlands to beaches and tidal flats, as well as reefs and deep water environments."³ The oceans have come to "embody the largest segment of the environment which

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¹ ALL HANDS, [Magazine of the U.S. Navy], Apr. 1995, at 1.

² Anastasia Toufexis, *The Dirty Seas: Threatened by Rising Pollution, the Oceans are Sending out an SOS*, TIME, Aug. 1, 1988, at 44.

³ Christopher C. Joyner, *Biodiversity in the Marine Environment: Resource Implications for the Law of the Sea*, 28 VAND. J. TRANSNAT'L L. 635, 637 (1995).

mankind can . . . directly influence,"⁴ and state interests have forced nations to utilize them. However, the oceans have become a garbage receptacle — "[a] dumping ground for virtually all of the by-products of man's activities."⁵

During the 1970s, it was estimated that shipboard waste, comprised of paper, plastics, metals, and glass, was discharged by vessels at a rate of 6.4 million tons per year.⁶ This figure includes approximately one million tons of plastic per annum at a rate of 639,000 plastic containers per day.⁷ More recently, oil tanker disasters have catapulted the collective conscience of humanity to an awareness of the extremely adverse effects that contaminants have on the marine environment.⁸ Images of blackened coastlines, and petroleum-soaked birds and mammals remind states that the ecological balance is delicate. While such catastrophic accidents are amplified by media coverage, large quantities of oil and other pollutants are still being discharged annually from the routine operation of commercial and military vessels.

International law has responded by imposing certain obligations and rights upon states to curtail the persistent problem of vessel-source pollution. However, to what extent may a state be held liable under these obligations. "Vessels do not engage in conduct; they are merely the instruments of human actors."⁹ As a result, "[s]tates may be attributed responsibility for vessel conduct injurious to the marine environment . . . only to the extent that the requisite juridical relationship exists between the state and an individual vessel-user."¹⁰ However, what if the vessel-user is the state?

⁴ Yvonne L. Tharpes, *International Environmental Law: Turning the Tide on Marine Pollution*, 20 U. MIAMI INTER-AM. L. REV. 579 (1989).

⁵ *Id.*

⁶ See Jeffrey S. Dehner, Note, *Vessel-Source Pollution and Public Vessels: Sovereign Immunity v. Compliance, Implications for International Environmental Law*, 9 EMORY INT'L L. REV. 508, 509 (1995).

⁷ See *id.*

⁸ See discussion *infra* Part II.A.2.

⁹ BRIAN D. SMITH, STATE RESPONSIBILITY AND THE MARINE ENVIRONMENT: THE RULES OF DECISION 147 (1988). Thus according to the author, "in this context, . . . 'vessel' is properly viewed as a short-hand expression referring to the individuals associated with a vessel, including owners, operators, masters, crews, passengers, and property shippers." *Id.*

¹⁰ *Id.*

Naval warships and similar vessels are unique in that they are owned and operated by governments.¹¹ Given this status, to what extent do the principles of state responsibility apply? Specifically, does international law impose obligations upon the United States Navy to control pollution discharges while conducting normal operations? If so, has the Navy complied with these obligations?

This article analyzes these issues and concludes that on a general level, the United States has a certain responsibility to comply with international standards concerning the prevention of marine pollution¹² from vessel-sources. This obligation applies equally to U.S. Naval forces despite the provisional barriers of sovereign immunity.¹³ Section II examines the problem of marine pollutants, analyzing their varying sources and their effects on the oceanic environment. Subsequent sections scrutinize the corpus of international environmental laws and determine the extent to which states are bound to its proscriptions. In order to understand the application of international law and ocean governance to the U.S. Navy, strategic and security interests are detailed. What is evident, however, is that these traditional military interests have given way to an awareness, by the Navy, of the need to prevent pollution by its afloat units. Finally, this article surveys current international law concerning the narrow issue of vessel-source pollution, its application to na-

¹¹ See discussion *infra* Part IV.C.1 (discussing the unique nature of naval vessels).

¹² According to the Intergovernmental Oceanographic Commission, marine pollution is defined as "the introduction by man, directly or indirectly, of substances or energy into the marine environment, resulting in such deleterious effects as: harm to living resources; hazards to human health; hindrance to marine activities including fishing; impairing the quality . . . use of seawater; and reduction of amenities." *Tharpe*, *supra* note 4, at 583, *citing* S. GERLACH, MARINE POLLUTION DIAGNOSIS AND THERAPY 4 (1981); Springer, *Towards a Meaningful Concept of Pollution in International Law*, 26 INT'L & COMP. L. Q. 531 (1977). This formulation has served as the basis of a "quasi-official definition" devised by the Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP). MARTINE RÉMOND-GOUILLOU, *Prevention and Control of the Marine Pollution*, THE ENVIRONMENTAL LAW OF THE SEA 194 (Douglas M. Johnston ed., 1981). Rémond-Gouillou argues, however, that this definition does not take into consideration all the possible sources of marine pollution. *See id.* New technology does not necessarily entail the "introduction of substances or energy." *Id.* For example, deep-sea mining and dredging the sea floor may have long-term "sterilizing effects." *See id.*

¹³ See discussion *infra* Part V.C.

val ships, and the degree to which the latter complies with the provisions.

II. MARINE POLLUTION — A GLOBAL PERSPECTIVE

Oceanic waters, which cover over seventy percent of the world, play a vital role in maintaining ecological balance.¹⁴ Economic, scientific, and security interests have increasingly forced States to turn to the utilization of the high seas,¹⁵ but, oceanic dependence has grave environmental consequences. Recreational, commercial, and military opportunities “exert substantial pressure on limited and fragile resources.”¹⁶ One commentator has posited that “[a]s the world’s population multiplies and industry expands, the problem of man’s degradation of the environment becomes more critical and compelling.”¹⁷

The capacity to exact harmful effects is revealed by staggering figures. For example, it was estimated that within the five year period between 1977 and 1982, 400 million tons of waste¹⁸ were dumped into ocean waters by members of the Convention on Prevention of Marine Pollution by Dumping Wastes and Other Matter.¹⁹ Studies have indicated that these substances, introduced into the marine environment, disrupt the delicate ecology.

Shellfish have been found to contain hepatitis, polio virus, and other pathogens. Pollution has closed at least one-fifth of the nation’s commercial shellfish beds; beaches and bays have been closed to swimming and other recreational use; lifeless zones have been created in the marine environment; there have been heavy

¹⁴ See Steven J. Moore, *Troubles in the High Seas: A New Era in the Regulation of U.S. Ocean Dumping*, 22 ENVTL. L. 913, 916 (1992). According to the author, “[t]he oceans provide the base for the world’s fresh water supply, affect global climate, and are important in the oxygen-carbon dioxide balance of the atmosphere.” *Id.* Citing GUNTHER DIETRICH ET AL., GENERAL OCEANOGRAPHY: AN INTRODUCTION 1 (2d ed. 1980).

¹⁵ See discussion *infra* Part IV.

¹⁶ REMOND-GOUILLOU, *supra* note 12.

¹⁷ Tharpes, *supra* note 4, at 581.

¹⁸ See Moore, *supra* note 14, at 917. In addition to this amount, it is estimated that 1.1 billion tons of dredged materials, seventeen million metric tons of industrial waste, and seventeen million wet metric tons of sewage sludge were dumped into oceanic waters. *Id.*

¹⁹ See Convention on Prevention of Marine Pollution by Dumping Wastes and Other Matter, Dec. 29, 1972, 26 U.S.T. 2406, 11 I.L.M. 1291 (1972) [hereinafter *The London Convention*].

kills of fish and other organisms; and identifiable portions of the marine ecosystem have profoundly changed.²⁰

Additionally, oil tanker disasters such as the *Torrey Canyon*²¹ and *Amoco Cadiz*²² turned the world's attention to the far-reaching effects of oil pollution.

To combat this problem, effective legal regimes must be created. The process, however, is inherently complicated.²³ Proposals to curb marine pollution must take into consideration "the variety of pollutants, their chemical composition and behavior, the sources and pathways by which they enter the marine environment, the nature and extent of their effects, and the degree of threat they pose over time."²⁴ In order to understand the magnitude of this problem, the following section identifies and examines the types and characteristics of waste that enter the marine environment, the deleterious effects that these substances inflict and the main sources of marine pollution.

A. *Marine Pollutants*

The fashioning of effective pollution control laws must necessarily take into consideration the "extraordinary diversity of pollutants."²⁵ Accordingly,

the scope, mode and effectiveness of a regulatory approach to any kind of marine pollution may depend in part on a properly scientific appreciation of the characteristics of the polluting substances and of their effects on the affected sectors of the food chain, and at least an approximate understanding of the assimilative capacity of ocean areas under particular stress.²⁶

²⁰ Tharpes, *supra* note 4, at 585 (citing U.S. Council on Environmental Quality, A National Policy 12-18 (1970)).

²¹ In March 1967, the *Torrey Canyon*, a 118,000 ton tanker ran aground spilling 100,000 tons of crude oil into the sea. See R.R. CHURCHILL & A.V. LOWE, *THE LAW OF THE SEA* 241 (1988). "[T]his caused black tides and damage to both the English and French coastlines." ALEXANDRE KISS & DINAH SHELTON, *INTERNATIONAL ENVIRONMENTAL LAW* 163 (1991).

²² Eleven years after the *Torrey Canyon* disaster, the *Amoco Cadiz* accidentally discharged 210,000 tons of petroleum off the coast of Brittany. See CHURCHILL & LOWE, *supra* note 21, at 241.

²³ See ROBERT A. SHINN, *THE INTERNATIONAL POLITICS OF MARINE POLLUTION CONTROL* 1 (1974).

²⁴ *Id.*

²⁵ RÉMOND-GOULLAUD, *supra* note 12, at 194.

²⁶ *Id.* at 194-95.

1. *Types and characteristics*

Commercial tanker disasters such as the *Torrey Canyon*,²⁷ the *Amoco Cadiz*²⁸ and the *Exxon Valdez*²⁹ illustrate the destructive nature that oil³⁰ has on the marine environment.³¹ While oil as a marine pollutant has received the most attention and public concern, it is not the most noxious of pollutants.³² Unlike oil, other substances such as chlorinated hydrocarbons,³³ heavy metals,³⁴ and radioactive wastes are not biodegradable, nor is there any means available to remove them once they enter the water.³⁵ In addition to these types of pollu-

²⁷ See *supra* note 21 and accompanying text.

²⁸ See *supra* note 22 and accompanying text.

²⁹ "More than 36,000 waterfowl died, along with more than 1,000 sea otters and 144 bald eagles." *Settlement Reached on Exxon Oil Spill*, CHRISTIAN SCI. MONITOR, Mar. 15, 1992, at 4.

³⁰ See generally SHINN, *supra* note 23, at 6-14 (discussing the problem and effects that oil and associated hydrocarbons have on the marine environment). Oil enters the ocean in a variety of ways including "natural submarine seepage, natural decay of marine plant and animal life, shore-based industrial and transport activities (including . . . the automobile), offshore drilling, wrecked oil tankers and other ships, and discharges from vessels that pump out cargo and ballast tanks with sea water." *Id.* at 6.

³¹ According to one commentator, the potential for oil spills is related to the employment of larger ships carrying more hazardous cargoes over greater distances. See JAN SCHNEIDER, *Pollution from Vessels*, THE ENVIRONMENTAL LAW OF THE SEA 203, 203 (Douglas M. Johnston ed., 1981). The twenty years from 1960 to 1980 witnessed a growth in the shipping industry. For example, during the 1960s, there was approximately 36,000 vessels of at least 100 gross registered tons (grt) totaling 1.25 million grt. See *id.* By 1980, the number of ships had grown to about 70,000 and represented 400 million grt. See *id.* Furthermore, according to Schneider:

As to the size of tankers, during the same period [1960 to 1980] the largest tanker in service went from around 30,000 [deadweight tons (dwt)], to over 500,000 dwt. In little more than twenty years, the amount of oil transported by sea increased by 700 percent: from 250 million tons to more than 1,700 million tons.

Id. These figures represent the potential for large scale environmental disasters. For example, within a two month period between December 1976 and January 1977, a series of tanker accidents made headlines, including the *Argo Merchant*, *Sansinena*, *Oswego Peace*, *Olympic Games*, *Daphne*, *Grand Zenith*, *Barcola*, *Mary Ann*, *Universal Leader* and *Irenes Challenger*. See *id.* at 204.

³² See CHURCHILL & LOWE, *supra* note 21, at 244. Oil is not viewed as the most harmful due in part to the fact that it is eventually broken down by marine bacteria. See *id.*

³³ Examples include DDT and polychlorinated biphenyls (PCBs). See *id.*

³⁴ Heavy metals include elements such as lead, mercury and cadmium. See *id.*

³⁵ See *id.*

tants, "[t]he U.S. Council on Environmental Quality (CEQ) has identified seven types of ocean disposed wastes."³⁶ The categories and definitions include:

1. *Dredge spoils*³⁷ - sand, silt, clay, rock, and pollutants that have been deposited from municipal and industrial discharges;
2. *Industrial wastes*³⁸ - acids and assorted liquid wastes from factories;
3. *Sewage sludge*³⁹ - the solid material remaining after municipal waste treatment;
4. *Construction and demolition debris* - masonry, tile, stone, plastic, wiring, piping, shingles, glass, cinder block, tar, tarpaper, plaster, vegetation and excavation dirt;
5. *Solid waste*⁴⁰ - more commonly called refuse, garbage, or trash — the material generated by residences; commercial, agricultural and industrial establishments; hospitals and other institutions; and municipal operations;
6. *Explosives and chemical munitions* - no official definition but includes 'unserviceable or obsolete shells, mines, solid rocket fuels, and chemical warfare agents;' and
7. *Radioactive wastes*⁴¹ - the liquid and solid wastes that result from processing of irradiated fuel elements, nuclear reactor opera-

³⁶ John Warren Kindt, *Solid Wastes and Marine Pollution*, 34 CATH. U. L. REV. 37, 38 (1984).

³⁷ "[D]redged materials usually refers to the sediment removed from waterways in order to improve navigation." Moore, *supra* note 14, at 920. The toxicity of these sediments is commonly due to the introduction of chemical or hazardous substances from land-based sources. *See id.*

³⁸ These wastes are no longer disposed of in the ocean territory of the United States. *See id.* at 918.

³⁹ Sewage sludge is "the heterogenous residue of municipal water treatment plants and is composed primarily of nutrients and thus contain protozoa and bacteria, heavy metals, and hydrocarbons (including PCBs and pesticides as well as petroleum distillates)." Moore, *supra* note 14, at 919. Until 1992, sewer sludge was continuously dumped into oceanic waters, but since then, the United States has ceased. *See id.* Even with the passing of legislation, "sewage is still finding its way into the ocean. Boston and Los Angeles still discharge raw sewage, which is less concentrated than sludge, in to the ocean through pipelines." *Id.* at 920.

⁴⁰ Solid waste has also been defined as "all material which is normally solid, and which arises from animal or human life and activities and is discarded as useless or unwanted." Tharpes, *supra* note 4, at 589.

⁴¹ For a general discussion of radioactive wastes, *See* SHINN, *supra* note 23, at 15-30. In terms of effects, tests have revealed that some sea-dwelling species have a concentration of radioactive elements in their bodies. *See id.* at 15. As a result, certain isotopes cause internal damages to the organisms thereby causing disfigurement or death. *See id.*

tions, medical use of radioactive isotopes, research activities and, also, from equipment and containment vessels which become radioactive by induction.

To what extent does the military contribute to marine pollution?⁴² Until the 1970s, the dumping of obsolete or dangerous military wastes into the oceans had been considered an acceptable means of disposal.⁴³ According to one commentator, "[t]hese wastes have consisted of organic materials, biological and chemical warfare agents, heavy metals, petrochemicals, outdated explosives, defoliating agents, pesticides, solid objects, dredging spoils, and other inorganic materials peculiar to military operations."⁴⁴

In addition to the dumping of wastes created by on-land installations, naval vessels contribute to marine pollution while on routine operations.⁴⁵ Generally, it is estimated that world navies carry approximately 771,500 crew-members thereby creating up to 74,000 tons of garbage⁴⁶ each year.⁴⁷ Often times, the solid waste that is created is jettisoned directly into the ocean.⁴⁸ Given the number of U.S. naval vessels,⁴⁹ the potential

⁴² It is undisputed that the United States military contributes to the waste stream that enters the oceanic environment. See, e.g., *id.* at 43-44; and William L. Schachte, Jr., *The Value of the 1982 UN Convention of the Law of the Sea — Preserving Our Freedoms and Protecting the Environment*, THE MARINE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT: LAW, POLICY, AND SCIENCE 105 (Alastair Couper & Edgar Gold eds., 1993) (detailing the need for the U.S. Navy to control the discharge of pollution at sea).

⁴³ See SHINN, *supra* note 23, at 43.

⁴⁴ *Id.* "Because of the classified aspect of military operations, the exact chemical and toxicological nature of these materials is frequently unknown, and details on the dumping of these materials are generally not available." *Id.* See also note 41 and accompanying text.

⁴⁵ See SHINN, *supra* note 23, at 44. One example, in the past, was the discharging of contaminated resins and nuclear cooling water from nuclear submarines. See *id.*

⁴⁶ According to the National Academy of Sciences, the amount of trash discarded is comprised of and categorized as follows: (1) paper materials — sixty-three percent; (2) metal — 16.6 percent; (3) glass — 9.6 percent; (4) plastic — 0.7 percent; and (5) rubber — 0.5 percent. See Tharpes, *supra* note 4, at 590.

⁴⁷ See Dehner, *supra* note 6, at 510.

⁴⁸ In 1993, approximately 63,356 tons of garbage were discharged into navigable waters by the Navy. See Jennifer Warren, *Town Throws Life Jacket to Sailor in Hot Water*, L.A. TIMES, May 23, 1993, at 3A. Cf. Tharpes, *supra* note 4, at 590; and Ava Carmel, *Killing the Sea the Silent Way*, THE JERUSALEM POST, Jan. 24, 1996.

for pollution discharge is startling.⁵⁰ It is opined that "every sailor produces about 3.1 pounds of trash a day . . . [and, o]n an aircraft carrier with 5,000 to 6,000 sailors, that amounts to about 18,000 pounds."⁵¹

2. *The effects on the oceanic ecological balance*

The encroachment of contaminants into the marine environment seriously threatens biodiversity⁵² and the delicate balance of the oceans. The introduction of pollutants into oceanic waters leads to two broad effects:⁵³ habitat destruction,⁵⁴ and

⁴⁹ It is estimated that the United States owns approximately 2,000 vessels, including 600 Navy ships with over 300,000 crew-members. See Dehner, *supra* note 6, at 510.

⁵⁰ Persons aboard passenger ships produce 28,000 tons of garbage per annum. See Tharpes, *supra* note 4, at 590. Furthermore, merchant marine crews and pleasure craft passengers are estimated to contribute 110,000 tons and 103,000 tons of garbage per annum, respectively. See *id.* Therefore, "in essence, virtually all the garbage and trash from the globe's commercial fleet is jettisoned directly into the ocean." *Id.*

⁵¹ *Navy Says It's Green*, NAVY NEWS & UNDERSEA TECHNOLOGY, Sept. 12, 1994. See also *Navy Struggles to Get a Handle on Ships' Trash*, THE CAPITAL, Sept. 6, 1994, at B1 (suggesting that the average aircraft carrier produces almost 19,000 pounds of solid waste a day). One particular form of solid waste — plastics — bears mentioning due to its adverse effects on the marine environment. It is estimated that 639,000 plastic containers are discarded daily into the sea. See Tharpes, *supra* note 4, at 590. The amount assumes 9,000 operational ships with an average of thirty people per vessel. See *id.* Yet, this figure does not take into consideration U.S. naval ships at sea. According to one Navy study, an aircraft carrier with a crew of 3,000 on a thirty day deployment would create 21,000 cubic feet of plastic waste, requiring a storage space seven feet high, thirty feet wide and 100 feet long. See *Some Navy Ships to Continue Dumping at Sea Through 2001*, MED. WASTE NEWS, Aug. 8, 1991. Cf. Michael Weisskopf, *Pollution From Plastics Ravaging Marine Life, Unregulated Dumping Imperils Some Species*, WASH. POST, Dec. 15, 1986, at A1 (indicating that the Navy alone dumps more than 60 tons of plastic materials a day).

⁵² The notion of biological diversity or "biodiversity encompasses the whole variety of life on earth." Joyner, *supra* note 3, at 636. According to Joyner:

[Biodiversity] is the total web of life on the planet, inclusive of plant, animal and micro-organisms that inhabit the soil, air, and ocean depths. [It] refers to the variety of ocean and coastal plants and animals. This variety exists at various levels of organization, ranging from genetic differences among individuals to whole ecosystems. Not surprisingly, biological variation in the global marine environment is especially vast; oceanic and coastal ecosystems cover seventy-one percent of the earth's surface.

Id. at 636-37.

⁵³ This is not to say that these two effects are exclusive. State interests in the high seas may lead to other threats to marine resources. For example, there exists the problem of over-exploitation. See Cyrille de Klemm, *Living Resources of*

ecological damage. For example, wastes may lead to oxygen depletion, biostimulation⁵⁵ and pH imbalances.⁵⁶ The process of "eutrophication" occurs when pollution-produced nutrients cause accelerated and excessive microscopic plant growth.⁵⁷ When the plant material decomposes, the available supply of dissolved oxygen diminishes.⁵⁸ As a result, the depletion of oxygen causes the impairment or death of oxygen-dependent organisms.⁵⁹

Chemical pollutants often raise the toxicity of the surrounding waters thereby adversely affecting fish and plant life. "Deformities and disease increase as accumulations of high levels of toxins are compounded in the fatty tissues."⁶⁰ Over time, organisms concentrate noxious substances leading to disease. The problem is exacerbated as successive levels of the food chain ingest the contaminated organisms.⁶¹

The intentional dumping or jettisoning of solid wastes into the ocean is a clear example of the potential for habitat destruc-

the Ocean, THE ENVIRONMENTAL LAW OF THE SEA 71, 75 (Donald M. Johnston, ed., 1981). For example, over-exploitation may occur when states over-fish thus leading to the collapse of fisheries. *See id.* *See also* Joyner, *supra* note 3, at 642 (stating that over-exploitation of resources occurs "when organisms are targeted for harvest as well as when organisms are caught incidentally").

⁵⁴ Habitat destruction includes "not only the physical destruction of habitats but also any alteration of the ecological conditions that will make the continuous existence of a species impossible." de Klemm, *supra* note 53, at 76. According to the author, this includes temperature or salinity changes, the destruction of spawning areas, nurseries, or feeding areas. *See id.*

⁵⁵ Biostimulation is the accelerated growth of algae and other forms of plant life caused by the increased levels of nitrates and phosphates in the water due to the introduction of waste materials. *See* Moore, *supra* note 14, at 921-22.

⁵⁶ *See id.* at 921.

⁵⁷ *See* Joyner, *supra* note 3, at 641.

⁵⁸ *See id.* *See also* Moore, *supra* note 14, at 921.

⁵⁹ *See* Joyner, *supra* note 3, at 641.

⁶⁰ *Id.* According to one commentator, the concentration of toxic substances begins when phytoplankton ingest contaminated nutrients. *See* Moore, *supra* note 14, at 921. Furthermore, blood and tissue toxicity increases as higher marine organisms, such as fish, take in contaminated water through these gills. *See id.*

⁶¹ This process is called "biomagnification." *See* Joyner, *supra* note 3, at 641. Joyner posits that this may occur "when persistent toxins are passed along the food chain and accumulate in progressively higher concentrations in higher prey species. Consequently, animals that feed high on the food chain risk much greater levels of tissue contamination." *Id.* While critics of this theory point out that contaminants are dispersed throughout the food chain, thereby diminishing the deleterious effects to higher species, this dilution does not negate the fact that the reach of toxic substances is extended in fact. *See id.*

tion and ecological damage. In many instances, the wastes may entangle, trap, drown, or choke fish, sea mammals,⁶² seabirds⁶³ and sea turtles. Floating plastic bags, resembling jelly fish, can be lethal to whales and sea turtles that feed on them.⁶⁴ Additionally, manta rays have had their wings sliced through by filament lines.⁶⁵

The above discussion is by no means an exhaustive examination of the consequences of marine pollution. Rather, it is indicative of the potential for deleterious effects. In order to fully understand the scope of the problem, the inquiry must take into consideration the modes or methods of introduction of pollutants into the oceanic environment.

B. *The Sources*

"Nothing . . . is more fundamental in the general design of marine pollution control policy than the classification of sources of marine pollution."⁶⁶ Commentators have accepted six forms of marine pollution by virtue of the source:⁶⁷

1. navigation (ship-generated or vessel-source pollution);
2. the disposal of wastes at sea (pollution by dumping);⁶⁸

⁶² According to Tharpes, marine mammals become entangle in plastics in at least three ways. See Tharpes, *supra* note 4, at 591-92. First, large fragments can kill a Northern fur seal. See *id.* Entanglement in medium sized fragments result in exhaustion and starvation since the energy level for swimming, breathing, and hunting become too insufficient to sustain the animal. Finally, small fragments may cause suffocation as the animal's body "grows into the debris." See *id.*

⁶³ For example, netting can cause immediate drowning; fragments may entrap their heads and extremities; or ingestion may cause death. See *id.* at 591, n. 85.

⁶⁴ See Joyner, *supra* note 3, at 642.

⁶⁵ See Tharpes, *supra* note 4, at 592.

⁶⁶ RÉMOND-GOUILLOUD, *supra* note 16, at 196 ("source" refers to the type of activity that gives rise to or causes the harm or hazard).

⁶⁷ See *id.* Compare with KISS & SHELTON, *supra* note 21, at 174-201.

⁶⁸ According to one commentator:

Ocean dumping is the seaward transport of land-generated wastes by ships, barges, platforms or aircraft and their disposal in the marine environment. Such wastes may be 'dumped' in bulk containers, or incinerated, but regardless of the method of disposal used, the ultimate aim is the disposal of undesirable wastes in the sea. Dumping forms part of the overall problem of how to dispose of wastes in an environmentally safe way.

Norman G. Letalik, *Pollution from Dumping*, THE ENVIRONMENTAL LAW OF THE SEA 217 (Douglas M. Johnston ed., (1981). For a general discussion of the problem

3. the discharge of a wide-range of shore-generated effluents (land-based pollution);⁶⁹
4. the dissemination of emissions on land (pollution from and through the atmosphere);⁷⁰
5. offshore petroleum exploration and exploitation (pollution from seabed activities);⁷¹ and
6. deep-ocean mining.

Given the missions, types and manners of naval operations,⁷² this article exclusively focuses on the problematic area of vessel-source and ship-generated pollution. While the scope of this examination is limited to warships and similar vessels, there are, nevertheless, general caveats concerning vessel-source pollution that are indispensable to the analysis.

Vessel-source pollution accounts for approximately twelve percent of all marine pollution.⁷³ While the bulk of the pollution results from routine operational discharges,⁷⁴ such as washing cargo tanks⁷⁵ or disposing garbage, accidental pollu-

and remedies of oceanic dumping *see id.*; *see also* KISS & SHELTON, *supra* note 21, at 180-86.

⁶⁹ *See generally* MARTINE RÉMOND-GUILLOUD, *Land-Based Pollution*, THE ENVIRONMENTAL LAW OF THE SEA 230 (Douglas M. Johnston ed., 1981) (detailing the problem of land-based sources and effluents); KISS & SHELTON, *supra* note 21, at 189-94 (highlighting the legal regimes which combat the problem of land-based sources of marine pollution).

⁷⁰ "This form of pollution appears to have received relatively little attention perhaps because the basic rules relative to air pollution generally apply to the marine environment as well as to land." KISS & SHELTON *supra* note 21, at 178. For a general discussion, *see id.* at 178-80.

⁷¹ *See generally id.* at 186-89 (discussing the problem stemming from seabed exploration and the legal response); MARTINE RÉMOND-GUILLOUD, *Pollution from Seabed Activities*, THE ENVIRONMENTAL LAW OF THE SEA 245 (Douglas M. Johnston ed., 1981).

⁷² *See supra* notes 132-145 and accompanying text.

⁷³ *See* Daniel Bodansky, *Protecting the Marine Environment from Vessel-Source Pollution: UNCLOS III and Beyond*, 18 *ECOLOGY L.Q.* 719, 724 (1991). This figure is compared to land-based and atmospheric sources comprising seventy-seven percent, ocean dumping ten percent, and offshore production one percent of all marine pollution. *See id.*

⁷⁴ *See id.*

⁷⁵ Ballasting and cargo washings are two forms of operational discharges. *See* Andrew Griffin, Comment, *MARPOL 73/78 and Vessel Pollution: A Glass Half Full or Half Empty?*, 1 *IND. J. GLOBAL LEGAL STUD.* 489, 491 (1994). According to the author, ballasting occurs when a tanker has discharged its load, and the crew fills up the now empty cargo area with sea water to compensate for weight lost from the delivery. With this new ballast, the vessel is able to displace sufficient water in

tion falls within the ambit of ship-generated or vessel-source pollution.⁷⁶

The problem of vessel-source pollution encompasses the conflict between coastal and maritime interests. The coastal interests seek to impose stricter environmental standards and greater authority over vessels in their coastal waters. The maritime interests seek to protect their military and commercial dominions.⁷⁷ What is emerging, is a corpus of international laws designed to ameliorate this conflict and impose

[a] partial compromise [which] has been to recognize greater authority of states over foreign vessels in their ports. International law has addressed the problem of vessel-source pollution standards that serve as an alternative to coastal state regulation; and second, by setting forth rules governing the jurisdiction of flag, coastal, and port states.⁷⁸

The foregoing discussions illustrate the magnitude of the problem of marine pollution. In response, international laws have been devised to address vessel-source pollution, but, questions remain unanswered. To what extent is a State obligated to follow or implement international pollution standards? To what extent must warships and similar vessels adhere to prescriptions governing vessel-source pollution? The following sections analyze these questions as they relate to the imposition of international marine pollution control laws on the U.S. Navy.

III. INTERNATIONAL ENVIRONMENTAL LAW AND MARINE POLLUTION

A. *Establishing the Obligations and Responsibility of States*

Man is both creature and molder of his environment, which gives him physical sustenance and affords him the opportunity for

order to maneuver. *See id.* The problem with this practice is that 0.35 percent of the original cargo is left behind as residue and thus mixes with the ballasted sea water. This contaminated water is then discharged before arriving at port, thus providing a means for the pollutant to enter the environment. *See id.* at 492. Contaminated substances also find their way into oceanic waters through tank washings. *See id.* Sea water is used to clean empty storage holds. The washings, containing sludge materials and cargo residue, are then discharged back into the ocean before returning to port. *See id.*

⁷⁶ *See* KISS & SHELTON, *supra* note 21, at 174.

⁷⁷ *See* Bodansky, *supra* note 73, at 725.

⁷⁸ *Id.*

intellectual, moral, social, and spiritual growth. In the long and tortuous evolution of the human race on this planet a stage has been reached when through rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways and on an unprecedented scale.⁷⁹

The Stockholm Declaration represents the birth of international environmental law. This Stockholm Conference, in addition to creating the Declaration, established a working-paradigm for global recognition of environmental issues, and instituted the United Nations Environment Program (UNEP).

The Conference issued 26 non-binding principles within its Stockholm Declaration and is significant for its recognition of state responsibility for environmental damage. Principle 21⁸⁰ directs that states may conduct activities within their borders such as "exploit[ing] their own resources"⁸¹ but that they have a further duty to prevent those actions from damaging other states.⁸² This has been viewed as constituting customary international law.⁸³ Some states sought to implement the principles

⁷⁹ Declaration of the United Nations Conference on the Human Environment, June 16, 1972, 11 I.L.M. 1416 [hereinafter Stockholm Declaration].

⁸⁰ See *id.* at 1420.

⁸¹ *Id.*

⁸² See *id.* Principle 21 states that:

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Id.

⁸³ Prior to its explicit delineation in the Stockholm Declaration, the notion of state responsibility has been relied on in litigation concerning environmental depollution. See *Trail Smelter Case* (United States v. Canada), 3 R. Int'l Arb. Awards 1905 (1938 & 1941) reprinted in 33 AM. J. INT'L L. 182 (1939) (initial opinion) and 35 AM. J. INT'L L. 684 (1941) (final decision). The case relates to injuries suffered by farmers resulting from emissions of sulphur dioxide from a smelting plant in British Columbia. The Arbitral Tribunal concluded that

no state has the right to use or permit the use of its territory in such a manner as to cause injury by fumes in or to the territory of another or the properties of another person therein, when the case is of serious consequence and the injury is established by clear and convincing evidence.

35 AM. J. INT'L L. at 716. Furthermore, custom is viewed as an important source of international law. In Article 38(b) of the Statute of the International Court of Justice, it is stated that "international custom, as evidence of a general practice accepted as law" is deemed a source of international law of which the ICJ shall apply. Statute of the ICJ, Art. 38 (b), 59 Stat. 1055 (1945), T.S. No. 993 at 25. Often

of the Stockholm Declaration. These states recognized the need to elaborate on measures to conserve natural resources viewed as necessary to humanity.⁸⁴ The United Nations responded in 1982 by promulgating the World Charter for Nature.⁸⁵

The Preamble of the World Charter expresses fundamental concepts, such as,

mankind is a part of nature and life depends on the uninterrupted functioning of natural systems to ensure the supply of energy and nutrients . . . [and] civilization is rooted in nature, which has shaped human culture . . . and living in harmony with nature gives man the best opportunities for the development of his creativity.⁸⁶

Implicit in these concepts is the recognition that "man can alter nature and exhaust natural resources by his action or its consequences and, therefore, must fully recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources."⁸⁷ Furthermore, "nature shall be respected and its essential processes shall not be impaired,"⁸⁸ which intimates a continuation of the principle espoused by the

times, there exists a gradual transformation of treaty law into customary law evidenced by municipal enactments passed by states as standards of conduct. If other states find such codifications acceptable, the municipal statutes tend to be interpreted as giving rise to generally accepted usages. Moreover, it is possible that further refinements of this established custom may undergo subsequent development by way of multilateral treaties. See GEORG SCHWARZENBERGER, *INTERNATIONAL LAW AS APPLIED BY INTERNATIONAL COURTS AND TRIBUNALS, THE LAW OF ARMED CONFLICT* 15 (1968). See also, Jonathan I. Charney, *International Agreements and the Development of Customary International Law*, 61 WASH. L. REV. 971 (1986). In a general sense, therefore, customary international law is perceived to exist when a practice is exercised by states, over an extended period of time, by a state with the conception that the action it takes is valid under international law, and with the acquiescence of other states. See G.M. DANILENKO, *LAW-MAKING IN THE INTERNATIONAL COMMUNITY* 75, 81-82 (1993). Yet, this approach presupposes acceptance by other states. Thus, one scholar has articulated that the general paradigm of the "decision-making process" model is such that if other states respond positively to the acting state's practice, international law is created. See ANTHONY D'AMATO, *INTERNATIONAL LAW: PROCESS AND PROSPECT* 124-25 (1986). Conversely, if other states respond negatively to the acting state's practice, arguably, no customary international law is created. See *id.*

⁸⁴ See KISS & SHELTON, *supra* note 21, at 46.

⁸⁵ General Assembly Resolution on a World Charter for Nature, Oct. 28, 1982, 22 I.L.M. 455 (1983) [hereinafter World Charter].

⁸⁶ *Id.* at 456.

⁸⁷ *Id.* at 457.

⁸⁸ *Id.*

Stockholm Declaration; humanity must respect the environment and take responsibility for state action. As was the case with the Stockholm Declaration, the principles of the World Charter are not codified into binding legal authority. Nevertheless, it is indicative of prevailing notions and the direction that international environmental law has taken.

The 1989 Declaration of the Hague on the Environment⁸⁹ issued a similar mandate to that of its predecessors. Adopted by 24 states, the Hague Declaration supported the right to a healthy environment. This is evident in Paragraph 5, "remedies to be sought involve not only the fundamental duty to preserve the ecosystem but also the right to live in dignity in a viable global environment."⁹⁰ The scope of the Hague Declaration included a proposal for fashioning an international organization, within the United Nations framework, to curtail state activities causing pollution.⁹¹

The most significant recent event concerning international environmental law occurred with the promulgation of the Rio Declaration on Environment and Development in 1992.⁹² The Rio Declaration, through its 27 Principles, restates concepts found in its predecessors and attempts to build on them. According to Principle 1, "human beings are the center of concerns for sustainable development . . . [and] are entitled to a healthy and productive life in harmony with nature."⁹³ Furthermore, the idea of state responsibility, found in the Stockholm Declaration, has carried over into the Rio Declaration and is embodied in Principle 2.⁹⁴

⁸⁹ Declaration of the Hague on the Environment, Mar. 11, 1989, 28 I.L.M. 1308 [hereinafter Hague Declaration].

⁹⁰ *Id.* at 1309.

⁹¹ The International Court of Justice would have authority to mandate compliance with such agreements and settle international environmental disputes. *See id.* at 1310. In many ways, however, it is difficult to assert that such a remedy is viable. This is mainly due to the failure of states to submit to the jurisdiction of the ICJ in most matters. *See* Lynn Berat, *Defending the Right to a Healthy Environment: Toward a Crime of Geocide in International Law*, 11 B.U. INT'L L.J. 327, 334-36 (1993).

⁹² United Nations Conference on Environment and Development: Rio Declaration on Environment and Development, June 14, 1992, 31 I.L.M. 874 [hereinafter Rio Declaration].

⁹³ *Id.* Principle 1, at 876.

⁹⁴ *See id.* Principle 2 states that:

The Rio Declaration allows for the recognition of state liability for activities that harm the environment.⁹⁵ According to Principle 13, "states shall . . . cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction."⁹⁶ Many of the principles concerning state responsibility, embodied in the conventional sources of international environmental law, have been further developed by the International Law Commission (ILC) in its Draft Articles on State Responsibility.⁹⁷ The set of 35 principles, which constitute the Draft Articles, relate to the responsibility of states for their internationally wrongful acts.⁹⁸

In summary, this brief history of international environmental law illustrates the existence of humanity's right to be secure in a habitable environment. Furthermore, states must take responsibility for their actions and activities that cause destruction to the natural environment. Despite the non-binding status of the Stockholm Declaration and its progeny, there is evidence that the right to a habitable environment and state responsibility have become fixed principles within customary international law.⁹⁹

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

Id.

⁹⁵ See *id.* Principles 13-15 at 878-879.

⁹⁶ *Id.* Principle 13 at 878.

⁹⁷ THE INTERNATIONAL LAW COMMISSION'S DRAFT ARTICLES ON STATE RESPONSIBILITY (Shabtai Rosenne ed., 1991) [hereinafter Draft Articles].

⁹⁸ See *id.* at 169. A more in-depth discussion of the Draft Articles is available *infra*, Part III.B in relation to the application of the principle of state responsibility to marine pollution.

⁹⁹ See note 83 and accompanying text (discussing customary international law). Specific examples of state responsibility found in conventional sources include: Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, 18 I.L.M. 1442 (1989) (dictating that states have the responsibility to limit air pollution); Vienna Convention for the Protection of the Ozone Layer, May 2, 1985, 26 I.L.M. 1529 (recommending that states should take appropriate measure to protect the ozone layer). See also Part V (analyzing MARPOL and the United Nations Convention on the Law of the Sea).

B. *The Application of the General Principles of International Environmental Law to Marine Pollution*

International environmental law has had an impact on marine pollution. The Stockholm Declaration contains a general principle dictating that "[t]he discharge of toxic substances or of other substances . . . must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems."¹⁰⁰ Specifically, it asserts that "[s]tates shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."¹⁰¹

In order to implement the general principles of the Stockholm Declaration, the participants adopted recommendations in the form of an Action Plan¹⁰² to identify international programs and activities. Recommendations 70-85 deal with the general problem of pollution¹⁰³ while Recommendations 86-94¹⁰⁴ deal with the specific problem of marine pollution. Although most of these prescriptions concern scientific research and monitoring efforts, Recommendation 86 urges states to develop norms that effectively prevent despoilment of the oceanic environment.¹⁰⁵

¹⁰⁰ Stockholm Declaration, *supra* note 79, Principle 6, at 1418.

¹⁰¹ *Id.* Principle 7, at 1418.

¹⁰² Action Plan for the Human Environment, *reprinted in* BASIC DOCUMENT OF INTERNATIONAL ENVIRONMENTAL LAW: VOLUME 1, THE IMPORTANT DECISIONS 40-44 (Harald Hohmann ed., 1992). While most of the general recommendations deal with scientific research and the establishment of standardized monitoring systems, there are general principles that mirror those of the Stockholm Declaration.

¹⁰³ *See id.* For example, Recommendation 71 states that:

Governments [should] use the best practicable means available to minimize the release to the environment of toxic or dangerous substances . . . until it has been demonstrated that their release will not give rise to unacceptable risks or unless their use is essential to human health of food production, in which case appropriate control measures should be applied.

Recommendation 71, *Id.* at 41.

¹⁰⁴ *See id.* Recommendations 86-94, at 44-47.

¹⁰⁵ Recommendation 86 states in pertinent part:

It is recommended that Governments . . . :

(a) Accept and implement available instruments on the control of the maritime sources of marine pollution;

(b) Ensure that the provisions of such instruments are complied with by ships flying their flags and by ships operating in areas under their jurisdiction and that adequate provisions are made for review-

Both the World Charter and the Rio Declaration take positions similar to the Stockholm Declaration. As a general principle, the World Charter dictates that "[n]ature shall be respected and its essential process shall not be impaired."¹⁰⁶ Given this general admonition, it details that: "[d]ischarge of pollutants into natural systems shall be avoided and:

- (a) Where this is not feasible, such pollutants shall be treated at the source, using the best practicable means available;
- (b) Special precautions shall be taken to prevent discharge of radioactive or toxic wastes."¹⁰⁷

Although there are no specific recommendations in the Rio Declaration that speak directly to the problem of oceanic pollution,¹⁰⁸ the participants at the Rio Conference were cognizant of the serious nature of marine pollution.¹⁰⁹ Nevertheless, it may be argued that the provisions governing transboundary pollution¹¹⁰ would apply by inference to oceanic pollution.¹¹¹

ing the effectiveness of, and revising, existing and proposed international measures for control of marine pollution;

(c) Ensure that ocean dumping by their national anywhere, or by any person in areas under their jurisdiction, is controlled and that Governments shall continue to work towards the completion of, and bringing into force as soon as possible of, an over-all instrument for the control of ocean dumping as well as needed regional agreements within the framework of this instrument, in particular for enclosed and semi-enclosed seas, which are more at risk from pollution;

...

(e) Participate fully in the 1973 Intergovernmental Marine Consultative Organization (IMCO) Conference on Marine Pollution and the Conference on the Law of the Sea . . . ; and

(f) Strengthen national controls over land-based sources of marine pollution, in particular in enclosed and semi-enclosed seas, and recognize that, in some circumstances, the discharge of residual heat from nuclear and other power-stations may constitute a potential hazard to marine ecosystems.

Id. Recommendation 86, at 44-45.

¹⁰⁶ World Charter, *supra* note 85, General Principle I.

¹⁰⁷ *Id.* Function 12, at 459.

¹⁰⁸ See Ranee Khooshie Lal Panjabi, *From Stockholm to Rio: A Comparison of the Declaratory Principle of International Environmental Law*, 21 DENV. J. INT'L L. & POL'Y 215, 265 (1993).

¹⁰⁹ See *id.* at 264. For example, according to the author, the delegate from Nauru called for "an immediate and permanent ban on the deliberate dumping of all toxic materials into the oceans, including especially radioactive wastes." *Id.*

¹¹⁰ Principle 14 urges states to cooperate to prevent transboundary pollution by dictating that: "States should effectively cooperate to discourage or prevent the

Scholars have posited that the development of international law is influenced by the United Nations¹¹² even though critics of these conventions argue that they provide no binding weight upon states.¹¹³ Thus, U.N. documents encourage the development of international law to the extent that they offer evidence of customary principles which may be perceived as binding upon states.¹¹⁴ Based on the widespread approval of these resolutions, it follows logically that state responsibility for marine pollution has a sufficient foundation in international law.¹¹⁵

The Draft Articles buttress the notion of imposing obligations controlling marine pollution on the states. As a general

relocation and transfer to other States of any activities and substances that cause severe environmental degradation or are found to be harmful to human health." Rio Declaration, *supra* note 92, Principle 14, at 878. Moreover, Principle 13 elaborates on the principle of state responsibility by articulating that:

States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.

Id. Principle 13.

¹¹¹ See Panjabi, *supra* note 108, at 265.

¹¹² See, e.g., OSCAR SCHACHTER, INTERNATIONAL LAW IN THEORY AND PRACTICE 85 (1991) (arguing that while the General Assembly does not have the power to create binding international law, "few would deny that General Assembly resolutions have had a formidable influence in the development of international law matters of considerable importance to national States" *Id.*); JORGE CASTANEDA, LEGAL EFFECTS OF UNITED NATIONS RESOLUTIONS 3 (Alba Amoia trans., Colombia University Press, 1969).

¹¹³ According to Article 14 of the Charter of the United Nations, "the General Assembly may recommend measures for the peaceful adjustment of any situation, . . ." U.N. CHARTER art. 14, reprinted in [1970] U.N.Y.B. 1003. Given this provision, one commentator has argued that these General Assembly Resolutions, of which the Stockholm Declaration, World Charter, and Rio Declaration are, are merely recommendations and are not *per se* legal restrictions. See Mark Caggiano, *The Legitimacy of Environmental Destruction in Modern Warfare: Customary Substance over Conventional Form*, 20 B.C. ENVTL. AFF. L. REV. 479, 502-03 (1993).

¹¹⁴ See SCHACHTER, *supra* note 112, at 91 (positing that "[i]f we treat law-declaring resolutions as *evidentiary*, they may have legal effect as evidence even if they are not unanimous" *Id.*).

¹¹⁵ Evidence of this may be found in the application of what constitutes customary international law. See *supra* note 83 and accompanying text (discussing the basis of customary international law). Moreover, further evidence of international support is found in the fashioning of legal regimes in the form of agreements. See discussion *infra* Part V (evaluating international agreements concerning marine pollution).

principle, the Draft Articles proclaim that "every internationally wrongful act of a State entails the international responsibility of that State."¹¹⁶ The elements necessary to constitute an "internationally wrongful act" are "conduct consisting of an act or omission . . . attributable to the State under international law" and "that conduct constitutes a breach of an international obligation"¹¹⁷ of the State."¹¹⁸

The Draft Articles extend further by explicitly delineating international crimes and international delicts.¹¹⁹ In particular, Article 19 defines an international crime as a "breach by a State of an international obligation so essential for the protection of fundamental interests of the international community." Thus, an international crime may result from a breach of the obligation of "*safeguarding and preserv[ing] . . . the human environment, such as those prohibiting massive pollution of the atmosphere or of the seas.*"¹²⁰ Drawing on the Stockholm Declaration and its progeny, the Draft Articles assert that "[i]t seems . . . undeniable that the obligations flowing from these rules are intended to safeguard interests so vital to the international community that a serious breach of those obligations cannot fail

¹¹⁶ Draft Articles, *supra* note 97, art. 1, at 43. Commentary to the adoption of this Article indicates that the drafters reaffirmed the basis of this principle as found in state practice and judicial decisions. In particular, the Draft Articles cite as authority such cases as the S.S. Wimbledon, 1927 P.C.I.J. (ser. A) No. 1, at 15; Concerning the Factory at Chorzow, 1927 P.C.I.J. (ser. A) No. 17, at 29; Corfu Channel, 1949 I.C.J. 23.

¹¹⁷ It should be noted that the Draft Articles impose a requirement that the international obligation must be in force for the State. According to Article 18, "[a]n act of the State which is not in conformity with what is required of it by an international obligation constitutes a breach of that obligation only if the act was performed at the time when the obligation was in force for that State." Draft Articles, *supra* note 97, Art. 18 at 171. The origin of the obligation, however, may arise through customary, conventional or other sources. See *id.* art. 17 at 163 ("An act of a State which constitutes a breach of an international obligation is an internationally wrongful act regardless of the origin, whether customary, conventional or other, of that obligation." *Id.*).

¹¹⁸ See *id.* Art. 3 at 49.

¹¹⁹ See *id.* Art. 19 at 179. According to Paragraph I, "[a]n act of a State which constitutes a breach of an international obligation is an internationally wrongful act, regardless of the subject-matter of the obligation breached." *Id.* Furthermore, "[a]n internationally wrongful act which results from the breach by a State of an international obligation so essential for the protection of fundamental interests of the international community that its breach is recognized as a crime by that community as a whole constitutes an international crime." *Id.*

¹²⁰ *Id.* Art. 19 at 179-180 (emphasis added).

to be seen by all members of the community as an internationally wrongful act of a particularly serious character."¹²¹

C. *Summary*

The general principles of international environmental law recognize the concept of state responsibility for environmental damage. This corpus of laws imposes an obligation to refrain from activities that harm the environment, specifically the delicate oceanic ecological balance. By applying the theoretical underpinnings of international law, it can be argued that a sufficient basis for these precepts is found in customary,¹²² as well as conventional, sources.¹²³

By virtue of international support, it can be argued that the United States is bound by the general principles of international environmental law. Support for this argument can be found in the language of the Restatement (Third) of Foreign Relations of the United States.¹²⁴ For example, Section 601, entitled "State Obligations with Respect to Environment of Other States and Common Environment," provides that:

[a] state is obligated to take such measures as may be necessary . . . to ensure that activities within its jurisdiction or control

¹²¹ *Id.* at 193.

¹²² See *supra* note 83 and accompanying text.

¹²³ See discussion *infra* Part V detailing the international conventions and agreements concerning marine pollution.

¹²⁴ For example, § 102 recognizes the sources of international law by dictating that:

- (1) A rule of international law is one that has been accepted as such by the international community of states
 - (a) in the form of customary law;
 - (b) by international agreement; or
 - (c) by derivation from general principle common to the major legal systems of the world.
- (2) Customary international law results from a general and consistent practice of states followed by them from a sense of legal obligation.
- (3) International agreements create law for the states parties thereto and may lead to the creation of customary international law when such agreements are intended for adherence by states generally and are in fact widely accepted.
- (4) General principles common to the major legal systems, even if not incorporated or reflected in customary law or international agreement, may be invoked as supplementary rules of international law where appropriate. RESTATEMENT (THIRD) OF FOREIGN RELATIONS OF THE UNITED STATES § 102 (1987).

(a) conform to generally accepted international rules and standards for the prevention, reduction, and control of injury to the environment of another state or of areas beyond the limits of national jurisdiction. . . .¹²⁵

With respect to marine pollution, the Restatement includes a list of responsibilities.¹²⁶ According to Section 603,

- (1) A state is obligated
 - (a) to adopt laws and regulations to prevent, reduce, and control any significant pollution of the marine environment that are no less effective than generally accepted international rules and standards; and
 - (b) to ensure compliance . . . by ships flying its flag, and, in case of a violation, to impose adequate penalties on the owner or captain of the ship.
- (2) A state is obligated to take, individually and jointly with other states, such measures as may be necessary, to the extent practicable under the circumstances, to prevent, reduce, and control pollution causing or threatening to cause significant injury to the marine environment.¹²⁷

Having established state responsibility for environmental despoilment of oceans, and that the United States recognizes these principles; to what extent do they apply to the United States Navy? The following sections analyze the narrower issue of applying international law concerning marine pollution to naval warships and similar vessels. In order to fully understand such an application several areas need to be examined. It is important to comprehend the competing interests that exist in the formation of a rational, legal regime for ocean governance. By scrutinizing these interests, the context of the application of international marine pollution control laws to the United States Navy can be more fully understood.

¹²⁵ *Id.* § 601. Furthermore, this Section recognizes that a state is responsible for "any violations of its obligations . . . , and for any significant injury." *Id.* For a general discussion of general remedies available to states; see *id.* § 602.

¹²⁶ See *id.* § 603. For a general discussion of remedies available for marine pollution; see *id.* § 604.

¹²⁷ *Id.* § 603. The Comments and Reporters' Notes recognize that these principles have a sufficient basis in convention law such as UNCLOS and MARPOL. See *id.* cmts. a-g (detailing the parallels to UNCLOS); see also *id.* Reporters' Notes 3-4.

IV. THE MILITARIZATION OF THE SEAS — NAVAL INTERESTS AND OCEAN GOVERNANCE

A. *Introduction*

The difficulty of establishing a legal regime to govern the world's oceans arises from prioritizing the conflicting uses and interests which determine ocean policy. One commentator has indicated that these priorities can be ordered in a myriad of ways, "[a]s contending power groups in which various interests seek to influence governments, as political models, analogs, or constructs that provide the intellectual substructure for more specific schemes of allocating ocean resources; or as vital national interests of nations-states that cannot be compromised."¹²⁸ Analyzing this dichotomy reveals two sets of conflicting goals and objectives, individual interests and state policies which seek to advance national interests.¹²⁹

Robert A. Shinn posits that "national security and its attendant problems of military and strategic interests have been the most important issues for many nations in sea law conferences."¹³⁰ Moreover, "military security can be expected to be the first in any ranking of priorities."¹³¹ The following section examines U.S. naval interests in ocean governance by analyzing current naval policies to determine if this concept is necessarily true.

¹²⁸ SHINN, *supra* note 23, at 87-88.

¹²⁹ See STEPHEN D. KRASNER, *DEFENDING THE NATIONAL INTEREST: RAW MATERIALS INVESTMENTS AND U.S. FOREIGN POLICY* (1978). Professor Krasner refers to this as a pluralist, liberalist, or interest-group approach to understanding the relations between entities in the international arena. See *id.* at 26-27. "Analytically, liberalism . . . begins with the society. Its basic unit of analysis is the group. Politics is viewed as a competition among organized interests. Government policy is understood to be the 'resultant of effective access by various interests'. . . ." *Id.* at 26, *quoting in part*, DAVID B. TRUMAN, *THE GOVERNMENTAL PROCESS; POLITICAL INTERESTS AND PUBLIC OPINION* 507 (2d ed. 1971).

¹³⁰ SHINN, *supra* note 23, at 88. See also KEN BOOTH, *LAW, FORCE AND DIPLOMACY AT SEA* (1985); D.P. O'CONNELL, *THE INFLUENCE OF LAW ON SEA POWER* (1975).

¹³¹ SHINN, *supra* note 23, at 88. This is not to say that there are no other interests that States may have. To the contrary, there exists concerns over fisheries, commercial uses and scientific research and development that similarly drive the establishment of legal regimes concerning the use of oceans and marine pollution. See P. SREENIVASA RAO, *THE PUBLIC ORDER OF OCEAN RESOURCES: A CRITIQUE OF THE CONTEMPORARY LAW OF THE SEA* 108-20 (1975).

B. National Security and the Use of the Sea

Today, more than any other time in our nation's history, there is a need for joint warfighting and peacekeeping capabilities that can be launched from the sea. In this world's rapidly changing global security environment, there is one enduring reality: the United States is a maritime nation that will always find value in a forward-deployable and self-sustainable global force to project power and protect our national interests.¹³²

Secretary Dalton's sentiments reflect a generalization of the U.S. Navy's main objectives.¹³³ Indeed, the ability to "project power and protect our national interests" is an extension of the pronounced missions¹³⁴ of the United States Naval forces —

¹³² John H. Dalton (Secretary of the Navy), *Forward . . . from the sea*, ALL HANDS, Jan. 1996, at 2.

¹³³ The notion of "Sea Power" has evolved to play an important role in the United States Navy. See, e.g., ADMIRAL ALFRED T. MAHAN, *THE INTEREST OF AMERICA IN SEA POWER, PRESENT AND FUTURE* (1897); WILLIAM P. MACK & THOMAS D. PAULSEN, *THE NAVAL OFFICER'S GUIDE 1-9* (10th ed. 1991). Naval officers are taught that sea power cannot survive without: "A strong, ready navy, capable of projecting its power across the sea and ashore with combinations of surface, submarine, and amphibious forces, and carrier and shore-based air forces, and capable of maintaining a sea-based strategic deterrence system. . . ." *Id.* at 3.

¹³⁴ These prescribed missions of the United States Navy were established in 1970 by Admiral Elmo R. Zumwalt, Jr., former Chief of Naval Operations, and expounded upon by Vice Admiral Stansfield Turner, former President of the Naval War College. See ADM. Stansfield Turner, *Missions of the U.S. Navy*, 26 NAVAL WAR COLLEGE REVIEW 2 (1974). It should be noted that other commentators have viewed naval power and the use of the sea as a means to maximize different values such as security and power; wealth and well-being; respect and rectitude; and enlightenment. See RAO, *supra* note 129 at 167-68. In the case of the first, Rao opines that "States have always relied on seapower in their bid to improve national power and security." *Id.* at 167. At a time when international relations was dominated by the United States and the former Soviet Union, the use of the sea by naval forces was an essential ingredient to mutual deterrence. See *id.* "Wealth and well-being" reflects the national aspiration of States to reach, and defend interests abroad including various economic interests such as food, energy and raw materials. See *id.* at 168. The third factor articulated by Rao, "respect and rectitude," views maintenance of seapower as "essential to preserve the image of a nation as a great power and to gain the respect of others." *Id.* Finally, defense interests tending to augment oceanographic research has led to the "enlightenment" of States as new uses or potentialities arise. See *id.*

strategic deterrence,¹³⁵ sea control,¹³⁶ projection of power ashore¹³⁷ and naval presence.¹³⁸

These missions require substantial use of the oceans by naval forces.¹³⁹ There are three identified classes of military uses:

1. Military uses generated in response to non-military uses: includes policing problems, and protection of shipping, fishing, shores, and property at sea.
2. Military uses generated from special properties of the sea: includes deterrence forces, sea based forces for attacks on foreign shores, and forces based at sea for surveillance of foreign activities.

¹³⁵ Strategic deterrence is viewed as the most important naval mission. See MARK W. JANIS, *SEA POWER AND THE LAW OF THE SEA* 1 (1976). Accordingly, its main objectives are:

1. To deter all-out attack on the United States or its allies;
2. To face any potential aggressor contemplating less than all-out attack with unacceptable risk; and
3. To maintain a stable political environment within which the threat of aggression or coercion against the United States or its allies is minimized.

Id.

¹³⁶ Sea control is defined as "ensuring industrial supplies, reinforcing and resupplying military forces engaged overseas, providing wartime economic and military supplies to allies, and providing safety for naval forces in the projection of power ashore role." *Id.* at 2. In other words, the ability to assert sea control is the ability to keep navigational lanes open for one's own side while denying them to the enemy. See *id.*

¹³⁷ The projection of power ashore entails the ability to use amphibious assault, naval bombardment, and tactical air strikes thereby permitting naval forces to take part in armed conflicts on foreign soil. See *id.*

¹³⁸ Naval presence may be no more than "showing the flag." See *id.* Yet, "[it] may also include the threatened application of another of the naval missions, especially the threat of some sort of projection of power ashore. As such, it can be used in attempts to sway the policies of other countries." *Id.* at 2-3.

¹³⁹ See Honorable Robert A. Frosch, Assistant Secretary of the Navy for Research and Development, Address at the Second Mershon-Carnegie Endowment Conference on Law, Organization, and Security in the Use of the Ocean (Oct. 7, 1967), in MERSHON CENTER FOR EDUCATION IN NATIONAL SECURITY AND CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE, PAPERS PRESENTED AT THE SECOND CONFERENCE ON LAW, ORGANIZATION AND SECURITY IN THE USE OF THE OCEAN 154 (1967) [hereinafter *Mershon Address*]. See also SHINN, *supra* note 23, at 87-88; Myres S. McDougal, *Authority to Use Force on the High Seas*, in 61 READINGS IN INTERNATIONAL LAW FROM THE NAVAL WAR COLLEGE REVIEW: ROLE OF INTERNATIONAL LAW AND AN EVOLVING OCEAN LAW 551 (Richard B. Lillich & John Norton Moore eds., 1980); Oliver J. Lissitzyn, *Electronic Reconnaissance from the High Seas and International Law*, in *Id.* at 563; Michael McGuire, *Changing Naval Operations and Military Intervention*, in *Id.* at 586.

3. Military uses generated by other military uses: includes sub-surface warfare, air defense of and attacks on fleets, and surveillance of enemy military forces.¹⁴⁰

Arising from these generalized uses are various "customary expectations" concerning the use of marine areas for security purposes.¹⁴¹ For example, states have accepted the principle of "freedom of the seas" to include an implied right of "freedom of navigation."¹⁴² In its traditional connotation,¹⁴³ freedom of navigation implied, "the freedom for states to send their military vessels, men-of-war and submarines, across the oceans. This right naturally includ[ed] free passage for military ships through straits that [were] not within territorial waters of a coastal state."¹⁴⁴

Historically, the laws of modern naval operations have recognized the fundamental right of navigation¹⁴⁵ and have

¹⁴⁰ *Mershon Address*, *supra* note 139, at 155-156.

¹⁴¹ *See* RAO, *supra* note 131, at 171.

¹⁴² *Id.* at 172. The author points out that from the Second Punic War, 218-201 B.C. to the present, oceans have been recognized as useful for the "offensive power of nations." *See id.*

¹⁴³ While this concept is outside the scope of the paper, it is nevertheless useful for understanding certain presumptions in both military and legal regimes concerning ocean governance. It is not clear what effect the 1982 United Nations Convention on the Law of the Sea is going to have on this principle. *C.f.* CMDR. Stephen A. Rose, Operational Law, *Naval Activity in the EEZ — Troubled Waters Ahead?*, 39 NAVAL L. REV. 67 (1990). In particular, the Exclusive Economic Zone (EEZ) will attempt to "accommodate two competing interests — the desire of coastal states for greater control over offshore resources versus the perceived need of maritime powers to maintain traditional freedom of action in waters beyond the territorial sea." *Id.* at 67. Moreover, according to Commander Rose, EEZs will present challenges to naval operations in foreign EEZs — specifically military exercises and the type of military devices employed. *See id.* at 73.

¹⁴⁴ *Id.*

¹⁴⁵ The Laws of Naval Operation promulgate two standards concerning Air Navigation. *See* Commander's Handbook on the Law of Naval Operations, Department of the Navy, § 2.5 [hereinafter *Commander's Handbook*]. Under the first, National Airspace, it is stated that:

Under international law, every nation has complete and exclusive sovereignty over its national airspace, that is, the airspace above its territory, its internal waters, its territorial sea, and . . . its archipelagic waters. There is no customary right of innocent passage of aircraft through the airspace over the territorial sea or archipelagic waters analogous to the right of innocent passage enjoyed by surface ships.

Id. § 2.5.1. For a discussion of "innocent passage" *see* note 144 and accompanying text.

adopted it into the protocols governing the use of vessels in national¹⁴⁶ and international¹⁴⁷ waters.

Modern science and technology have changed the perspective of naval strategists.¹⁴⁸ The result is a formidable arsenal of

Concerning the second case, international airspace, the Commander's Handbook proposes that:

All international airspace is open to the aircraft of all nations. Accordingly, aircraft, including military aircraft, are free to operate in international airspace without interference from coastal or island nation authorities. Military aircraft may engage in flight operations, . . . surveillance and intelligence gathering, and support of other naval activities.

Id. § 2.5.2.

¹⁴⁶ See *id.* § 2.3. The law governing navigation in national waters is largely governed by the concept of "innocent passage." See *id.* §§ 2.3.2 and 2.3.4. Innocent passage dictates that:

International law provides that ships (but not aircraft) of all nations enjoy the right of innocent passage for the purpose of continuous and expeditions traversing of the territorial sea or for proceeding to or from internal waters. [It] includes stopping and anchoring, but only insofar as incidental to ordinary navigation, or as rendered necessary by *force majeure* or distress. Passage is innocent so long as it is not prejudicial to the peace, good order, or security of the coastal or island nation. Among the military activities considered prejudicial . . . , are:

1. Any threat or use of force against the sovereignty, territorial integrity, or political independence of the coastal or island nation;
2. any exercise or practice with weapons of any kind;
3. the launching, landing, or taking on board of any aircraft or any military device;
4. intelligence collection activities detrimental to the security of that coastal or island nation; and
5. the carrying out of research or survey activities.

Id. In international straits, the notion of transit passage applies, which is defined as "the exercise of the freedoms of navigation and overflight solely for the purpose of continuous and expeditious transit in normal modes of operation utilized by ships and aircraft for such passage." See *id.* § 2.3.3.1.

¹⁴⁷ See *id.* § 2.4. The Commander's Handbook articulates a standard governing international waters that is essentially based on the traditional notion of freedom of navigation. See *supra* note 145 and accompanying text. Under § 2.4.3, the Commander's Handbook dictates that:

[a]ll ships and aircraft, including warships and military aircraft, enjoy complete freedom of movement and operation on and over the high seas. For warships, this includes task force maneuvering, flight operations, military exercises, surveillance, intelligence gathering activities, and ordnance testing and firing. . . . All of these activities must be conducted with due regard for the rights of other nations and for the safe conduct and operation of other ships and aircraft.

Commander's Handbook, *supra* note 145, at § 2.4.3

¹⁴⁸ See RAO, *supra* note 131, at 166. Over time, technological advancements have seen efforts to diminish the noise of submarines, and improve its speed and range. See *id.*

strike platforms capable of being delivered to any remote region of the world. It is clear that interests concerning national security remain and that the United States still places reliance on its naval forces.¹⁴⁹ However, the concept of the World Charter that oceans are a common heritage of mankind, is emerging alongside those traditional principles of security.¹⁵⁰ Actors, such as the military, must take steps to ensure the ocean's conservation by minimizing the hazardous effects of marine pollution.¹⁵¹

C. *Environmental Protection and Conservation —
An Emerging Interest*

We [a]re . . . the users, managers, and protectors of a significant portion of the nation's most ecologically important lands. Our area of operations includes the global air, land, marine, and estuarine environments Our continued mission access to domestic airspace, land, and coastal waters is dependent on public confidence that we are competent and conscientious stewards of resources entrusted to our use. We must earn this confidence on an installation by installation, and on an operation by operation, basis.¹⁵²

The traditional missions¹⁵³ of the Navy have begun to incorporate environmental concerns and a recognition that "[r]eadiness and protection of the environment are inextricably linked."¹⁵⁴ However, environmental laws and standards could

¹⁴⁹ *C.f. The Strategic Imperative*, ALL HANDS, *supra* note 132 at 4. The strategic imperative still recognizes that:

[o]ur vital economic and security interests are dispersed around the globe. Because [the United States is] a maritime nation [its] strategy is necessarily a transoceanic one. Deployed naval forces will provide the critical operational links between peacetime operations and the requirements of a developing crisis or major regional contingency.

Id.

¹⁵⁰ See discussion, *supra* Part III.A.

¹⁵¹ See, e.g., *We Protect the Environment - We live Here, Too*, ALL HANDS, *supra* note 132, at 6. "In today's Navy, caring for the environment is an operational necessity. We are dedicated to environmental issues because it is the right thing to do. This dedication allows us to complete our mission more effectively. . . . Every day is Earth Day in the Navy." *Id.*

¹⁵² Department of the Navy, Natural Resources Conservation Strategic Plan, available at <<http://www.enviro.navy.mil/conserv.htm>>.

¹⁵³ See *supra* notes 134-38 and accompanying text.

¹⁵⁴ Cheryl A. Kandaras, Principal Deputy Assistant Secretary of the Navy (Installations and Environment), *Statement Before the Subcommittee on Defense of*

hamper the ability of naval forces to achieve their missions.¹⁵⁵ Despite this potential, the Navy has attempted to implement broad, sweeping policies to confront the military's environmental obstacles and comply with the imposed prescriptions and standards.

The following sections examine current Naval environmental policies. In order to understand the application of environmental laws to naval ships, the unique status of these vessels will be analyzed. Subsequent sections will survey current environmental policies utilized by the U.S. Navy within the context of application and compliance with federal and international environmental standards.

1. *The unique status of naval vessels*

The status of naval vessels is important in determining the applicability of environmental laws.¹⁵⁶ For example, the designation of a ship as a "public vessel" may accord it certain statutorily defined deferential rights,¹⁵⁷ or federal sovereign immunity.¹⁵⁸ A complication exists, because, the current set of na-

the Senate Appropriations Committee on the Department of the Defense Environmental Programs (May 17, 1994) 1994 WL 14187864 at 2 [hereinafter *Kandaras Testimony*].

¹⁵⁵ See *id.* at 2. "We are mindful that federal, state or local environmental standards can, short of national security situations, reduce or preclude our training options, and thus our mission capability." *Id.* See also, Daniel E. O'Toole, *Regulation of Navy Ship Discharges under the Clean Water Act: Have too Navy Chefs Spoiled the Broth?*, 19 WM. & MARY ENVTL. L. & POL'Y REV. 1 (1994).

[T]he critical nature of the confrontation posited between a state and Navy ships may not be mere fiction but could be entirely possible, indeed inevitable, given the current state of environmental laws and the increasingly aggressive posture taken by many states in interpreting and applying those laws to Navy ship discharges.

Id. at 2.

¹⁵⁶ See *id.* at 4-7.

¹⁵⁷ See *id.* at 3, n.11.

¹⁵⁸ "Federal sovereign immunity . . . has historically barred the states from regulating federal activities." *Id.* at 25. Moreover, the notion of Federal sovereign immunity is grounded in the Supremacy Clause (Article VI) of the Constitution of the United States. See *id.*

This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

U.S. CONST. art. VI, cl. 2.

val ships is composed of a wide variety of vessel types possessing various capabilities. Thus, without examination, it is difficult to categorize the nature of a ship for purposes of certain environmental statutes.¹⁵⁹ It is uncontested that warships,¹⁶⁰ a fundamental characteristic of vessels in an active fleet,¹⁶¹ are unique public vessels due to their constitutionally derived mission.¹⁶² It has been articulated that, "warships are designed as platforms to carry weapons systems and the personnel required to operate them."¹⁶³ This broad definition encompasses aircraft carriers,¹⁶⁴ surface warfare ships,¹⁶⁵

¹⁵⁹ See O'Toole, *supra* note 155, at 7.

¹⁶⁰ According to the Commander's Handbook on the Law of Naval Operations:

International law defines a warship as a ship belonging to the armed forces of a nation bearing the external markings distinguishing the character and nationality of such ship, under the command of an officer duly commissioned by the government of that nation and whose name appears in the appropriate service list of officers, and manned by a crew which is under regular armed forces discipline. In the U.S. Navy, those ships designated "USS" are warships as defined by international law.

Commander's Handbook, *supra* note 145, at § 2.1.1.

¹⁶¹ See *id.* at 5.

¹⁶² See O'Toole, *supra* note 153, at 3-4. The Constitution dictates that "Congress shall have the power to . . . provide for the common Defense and the general Welfare of the United States . . . [and] to provide for a Navy." U.S. CONST. art I, sec. 8, cl. 1. Moreover, Congress is charged with the duty "to provide for organizing, arming, and calling forth the Militia to execute the laws of the union, suppress insurrections, or repel invasions." *Id.* at cl. 14.

¹⁶³ O'Toole, *supra* note 153, at 5.

¹⁶⁴ Aircraft carriers are charged with the following general mission: "The centerpiece of the Navy's offensive and defensive strategy, carriers support and operate aircraft that engage in attacks on airborne, afloat, and ashore targets which threaten our use of the sea. These vessels also engage in sustained operations in support of other forces." *Naval Ships*, ALL HANDS, *supra* note 132, at 38. The Navy has five classes of carriers each with different strike capabilities: (1) Kitty Hawk (CV 63) Class; (2) John F. Kennedy (CV 67) Class; (3) Enterprise (CVN 65) Class; (4) Nimitz (CVN 68) Class; and (5) Forrestal (CV 59) Class. See *id.*

¹⁶⁵ Surface Warfare Ships are "[p]rimary surface-borne combatants [that] conduct at-sea battle operations against surface, air and sub-surface enemies, [that] protect sea lanes and [that] serve as front-line support to aircraft carriers in a battle group." *Id.* Frigates, Cruisers, and Destroyers are considered as primarily surface warfare vessels. See *id.*

ballistic missile and attack submarines,¹⁶⁶ amphibious warfare ships¹⁶⁷ and mobile combat logistics forces.¹⁶⁸

In addition to warships, the Navy maintains an extensive fleet of auxiliary vessels. The Commander's Handbook on the Law of Naval Operations defines "auxiliaries" as:

all vessels which comprise the Military Sealift Command (MSC) Force.¹⁶⁹ The MSC Force includes: (1) United States Naval Ships (USNS) (i.e., U.S. owned vessels or those under bareboat charter, and assigned to MSC); (2) the National Defense Reserve Fleet and the Ready Reserve Force¹⁷⁰ (RRF) (when activated and assigned to MSC); (3) privately owned vessels under time charter assigned

¹⁶⁶ Ballistic Missile Submarines mainly deliver fleet missiles such as the Trident II (D-5) and Trident I (C-4) missiles. *See id.* at 34. Attack submarines, a relatively new strike platform, has the duty to "destroy enemy ships, primarily submarines, [and] to prohibit the employment of such forces against the United States or allied ships." *Id.* at 38.

¹⁶⁷ Assault ships; amphibious transport docks and command ships; tank landing; and dock landing ships are considered amphibious warfare ships. *See id.* at 40-41. Their main mission is to "[c]arry assault troops and equipment to enemy beaches and serve combat support platforms for these forces." *Id.* at 40.

¹⁶⁸ Mobile combat logistics forces "provide fuel, provisions and ammunition to combatant ships at sea via underway and vertical replenishment. These ships are an integral part of carrier battle groups as fuel, ammunition and stores reservoirs." *Id.* at 39. There are essentially five different types of these vessels: (1) fast combat support ships which redistribute petroleum products, ammunition, and stores; (2) replenishment oilers which "deliver petroleum and munitions simultaneously to carrier battle groups using both connected and vertical replenishment;" (3) Ammunition ships which deliver ammunition and stores; (4) fleet oilers which "transport bulk petroleum and lubricants from depots to underway battle groups station ships . . .;" and (5) combat stores which "conduct underway replenishment of refrigerated stores, dry provisions, technical spares, general stores, fleet freight, mail and personnel." *Id.*

¹⁶⁹ Typical vessels comprising the Military Sealift Command (MSC) include fast sealift vessels; combat stores; oilers; and tankers. *See Naval Ships, supra* note 132, at 42-43. Since these ships are not commissioned, the vessels bear the designations United States Navy Ship (U.S.N.S.) rather than United States Ship (U.S.S.). *See O'Toole, supra* note 153, at 5-6. While these ships are further distinguished by blue and yellow bands encircling their stacks, they do fly the naval ensign of the United States. *See id.* at 6. Finally, the crews are primarily civilians. *See id.*

¹⁷⁰ The Ready Reserve Force (RRF) is:

A force of inactive ships [designed] to provide militarily useful transportation to meet wartime surge sealift requirements. Sources of RRF ships are commercial ships that are purchased through competitive procedure; ships from the near term pre-positioning force which are upgraded to meet RRF standards; and ships removed from active MSC service. RRF ships are maintained in a 5-, 10- or 20-day readiness status.

Naval Ships, supra note 132, at 43.

to the Afloat Prepositioned Force (APF); and (4) those vessels chartered by MSC for a period of time or for a specific voyage or voyages.¹⁷¹

Because these vessels are used for governmental noncommercial service, auxiliaries enjoy federal sovereign immunity.¹⁷² Yet, one commentator has indicated that

a number of ships operating under Navy auspices at any given time, *such as MSC vessels*, might not qualify as “public” vessels for lack of sufficient indicia of Government ownership, *despite* the fact that a given ship may have been built to Navy specifications and placed under operational control of the Navy by long term and exclusive charter.¹⁷³

This categorization is significant because of its effect on the applicability of certain environmental standards and/or exceptions.¹⁷⁴

In summary, the previous discussion illustrates two major classes of naval vessels — warships and auxiliaries. Each is charged with different functions essential to achieving the missions of the naval forces. Yet, to what extent does international and federal environmental laws dealing with marine pollution affect their peacetime operations? Framing this question, within a proper context, is necessary to examine current naval policies towards environmental protection.

2. *United States Naval environmental policy*

The Department of the Navy[s] mission is to defend our national interest by projecting military power from the sea to land Because we need continued use of and access to . . . our seas and the airspace over them, we view our environmental program as an integral part of our overall management effort to accomplish our mission.¹⁷⁵

Since 1990, the environmental efforts of the Navy have grown exponentially as its programs have grown over 230 percent.¹⁷⁶ In fiscal year 1995, the Department of the Navy sought

¹⁷¹ Commander's Handbook, *supra* note 145, at § 2.1.2.3.

¹⁷² *See id.*

¹⁷³ O'Toole, *supra* note 155, at 6 (emphasis added).

¹⁷⁴ *See* discussion *infra* Part V.C.

¹⁷⁵ *Kandaras Testimony*, *supra* note 154, at 2.

¹⁷⁶ *See id.* at 3.

funding for environmental cleanup, compliance, conservation, pollution prevention and technological development.¹⁷⁷ It was estimated that in 1995, the Navy would spend approximately 1.8 million dollars.

<u>PROGRAM</u>	<u>Amount in millions</u>
Cleanup	\$ 538
Compliance	\$ 768
Conservation	\$ 18
Pollution Prevention	\$ 141
Technology	\$ 73
BRAC ¹⁷⁸	\$ 274
TOTAL	\$1,812¹⁷⁹

A comprehensive set of environmental programs which the Navy seeks to implement has emerged. Naval forces have become cognizant of two problematic areas — pollution prevention and conservation.¹⁸⁰

¹⁷⁷ See *id.* Collectively, this program is known as "C3P2T." See *id.*

¹⁷⁸ BRAC refers to "base realignment and closure decisions." *Kandaras Testimony, supra* note 154, at 3. This amount includes funds allocated for environmental assessments, compliance, and cleanup efforts in support of the BRAC. See *id.*

¹⁷⁹ See *id.* In comparison, the Navy spent (in millions) the following in previous fiscal years:

<u>PROGRAM</u>	<u>FY 1993</u>	<u>FY 1994</u>
Cleanup	\$ 370	\$ 404
Compliance	\$ 616	\$ 768
Conservation	\$ 10	\$ 20
Pollution Prevention	\$ 105	\$ 122
Technology	\$ 68	\$ 90
BRAC	\$ 105	\$ 386
TOTAL	\$1,274	\$1,762

Id.

¹⁸⁰ Other issues of concern to the U.S. Navy are issues such as bioremediation; the cleanup of Kaho'olawe; environmental compliance; and ozone depleting substances (ODS). See *id.* at 7. "Bioremediation" is essentially a remedial measure whereby "naturally occurring microorganisms consume the contamination in the soil as a source of food and energy. The microorganisms reduce the contaminants to non-hazardous forms of carbon dioxide, water, and cell mass." *Id.* Kaho'olawe presents a unique problem in that the Navy is faced with cleaning up this island former used as a weapons range. See *id.* On May 7, 1994, the United States handed back control of the island to the state of Hawaii. FACTS ON FILE WORLD NEWS DIGEST, June 2, 1994 at 397 E3. See also *Navy Test Ground Returns to Hawaii*, N.Y. TIMES, May 9, 1994, at A12. The Navy will continue to control access to the island until 2003, or until all exploded ordnance are removed. See *id.* In terms of environmental compliance, the principle challenges facing the Navy and Marine

(a) Pollution prevention

For many years, the nation's environmental strategies have focused on "end-of-the-pipe" waste management and treatment. We now recognize that we must reduce pollution at all points in our military and industrial process if we are to reduce the amount and the toxicity of waste at the end of the process. We view pollution prevention as the primary means for the Department of the Navy to achieve and maintain compliance with the environmental requirements and preserve our access to the sea, air, and land.¹⁸¹

Pollution prevention has become a major issue for naval forces.¹⁸² Previous programs have outline the putative benefits of policies such as "hazardous waste minimization, shipboard systems, solid waste and recycling, maintenance process improvement, hazardous material control, ozone depleting substances and acquisition management."¹⁸³ There are two significant marine pollution programs; shipboard solid waste and effluent compliance.

The Navy has acknowledged that "[its] ships and submarines present a unique environmental challenge,"¹⁸⁴ in dealing with solid waste. As a result, goals of minimizing waste genera-

Corps are complying with the Clean Water Act, Clean Air Act, Toxic Substances Control Act, Resource Conservation and Recovery Act, and Comprehensive Environmental Response, Compensation, and Liability Act. *Kandaras Testimony*, *supra* note 152, at 7-8. The Navy's ODS program began in 1989 and its initial focus was to "identify, test, qualify and implement alternatives to ODS in . . . weapons systems and platforms." *Id.* at 15. What has developed are comprehensive shore and sea programs. *See id.*

¹⁸¹ *Kandaras Testimony*, *supra* note 154, at 13.

¹⁸² *See generally*, Elsie Munsell, Address Before the U.S. Navy Pollution Prevention Conference: Held in Crystal City, Virginia on June 6, 1995 (detailing the importance of pollution prevention programs) [hereinafter *Pollution Prevention Speech*]. According to Munsell:

[p]ollution prevention is a key pillar, if not the key of our overall environmental security program. More and more, pollution prevention and compliance are becoming interwoven as [the Navy] look[s] for ways to reduce the cost of compliance with the numerous Federal, state and local environmental statutes. . . . Lowering the cost of compliance will lower the cost of operating and maintaining our weapon systems throughout the fleet. Besides lowering the cost of compliance and protecting the environment, pollution prevention is critical to protecting the health of our people, ensuring our ability to operate and train effectively and protecting our nation.

Id. at 2.

¹⁸³ *Kandaras Testimony*, *supra* note 154, at 13.

¹⁸⁴ *Id.* at 9.

tion and maximizing waste management have been set.¹⁸⁵ For example, by December 31, 1998, U.S. Naval surface ships will be modified to comply with a plastics discharge prohibition.¹⁸⁶ The Naval Supply Systems Command, as a means to reduce the amount of plastics going aboard ships, established the Plastics Removal in the Marine Environment (PRIME) Program.¹⁸⁷ Concerning effluent compliance, "[the U.S. Navy's] environmentally sound ship goal also extends to liquid wastes."¹⁸⁸ As a result, naval commands have developed methods to control the discharge of bilge water and other wastes.¹⁸⁹

In order to meet its objectives, the Navy has implemented a Pollution Prevention (P2) Program¹⁹⁰ consisting of four distinct efforts: (1) Acquisition P2;¹⁹¹ (2) Base Level P2;¹⁹² (3) P2 Research and Development¹⁹³ and (4) Outreach and Awareness.¹⁹⁴

¹⁸⁵ *See id.*

¹⁸⁶ *See id.* at 10. Submarines are required to comply with plastics discharge requirements by December 31, 2008. *See id.* *See infra* Part V (discussing the application of the International convention for the Prevention of Pollution from Ships to naval forces).

¹⁸⁷ *Kandaras Testimony*, *supra* note 154, at 16-17.

¹⁸⁸ *Id.* at 10.

¹⁸⁹ *See id.* at 10. *See* discussion *infra* Part VI.B.

¹⁹⁰ Department of the Navy, Pollution Prevention (P2) Program [hereinafter P2 Program].

¹⁹¹ Acquisition pollution prevention is essentially a response to the MARPOL Convention. *See id.* *See also* discussion *infra* Part V. In its general form, the theory of this program is to "prevent generation of new sources of hazardous material through acquisition reform." P2 Program, *supra* note 190 at 1.

¹⁹² This program targets the use of alternative methods of operations. For example, Base Level Pollution Prevention advocates the use of energy conservation, the introduction of alternative fuel vehicles for Navy and Marine Corps use; reductions in the cost and quantity of hazardous wastes associated with aerosol cans, and the imposition of a Consolidated Hazardous Material Re-utilization and Inventory Management Program (CHRIMP) based on the concept of centralized control and cradle-to-grave management of hazardous wastes. P2 Program, *supra* note 190.

¹⁹³ Technological advancements are the cornerstone of the Pollution Prevention Research and Development Program. For example, Fleet Activity Support & Technology Transfer Teams Environment (FASTT-E) assists in the minimization of hazardous materials and hazardous waste generation through site surveys, education, and implementation of P2 opportunities. *See id.* Furthermore, technological advancements concerning shipboard waste management fall within this program. *See id.* *See also* discussion *infra* Part VI (detailing naval efforts to comply with MARPOL and domestic marine pollution control standards).

¹⁹⁴ According to this program, "Navy Environmental Leadership Program (NELP) activities are selected to serve as model installations in the pollution prevention area. Through the application of the P2 planning process and the equip-

It is believed that implementation of these P2 initiatives will "help improve military readiness . . . by improving maintenance cycle times and reliability, improving personnel safety, reducing the regulatory burden on [the U.S. Navy's] activities, and increasing productivity."¹⁹⁵ Moreover, "[f]rom an environmental perspective, pollution prevention improves environmental compliance by reducing releases into the air and water, along with decreased hazardous waste disposal."¹⁹⁶

(b) Conservation

Given the relative importance of federal statutes such as the Endangered Species Act,¹⁹⁷ the Clean Water Act¹⁹⁸ and the Migratory Bird Act,¹⁹⁹ the Department of the Navy has become "particularly sensitive to the need to protect the natural and cultural resources on [its] bases."²⁰⁰ As a result, it has aligned itself with the efforts of private, state and federal conservation organizations²⁰¹ to develop initiatives such as fish and wildlife management.²⁰²

In addition to these programs, the U.S. Navy has established its own Natural Resources Conservation Strategic Plan.²⁰³ According to this framework, the U.S. Navy articulates that its "vision . . . is to be a leader in natural resources conservation and compliance. Natural resources stewardship is emphasized because [the U.S. Navy] recognize[s] that . . . national security is inextricable linked to local, regional, and global eco-

ment procurement program at these locations, the Navy will develop new and better ways to conduct day-to-day management of captivity environmental programs." P2 Program, *supra* note 190 at 3.

¹⁹⁵ *Pollution Prevention Speech*, *supra* note 182, at 4-5.

¹⁹⁶ *Id.* at 5.

¹⁹⁷ 16 U.S.C.A. § 1531 (1996).

¹⁹⁸ 33 U.S.C.A. § 1251 (1996).

¹⁹⁹ 16 U.S.C.A. § 703 (1996).

²⁰⁰ *Kandaras Testimony*, *supra* note 154, at 11.

²⁰¹ For example, the Navy has aligned itself with such organizations as Partners in Flight, a migratory bird program; the North American Waterfowl Management Plan; the Chesapeake Bay Program; the Gulf of Mexico Initiative; the Washington State Environment 2000 Initiative; and the Watchable Wildlife Program. *See id.*

²⁰² Additional programs include forest management, soil and water conservation, and outdoor recreation opportunities. *See id.*

²⁰³ Conservation Strategic Plan, *supra* note 152.

logical integrity.”²⁰⁴ Naval forces must “strengthen national security by strengthening conservation aspects of environmental security” and “preserve the opportunity for a high quality of life for present and future generations of Americans.”²⁰⁵ In order to attain these goals, the U.S. Navy has set the objective to “build a strong conservation ethic throughout the Department”²⁰⁶ The necessary means are to “prepare and implement installation integrated natural resources management programs”²⁰⁷ which “[e]nsure optimum utilization of land and water resources while maintaining ecological integrity.”²⁰⁸

D. *Summary*

The preceding sections illustrate a dichotomy of naval policies concerning ocean governance. Although, in accordance with Shinn’s concept, the Navy’s central role is protecting the maritime interests of the United States both domestically and abroad, even the naval commanders have become aware of the need for an elaborate scheme of environmental policies.²⁰⁹ In

²⁰⁴ *Id.* at 1.

²⁰⁵ *Id.* at 2. In addition to these pronounced goals, the Navy seeks to “[p]reserve [its] mission access to air, land, and sea resources.” *Id.*

²⁰⁶ *Id.* In addition, the Navy declares that it must “[d]evelop and sustain strong natural resources programs at [its] installations [and] [e]arn public confidence in the . . . Navy [sic] stewardship of the nation’s natural heritage.” *Id.*

²⁰⁷ *Id.*

²⁰⁸ Conservation Strategic Plan, *supra* note 152, at 2-3. This is by no means the only scheme to be utilized. The Navy also hopes to:

Plan, program, and budget for natural resources projects and functions as a cost of doing business. Identify all natural resources project funding requirements Ensure attention to natural resources conservation opportunities and constraints when formulating land use and management decisions. Use geographic information systems (where available) to integrate natural resources management objectives with mission requirements on Department of the Navy lands. Allow public recreational access to Department of the Navy controlled lands when there is no military mission or safety constraint and when environmental attributes will not be adversely affected. Ensure optimal natural resources program staffing, funding, and organizational alignment at each Department of the Navy activity. . . . Encourage a personal commitment to environmental stewardship by all . . . personnel. Implement meaningful measures of merit to ascertain success/failure of stewardship initiatives and mitigation (compliance) requirements. [And p]reserve biological diversity.

Id. at 3.

²⁰⁹ See *supra* note 127 and accompanying text.

many instances, these policies are commensurate with the notion of state responsibility for environmental despoilment.

To what extent does or will the U.S. Navy follow the existing international environmental policies? The following sections examine this question by analyzing the application of international marine pollution laws to the U.S. Navy. Furthermore, subsequent sections illustrate the extent to which naval forces comply with these prescriptions. In fact, as a baseline consideration, naval commanders, "shall observe and require his command to observe the principles of international law. Where necessary to the fulfillment of this responsibility, a departure from other provisions of Navy Regulations is authorized."²¹⁰ The Commander's Handbook on the Law of Naval Operations justifies this principle by stating that:

International law provides stability in international relations and an expectation that certain acts or omissions will effect predictable consequences. If one nation violates the law, it may expect that others will reciprocate. Consequently, failure to comply with international law ordinarily involves greater political and economic costs than does observance. In short, nations comply with international law because it is in their interest to do so.²¹¹

V. APPLYING INTERNATIONAL LAW TO VESSEL-SOURCE POLLUTION AND THE UNITED STATES NAVY

By the end of the 1960s, the *Torrey Canyon*²¹² accident led to international cognizance and serious consideration of the problem of marine environmental pollution.²¹³ Prior to this occurrence, most early marine pollution treaties were concerned with oil pollution by private vessels.²¹⁴ Moreover, as international environmental law was experiencing its genesis in the

²¹⁰ Bernard H. Oxman, *International Law and Naval and Air Operations at Sea*, in INTERNATIONAL LAW STUDIES 1991: THE LAW OF NAVAL OPERATIONS 21 (Horace B. Robertson, Jr. ed., 1991).

²¹¹ COMMANDER'S HANDBOOK, *supra* note 145, *preface*.

²¹² See *supra* note 21 and accompanying text.

²¹³ KISS & SHELTON, *supra* note 21, at 163.

²¹⁴ Dehner, *supra* note 6, at 511-12. These include the 1926 Draft Convention on Oil Pollution of Navigable Waters, I Foreign Relations of the United States 238 (1926); The 1956 International Convention for the Prevention of Pollution of the Sea by Oil, 9 I.L.M. 1, July 26, 1958; Convention on the High Seas, 13 U.S.T. 2312, April 29, 1958; the 1969 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 9 I.L.M. 25, Dec. 31, 1970.

early 1970s, additional agreements concerning marine pollution were promulgated.²¹⁵ These included the 1974 International Convention for Safety of Life at Sea²¹⁶ and the 1972 Intergovernmental Conference on the Convention of the Dumping of Wastes at Sea.²¹⁷ In the area of vessel-source pollution and ship-generated wastes, however, commentators have focused exclusively on the prescriptions and proscriptions of the International Convention for the Prevention of Pollution From Ships and its amending Protocol of 1978 (MARPOL),²¹⁸ and the United Nations Convention on the Law of the Sea (UNCLOS) as the important vehicles for imposing marine pollution standards on vessels during routine operations.²¹⁹ The following section examines MARPOL and UNCLOS and their application to naval vessels by scrutinizing their substantive provisions. As this section will illustrate, while the conventions provide for clear prohibitions, the problem of sovereign immunity may ultimately affect compliance. Nevertheless, this section concludes

²¹⁵ For a general history concerning vessel-source pollution, see SCHNEIDER, *supra* note 31, at 205-07; and KISS & SHELTON, *supra* note 21, at 162-68. In addition, regional efforts have addressed the problem of vessel-source pollution. See generally SCHNEIDER, *supra* note 31, at 207-08. For example, in the Northeast Atlantic region, the Agreement Concerning Pollution of the North Sea by Oil (Bonn Agreement) was signed by Belgium, Denmark, France, Germany, the Netherlands, Norway, Sweden, and the United Kingdom in order to make assessments of oil pollution casualties and take certain ameliorative actions. See 9 I.L.M. 359, April 9, 1970. In the Baltic area, strides were taken to provide a legal framework to cover all sources of marine pollution. See The Convention on the Protection of the Marine Environment of the Baltic Sea Area (Helsinki Convention), 13 I.L.M. 544, March 22, 1974. One final example is the Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention). See 15 I.L.M. 290, Feb. 16, 1976.

²¹⁶ 14 I.L.M. 959, July 1, 1975. While this Convention deals with matters such as partitioning and stabilizing cargo, machinery and electrical installations, fire prevention, and radio and navigational equipment, its ultimate utility is seen as bolstering the importance of MARPOL decided one year early. SCHNEIDER, *supra* note 31, at 206.

²¹⁷ 11 I.L.M. 1291, Nov. 13, 1972. The scope of this Convention is outside the scope of the Article, but it is nevertheless important to note that according to the convention, dumping is "any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea", *id.* art. III(a)(i), at 1295, but this excludes "[the] disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels. . . ." *Id.* Art. III(b)(i), at 1296.

²¹⁸ 12 I.L.M. 1319, Nov. 2, 1973 [hereinafter *MARPOL*].

²¹⁹ See generally KISS & SHELTON, *supra* note 21, at 174-78 (detailing the innovative values of these conventions in resolving the issues of marine pollution).

that despite obstacles to the imposition of the conventional prescriptions to naval vessels, states have a good-faith duty to adhere to the provisions arising from the general principles and obligations of international environmental law.

A. MARPOL

MARPOL was intended to supersede the 1954 International Convention for the Protection of Pollution of the Sea by Oil.²²⁰ The integrated Convention/Protocol was designed to "limit and prohibit certain types of vessel-source pollution on a global scale."²²¹ It functions to regulate marine pollution through the principal convention, three protocols and five annexes.²²²

MARPOL, which applies to ships,²²³ set forth the general premise that there exists "the need to preserve the human environment in general and the marine environment in particular."²²⁴ The term "pollution" is not expressly defined in the provisions of the Convention. However, its elements are found in the definition of "discharge"²²⁵ which "in relation to harmful substances or effluents containing such substances, means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying" ²²⁶

²²⁰ See EDITH BROWN WEISS ET AL., *INTERNATIONAL ENVIRONMENTAL LAW: BASIC INSTRUMENTS AND REFERENCES* 327 (1992).

²²¹ Dehner, *supra* note 6, at 516.

²²² See KISS & SHELTON, *supra* note 21, at 175.

²²³ "Ship" is defined as "a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms." MARPOL, *supra* note 218, Art. 2(4).

²²⁴ *Id.* preamble. The 1978 Protocol appears at 17 I.L.M. 546, May 31, 1978.

²²⁵ See KISS & SHELTON, *supra* note 21, at 173.

²²⁶ MARPOL, *supra* note 218, Art. 3(a). The definition further states that discharge does not include:

(i) dumping within the meaning of the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter . . . ;

(ii) release of harmful substances directly arising from exploration, exploitation and associated off-shore processing of sea-bed mineral resources; or

(iii) release of harmful substance for purposes of legitimate scientific research into pollution abatement or control.

Id. Art. 3(b)(i)-(iii).

The governing scheme of the annexes of MARPOL is regulation by the type of pollutant. Thus, Annex I governs oil, Annex II relates to the control of pollution by noxious liquids in bulk, Annex III regulates pollution by harmful substances carried in package form, Annex IV concerns the discharge of sewage and Annex V deals with pollution by garbage from ships. The first two annexes are "mandatory" in nature and have been in force since October 2, 1983,²²⁷ Annexes III through V are optional. According to Article 15, an optional annex enters into force twelve months after the date on which no less than fifteen States, representing fifty percent of the gross tonnage of the world's merchant shipping, have ratified them.²²⁸ For example, the ratification by the United States of Annex V of MARPOL, in late 1987, satisfied the tonnage requirements for that annex.²²⁹

As stated, Annex V specifically regulates pollution by garbage from ships. The term "garbage" means "all kinds of victual, domestic and operational waste excluding fresh fish parts thereof, generated during normal operation of the ship and liable to be disposed of continuously or periodically"²³⁰ Furthermore, the jettisoning into the sea of all plastics is expressly prohibited.²³¹ Other types of waste are to be disposed of "as far as practicable from the nearest land"²³² In addition to that limitation, certain forms of waste may not be disposed of if it is within a certain minimum threshold distance from land. For example, Regulation 3 of Annex V dictates that disposal is prohibited if the distance from the nearest land is less than:

- (i) 25 nautical miles for dunnage, lining and packing materials which will float;

²²⁷ See WEISS ET AL., *supra* note 220, at 327.

²²⁸ See MARPOL, *supra* note 218, Art. 15(1),(2).

²²⁹ See Dehner, *supra* note 6, at 518. Annex V entered into force on December 31, 1988. See *id.* Moreover, by 1993, more than seventy nations had ratified the Annex, representing over ninety-percent of the world's shipping tonnage. See *id.*

²³⁰ MARPOL, *supra* note 218, Annex V, regulation 1(1).

²³¹ See *id.* Regulation 3(1)(a).

²³² *Id.* Regulation 3(1)(b). Annex V also includes designation of "special areas" in which no plastic or other garbage including paper, glass, and metals, may be discharged. See *id.* Regulation 5. These "special areas" include the Mediterranean Sea, the Baltic Sea area, the Black Sea area, the Red Sea area and (Persian) Gulfs area. See *id.*

- (ii) 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse²³³

However, food, paper products, glass, metal and similar waste may be dumped outside three nautical miles of land if they are ground in a comminuter.²³⁴

Annex V provides for certain limited exceptions in which its prohibitions may be suspended. According to Regulation 6, these include:

- (1) disposing garbage for the purpose of securing safety for the ship or saving life at sea;²³⁵
- (2) the unintentional escape of garbage resulting from damage to the vessel;²³⁶ and
- (3) accidental loss of synthetic fishing nets incidental to the repair of such nets.²³⁷

B. UNCLOS

The Third United Nations Conference on the Law of the Sea convened in 1973. Within nine years, the United Nations Convention on the Law of the Sea²³⁸ was completed and opened for signature on December 10, 1982.²³⁹ By the end of 1984,

²³³ *Id.* Regulation 3(1)(b)(i),(ii).

²³⁴ *See id.* Regulation 3(1)(c). A comminuter is a machine that grinds garbage. Moreover, wastes that are ground must be able to pass through a screen with opening no greater than 25 millimeters. *See id.*

²³⁵ *See id.* Regulation 6(a).

²³⁶ *See id.* Regulation 6(b).

²³⁷ *See id.* Regulation 6(c).

²³⁸ *See* 21 I.L.M. 1261, Nov. 26, 1982, *reprinted in* THE 1994 UNITED NATIONS CONVENTION ON THE LAW OF THE SEA: BASIC DOCUMENTS WITH AN INTRODUCTION (Renate Platzöder ed., 1995) [hereinafter UNCLOS]. For additional commentary, *see* Jonathan I. Charney, *Entry into Force of the 1982 Convention on the Law of the Sea*, 35 VA. J. INT'L L. 381 (1995); *see also* John R. Stevenson & Bernard H. Oxman, *The Future of the United States Convention on the Law of the Sea*, 88 AM. J. INT'L L. 488 (1994); Bernard H. Oxman, *United States Interests in the Law of the Sea*, 88 AM. J. INT'L L. 167 (1994); CAPT. George V. Galdorisi & CMDR. James G. Stavridis, Comment, *United Nations Convention on the Law of the Sea: Time for a U.S. Reevaluation?*, 40 NAVAL L. REV. 229 (1992); Branda S. Thornton, *Law of the Sea: Evolving National Policies*, 84 AM. SOC'Y INT'L L. PROC. 277 (1990); and Louis B. Sohn, *The Law of the Sea: Customary International Law Developments*, 34 AM. U. L. REV. 271 (1985).

²³⁹ *See* WEISS ET AL., *supra* note 220, at 332.

more than 152 States became signatories.²⁴⁰ As of November 16, 1994, the Convention entered into force for the 65 states who deposited their instruments for ratification.²⁴¹ On October 7, 1994, President Bill Clinton transmitted the Convention and its Agreement Relating to the Implementation of Part XI of UNCLOS, with Annex, to the United States Senate for its advice and consent.²⁴²

The Convention is a "complex instrument of 320 articles and nine annexes . . . [and] is the first instrument to provide a comprehensive regime to protect and preserve the marine environment."²⁴³ The relevant environmental provisions are found in Part XII, entitled "Protection and Preservation of the Marine Environment." In particular, Section Five, entitled "International Rules and National Legislation to Prevent, Reduce and Control Pollution of the Marine Environment," contains provisions concerning pollution from land-based sources,²⁴⁴ from seabed activities subject to national jurisdiction,²⁴⁵ from dumping,²⁴⁶ from vessels²⁴⁷ and from or through the atmosphere.²⁴⁸

Article 192 establishes the general proposition that "States have the obligation to protect and preserve the marine environment."²⁴⁹ Article 194 elaborates on this:

States shall take, individually or jointly as appropriate, all measures consistent with [UNCLOS] that are necessary to prevent, reduce, and control pollution of the maritime environment from any source, using for this purpose the best practicable means at their

²⁴⁰ See 140 CONG. REC. S14,467-504, (daily ed. Oct. 6, 1994).

²⁴¹ See *id.*

²⁴² See *Message from the President of the United States and Commentary Accompanying the United Nations Convention on the Law of the Sea and the Agreement Relating to the Implementation of the Part XI upon their Transmittal to the United State Senate for its Advice and Consent*, S. TREATY DOC. NO. 103-39 (1994), reprinted in 7 GEO. INT'L ENVTL. L. REV. 77 (1994) [hereinafter *Message from the President*].

²⁴³ WEISS ET AL., *supra* note 219, at 332.

²⁴⁴ See UNCLOS, *supra* note 237, Art. 207.

²⁴⁵ See *id.* Art. 208.

²⁴⁶ See *id.* Art. 210.

²⁴⁷ See *id.* Art. 211.

²⁴⁸ See *id.* Art. 212.

²⁴⁹ *Id.* Art. 192. This obligation, however, is subject to the notion that "[s]tates have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment." *Id.* Art. 193.

disposal and in accordance with their capabilities, and they shall endeavor to harmonize their policies in this connection.²⁵⁰

UNCLOS develops in considerable detail, provisions concerning pollution from vessels. Article 211 requires states to establish international rules and standards to prevent, reduce and control vessel-source pollution.²⁵¹ It is recognized that such rules and standards are to be developed through the International Maritime Organization — the catalyst for MARPOL.²⁵² Moreover, Paragraph 2 of Article 211 obligates states to adopt measures relating to vessels of their registry or flying their flag.²⁵³

While UNCLOS is not as specific as MARPOL, it nevertheless places obligations on states to fashion an effective legal regime concerning marine pollution. Article 235 recognizes the general principle of state responsibility for environmental damage. According to that provision, “[s]tates are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.”²⁵⁴

C. *Application of International Law to the United States Navy — The Problem of Sovereign Immunity*

The application of UNCLOS and MARPOL to naval vessels, although optimistic in their approach, is hindered by the problem of sovereign immunity. In a doctrinal sense, the concept of immunity is an established principle which is juridically accepted in the United States.²⁵⁵ For example, in *The Schooner Exchange v. McFadden*,²⁵⁶ Chief Justice Marshall enunciated a rule whereby public armed vessels in the service of a foreign

²⁵⁰ *Id.* Art. 194(1).

²⁵¹ *See id.* Art. 211(1). Furthermore, this provision suggests “promot[ing] the adoption . . . wherever appropriate, of routing systems designed to minimize the threat of accidents which might cause pollution of the marine environment. . . .” *Id.*

²⁵² *See Message from the President*, *supra* note 241, at 124-25.

²⁵³ *See UNCLOS*, *supra* note 237, Art. 211(2).

²⁵⁴ *Id.* art. 235(1). Furthermore, “States shall ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction.” *Id.* Art. 235(2).

²⁵⁵ *See Dehner*, *supra* note 6, at 519-20.

²⁵⁶ 11 U.S. (7 Cranch) 116 (1812).

sovereign are exempt from the jurisdiction of any nation but the flag state.²⁵⁷ Thus, it was held that American citizens could not assert title to a French warship harbored in Philadelphia.²⁵⁸

UNCLOS and MARPOL recognize the principle of sovereign immunity. "The provisions [of UNCLOS] regarding the protection and preservation of the marine environment do not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service."²⁵⁹ Similarly, the provisions of MARPOL "shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service."²⁶⁰

By virtue of the type of vessels owned and operated by the U.S. Navy, the sovereign immunity clauses, but not the proscriptions, apply to naval vessels.²⁶¹ Proponents for retention of sovereign immunity for public vessels focus on security issues since "[s]tates are extremely averse to allowing foreign nations to have access or power to detain military ships."²⁶² "To support military operations around the globe, there must be assurance that military vessels and their cargoes can move freely without being subject to levy or interference by coastal states."²⁶³ Thus, the issue emerges whether security interests of states should be altered to achieve compliance with international environmental treaties.²⁶⁴ In analyzing this issue, it is opined that:

[t]his serious derogation is not only irreconcilable . . . it is incompatible with the usual principles of immunity which provide only

²⁵⁷ See *id.* at 146.

²⁵⁸ See *id.*

²⁵⁹ UNCLOS, *supra* note 237, § 10 Art. 236. Other forms of sovereign immunity appear throughout UNCLOS. *E.g.*, Article 95 states that "[w]arships on the high seas have complete immunity from the jurisdiction of any State other than the flag State. *Id.* Art. 95. Similarly, Article 96 dictates that "[s]hips owned or operated by a State and used only on government non-commercial service shall, on the high seas, have complete immunity from the jurisdiction of any State other than the flag States." *Id.* Art. 96.

²⁶⁰ MARPOL, *supra* note 215, Art. 3(3).

²⁶¹ See *supra* notes 154-72 and accompanying text (discussing the nature of U.S. naval vessels).

²⁶² Dehner, *supra* note 6, at 522-23.

²⁶³ *Id.* at 523.

²⁶⁴ See *id.*

for exemption from enforcement procedures, not from applicability of the law. Logically and according to general international law, there is no reason why government ships and aircraft should not be governed by marine pollution rules, even though they may be immune from otherwise applicable enforcement procedures.²⁶⁵

Both UNCLOS and MARPOL address this polar conflict by providing good-faith adherence to general principles of international law by sovereign states. Article 236 of UNCLOS articulates that "each State shall ensure, by the adoption of appropriate measures not impairing operations or operational capabilities of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, so far as is reasonable and practicable, with [the provisions of UNCLOS]." ²⁶⁶ MARPOL includes almost identical language.²⁶⁷

D. *Summary and Conclusions*

The foregoing section illustrates the extent to which international law is cognizant of the problem of marine pollution and specifically vessel-source pollution. Both UNCLOS and MARPOL take active steps to reduce oceanic despoilment by requiring flag states to follow certain prescribed standards. However, there exists a difficulty in applying these provisions to the U.S. Navy due to the unique status of its vessels. The proscriptions of the conventions do not apply to naval warships because of the existing sovereign immunity sections. Both UNCLOS and MARPOL, however, provide for "good-faith" exceptions to the principle of sovereign immunity by requiring party-states to adopt measures commensurate with the underpinnings of the substantive provisions of the conventions. In terms of United States policy, it can be argued that state responsibility mandates the fashioning of such a legal regime, as evidenced by Section 603(2) of the Restatement (Third) of Foreign Relations of the United States which dictates that "a state is obligated to

²⁶⁵ KISS & SHELTON, *supra* note 21, at 173-74.

²⁶⁶ UNCLOS, *supra* note 237, Art. 236.

²⁶⁷ See MARPOL, *supra* note 215, Art. 3(3). The provision states that: each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention.

Id.

take . . . such measures as may be necessary . . . to prevent, reduce, and control pollution causing or threatening to cause significant injury to the marine environment.”²⁶⁸ Based on the Restatement, does the United States impose an obligation and a responsibility upon the U.S. Navy to ensure adherence to conventional international standards concerning marine pollution? The following section examines that question by focusing on the means, methods and implementation of U.S. naval policy towards international compliance.

VI. REMEDYING THE PROBLEM — UNITED STATES COMPLIANCE AND NAVAL POLICIES

A. *Towards Compliance*

The United States has taken active steps towards compliance with international standards concerning marine pollution. Indeed, the U.S. Navy is required under domestic law to comply with Annex V of MARPOL as implemented by the Marine Plastic Pollution Research and Control Act (MPPRCA) of 1987.²⁶⁹ In its original form, Congress mandated that the U.S. Navy comply with the provisions of the annex by January 1, 1994.²⁷⁰ In order to achieve these goals, the Secretary of the Navy is charged with the duty of “develop[ing] and . . . support[ing] the development of technologies and practices for solid waste management aboard ships owned or operated by the Department of the Navy, including technologies and practices for the reduction of the waste stream generated aboard ships.”²⁷¹

The U.S. Navy however, was unable to meet its deadline²⁷² and a new time-table had to be imposed.²⁷³ Accordingly, all sur-

²⁶⁸ RESTATEMENT (THIRD) OF FOREIGN RELATIONS OF THE UNITED STATES § 603(2) (1986).

²⁶⁹ 33 U.S.C.A. § 1901 (1987).

²⁷⁰ *See id.* § 1902(b)(2)(A)(i).

²⁷¹ *Id.* § 1902(e)(1).

²⁷² *See Navy Says It's Green*, *supra* note 51. One commentator points out that from a practical perspective, naval vessels face certain difficulties in compliance due to their classification as “space and weight critical.” Dehner, *supra* note 7, at 527. Thus, in order to comply with MPPRCA, analysts must take into consideration the fact that if garbage is to be retained on board, storage and equipment space must be created. *See id.* The problem is further exacerbated by prolonged operations at sea and the lack of adequate shore disposal facilities. *See id.*

²⁷³ National Defense Authorization Act for Fiscal Year 1994, Pub. L. No. 103-160, 107 Stat. 1547 (1993).

face vessels must comply with the requirements of Annex V of MARPOL by December 31, 2000²⁷⁴ and all submarines by December 31, 2008.²⁷⁵ Additionally, the MPPRCA also provides for adherence to the "special area" prohibitions as found in Annex V of MARPOL.²⁷⁶

Efforts by the Navy to comply with international standards are by no means limited to MPPRCA. According to one commentator, "ship discharges historically have not been subject to the same degree of regulatory control as point source discharges ashore. The lack of clear standards for discharges incidental to normal operations from military vessels creates uncertainty in both the regulator and regulated community."²⁷⁷ In other legislative areas, the Department of the Navy has sought to amend current domestic pollution control laws thereby facilitating compliance by its vessels.

Clear national standards . . . would enhance environmental protection and facilitate compliance by vessel operators. In a proactive effort to promote these objectives, the Navy is spearheading a federal effort to establish uniform national discharge standards for effluent from [Department of Defense] vessels The precedent for national standards already exists in the Clean Water Act [Section] 312²⁷⁸ which establishes standards for the management of sewage from vessels.²⁷⁹

On June 8, 1995, the Department of the Navy transmitted to the Vice-President and the Speaker of the House a proposed bill that would direct the Secretary of Defense and the Administrator of the Environmental Protection Agency to develop stan-

²⁷⁴ 33 U.S.C.A. § 1902(b)(2)(A)(ii).

²⁷⁵ See *id.* § 1902(b)(2)(A)(iii). See also 59 Fed. Reg. 37,223-24 (1994).

²⁷⁶ See 33 U.S.C.A. § 1902(c)(1). According to this Section, "[n]ot later than December 31, 2000, all surface ships owned or operated by the Department of the Navy, and not later than December 31, 2008, all submersibles owned or operated by the Department of the Navy, shall comply with the special requirement of Regulation 5 of Annex V of [MARPOL]." *Id.* See also discussion, *supra* Part V.A.

²⁷⁷ *Kandaras Testimony*, *supra* note 154, at 21.

²⁷⁸ Federal Water Pollution Control Act, 33 U.S.C. § 1322 (1996). According to the provision, Federal standards of performance for marine sanitation devices shall be promulgated in order to prevent "the discharge of untreated or inadequately treated sewage into or upon the navigable waters from new vessels and existing vessels" *Id.* § 1322(b)(1).

²⁷⁹ *Kandaras Testimony*, *supra* note 154, at 21.

dards and regulations applicable to non-sewage discharges²⁸⁰ from naval vessels.²⁸¹ In order to achieve these objectives, the proposed amendments to Section 312 of the Clean Water Act would add "marine pollution control devices"²⁸² as the required form of technology. "With national standards established, the [U.S.] Navy could proceed with technology development with resulting dual use technologies applicable in a variety of marine applications worldwide."²⁸³

Indeed, the U.S. Navy may be moving closer to realizing its goals. Section 325 of the National Defense Authorization Act for Fiscal Year 1996²⁸⁴ enunciates that its main purposes are to:

- (1) enhance the operational flexibility of vessels of the Armed Forces domestically and internationally;
- (2) stimulate the development of innovative vessel pollution control technology; and
- (3) advance the development by the United States Navy of environmentally sound ships.²⁸⁵

Furthermore, by incorporating the proposals concerning pollution abatement,²⁸⁶ Section 325 promulgates governmental mechanisms for such things as determining which discharges

²⁸⁰ These may include graywater composed of sink and shower water; bilge water from the holds of vessels; boiler blow down waste streams; wastewater from vessel cleaning operations; discharges from mechanical and maintenance operations; and releases of hazardous substances from hull coatings. *See* UNIFORM NATIONAL DISCHARGE STANDARDS FOR ARMED FORCES VESSELS ACT OF 1995, S. REP. NO. 113, 104th Cong., 1st Sess. (1995).

²⁸¹ *See id.*

²⁸² Marine pollution control devices are defined as "any equipment or management practice, for installation or use on board a vessel of the Armed Forces that is . . . designed to receive, retain, treat, control . . . a discharge incidental to the normal operation of a vessel." *Id.*

²⁸³ *Kandaras Testimony*, *supra* note 152, at 22.

²⁸⁴ National Defense Authorization Act for Fiscal Year 1996, Pub. L. No. 104-106, 110 Stat. 186 (1996).

²⁸⁵ *Id.* § 325, 110 Stat. 186 at 254.

²⁸⁶ *See* note 279, *supra*, and accompanying text.

are to be controlled,²⁸⁷ performance standards of marine pollution control devices,²⁸⁸ and enforcement.²⁸⁹

B. *The Role of Technology in Naval Policy*

The previous sections have examined the problem of marine pollution and how state responsibility, required by international law, has necessitated states to implement legal regimes commensurate with the international standards. The U.S. Navy's compliance with the MPPRCA is merely an extension of its growing environmental policies.²⁹⁰ However, it has also been said that "[r]esearch and development in [the area of waste management] is costly, and the Navy has expended some funds which have resulted in some very important technological advances in waste disposal."²⁹¹ As a result, the U.S. Department of the Navy has been viewed as a leader in research and development of pollution control technologies.²⁹² The following section shall highlight some of the advances that have been made to remedy the problem of marine pollution and bring naval warships into compliance with both international and domestic standards.

The U.S. Navy has long been concerned with the problem of disposing of plastics. In 1989, the Department of the Navy implemented the PRIME²⁹³ program in order to reduce the amount of plastics used by naval personnel.²⁹⁴ For example, in

²⁸⁷ According to § 325, relevant governmental parties "shall jointly determine the discharges incidental to the normal operation of a vessel of the Armed Forces for which it is reasonable and practicable to require use of a marine pollution control device to mitigate adverse impacts on the marine environment." 110 Stat. 186, *supra* note 284 at 254-55. In order to arrive at this decision, various factors are taken into account such as the nature of the discharge, the environmental effects, the practicability of using a marine pollution control device, applicable domestic and international law, and economic costs. *See id.* at 255.

²⁸⁸ *See id.*

²⁸⁹ The laws apply "against any agency of the United States responsible for vessels of the Armed Forces notwithstanding any immunity asserted by the agency." *Id.* at 258.

²⁹⁰ *See* discussion *supra* Part IV.C.

²⁹¹ *Two Congressmen Rap Navy Expenditures for Shipboard Waste Management Systems*, 18 B.N.A. ENV'T REP. 837 (1994).

²⁹² *See* Dehner, *supra* note 6, at 530.

²⁹³ *Plastics Removal in the Marine Environment Program*.

²⁹⁴ *See U.S. Panel Develops Plan to Curb Use, At-Sea Disposal of Plastics by U.S. Navy*, 1988 B.N.A. INT'L ENV'T REP. 395 (Current Report).

a two year period, Naval Supply Systems Command had reviewed over 700,000 managed line items and has changed the packaging specifications on fifty-seven percent of these items.²⁹⁵ This review has allowed the Navy to prevent over 500,000 pounds of plastics from being brought aboard ships each year.²⁹⁶ Moreover, by adopting the use of solid paper cups instead of the traditional polystyrene or plastic lined cups, another 62,000 pounds of plastic use is avoided.²⁹⁷

The Navy has developed, through new technology, an elaborate plastic waste processor which shreds, heats, and compresses all plastics, producing a sanitized disc thirty times smaller than the original mass.²⁹⁸ These discs can then be stored for shore disposal.²⁹⁹ In addition, experiments have yielded plastic substitutes such as "plastic chitins," whose chemical composition resembles the natural plastics found in the shells of marine crustaceans, which are more readily biodegradable.³⁰⁰

Other efforts for afloat units include: using hardware to remove oil from bilge discharges,³⁰¹ non-chemical fire fighting and paint removal using recycled steel grit and plastic beads instead of chemical toxins.³⁰² In addition, considerable research has been devoted to the development of a solid waste pulper which would shred paper, cardboard, light wood, cloth, and food waste into a mixture of cellulose fibers called "slurry."³⁰³ This slurry could then be discharged as a biodegradable waste.³⁰⁴

The foregoing discussion illustrates the extent to which the U.S. Navy is striving to comply with international and domestic standards. The Department of the Navy has been criticized for

²⁹⁵ See *Kandaras Testimony*, *supra* note 154, at 17.

²⁹⁶ See *id.*

²⁹⁷ See *id.*

²⁹⁸ See *Navy Says It's Green*, *supra* note 51. See also Dehner, *supra* note 6, at 530-31.

²⁹⁹ See *Navy Says It's Green*, *supra* note 51.

³⁰⁰ See Dehner, *supra* note 6, at 531.

³⁰¹ Approximately seventy percent of naval vessels have oil/water separators that treat bilge water to international standards. *Kandaras Presses for Standard, DEFENSE CLEANUP*, April 29, 1994, available in WESTLAW, 1994 WL 2507343.

³⁰² See Schachte, *supra* note 42 at 105.

³⁰³ See *Navy Chokes on Plastic Waste*, Navy News & Undersea Technology, Aug. 5, 1991.

³⁰⁴ See *id.*

remaining complacent in its efforts.³⁰⁵ However, the U.S. Navy is striving towards adhering to the legal prescriptions and has enjoyed international recognition for its accomplishments.³⁰⁶

VII. CONCLUSION

This article has explored the pervasive problem of marine pollution and how international law has imposed a general duty and responsibility on states to maintain a habitable environment. This concept extends to the areas of ocean governance and vessel-source pollution. Conventions such as MARPOL and UNCLOS require party-states to adhere to certain prescriptions governing the discharge of pollutants from ships.

In response to these requirements, the U.S. Navy has sought to comply by implementing comprehensive pollution prevention and conservation programs. Sovereign immunity provisions, included in MARPOL and UNCLOS, which suspend the legal obligations dictated by the conventional provisions, cause difficulty in compliance. However, these barriers have not stymied compliance efforts by the U.S. Navy. The MARPOL legislation, that has been implemented, requires naval vessels to reduce marine pollution by various target dates. Furthermore, such legislation has cultivated research towards the development of the best practicable technologies to handle and dispose of shipboard wastes.

The future of marine pollution control appears promising. The international ratification of UNCLOS and its transmission to the United States Senate for its advice and consent, gives new hope for an effective legal regime of ocean governance. Whatever the future holds, the U.S. Navy must maintain the balance of interests between national security and environmental protection. Indeed, as one commentator has suggested, "[a]

³⁰⁵ See, e.g., *Solid Waste: GAO Report Questions Navy Waste Management*, American Political Network, Inc., Aug. 25, 1994. According to Senator Joseph Lieberman (D-Conn), "[The Navy is] wasting taxpayer's money — your money and mine — and they're wasting the environment by continuing to dump stuff into the oceans." Dehner, *supra* note 6, at 532. Furthermore, environmentalists have argued for an absolute prohibition on discharges, thus affecting the viability of naval programs. See *Navy Says It's Green*, *supra* note 51.

³⁰⁶ For example, government of Canada and various Caribbean nations have shown interest in implementing shipboard plastic processing systems modeled after the U.S. naval prototype. See *Navy Says It's Green*, *supra* note 51.

nation's security, economic, and environmental interests are compatible — the framework is found in [UNCLOS]."³⁰⁷ This article has shown that the framework extends beyond a single convention. It embodies an entire corpus of laws that imposes general rights, obligations and duties on states to refrain from compromising the delicate ecological balance of the world's oceans.

³⁰⁷ Schachte, *supra* note 42, at 114.