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Jeffrey D. Wilson

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# MINING THE DEEP SEABED: DOMESTIC REGULATION, INTERNATIONAL LAW, AND UNCLOS III

Jeffrey D. Wilson\*

## I. DEEP SEABED MINERAL RESOURCES AND MINING TECHNOLOGY

### A. *Mineral Resources and Their Importance*

As the world's known terrestrial sources of mineral wealth are depleted, attention has been increasingly focused on the untold, vast resources of the sea. Although one can only speculate about the full extent of the ocean's recoverable resources, it may contain enough minerals to multiply known terrestrial sources by a factor of thousands, or even hundreds of thousands.<sup>1</sup>

Of significant interest is the presence in the deep seabed of mineral deposits, known as manganese nodules. First discovered during the epic 1873-76 voyage of the *Challenger*, the nodules contain substantial quantities of scarce, valuable, and strategic minerals.<sup>2</sup> The United States has developed a keen interest in these nodules, especially because of its near total dependence on foreign, politically unstable sources for the nodules' constituent minerals.

Competing with the desire of the United States to be minerally self-sufficient is the desire of the developing countries to protect their monopoly position as land-based mineral suppliers in the world's mineral markets.<sup>3</sup> Additionally, the developing countries want to assure their access to the wealth generated by the commercial exploitation of seabed minerals, in order to redress the perceived economic imbalance

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\* Associate, Hall, Estill, Hardwick, Gable, Collingsworth & Nelson, Tulsa, Oklahoma; B.A., 1979, Brigham Young University; J.D., 1982, University of Kansas.

1. Collins, *Mineral Exploitation of the Seabed: Problems, Progress and Alternatives*, 12 NAT. RESOURCES LAW. 599, 600 (1979); Kotz, "The Common Heritage of Mankind": *Resource Management of the International Seabed*, 6 ECOLOGY L.Q. 65, 69 (1976).

2. Collins, *supra* note 1, at 604.

3. See Kotz, *supra* note 1, at 74-77.

between the "rich North" and the "poor South."<sup>4</sup>

The United Nations has become the focal point for much of the debate on deep-sea mineral resources.<sup>5</sup> There has been continuing effort, for several years, to produce a comprehensive Law of the Sea Treaty that would reasonably accommodate competing world interests.<sup>6</sup> Of particular relevance to these negotiations is the general sentiment that the ocean and its resources are the "common heritage of mankind," that its resources should be cooperatively, not competitively, developed, and that the resulting wealth should be spread equitably throughout the world.<sup>7</sup>

Technology currently exists that would allow commercial recovery of the ocean's mineral resources within the next decade. The depletion of land-based reserves of oil and gas and the economic and political vulnerability arising from dependence on unstable foreign sources has increased interest in submarine hydrocarbons.

This Article, however, will focus on the commercial recovery of manganese nodules. These nodules are formed by the gradual precipitation of metallic ions from seawater onto a "nucleus" of volcanic rock or calcium compounds. These ions accumulate at a rate of only atomic layers per day (approximately two to four millimeters per million years), thus making this process one of the slowest chemical reactions in nature.<sup>8</sup> The richest nodule fields are found in the Pacific Ocean, where the metallic ion content of the seawater is high and sedimentation and ocean bottom disturbances are insubstantial and infrequent.<sup>9</sup> Despite the slowness of the precipitation process, a substantial number of tons accumulate annually, thus making the nodules essentially a "renewable resource." This renewability means that world consumption in the foreseeable future will not diminish available nodule quantities, even if the nodule beds were being fully exploited.<sup>10</sup> Thus, the nodules

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4. *See id.*

5. *See Saffo, The Common Heritage of Mankind: Has the General Assembly Created a Law to Govern Seabed Mining?*, 53 TUL. L. REV. 492, 492-95 (1979).

6. *Id.*

7. *See id.* at 513-14.

8. Collins, *supra* note 1, at 604; Eckert, *Exploitation of Deep Ocean Minerals: Regulatory Mechanisms and United States Policy*, 17 J.L. & ECON. 143, 145 (1974).

9. Eckert, *supra* note 8, at 145.

10. Collins, *supra* note 1, at 606. *Contra Note, A New Combination to Davy Jones' Locker: Melee Over Marine Minerals*, 9 LOY. U. CHI. L.J. 935, 937 (1978) (outer layer growth of nodules is only one to seven millimeters per million years; therefore, nodules should be considered essentially nonrenewable).

are more like renewable fish and seafood, rather than an ever depleting, nonrenewable mineral resource.

The submarine deposits of manganese nodules are thought to be the largest mineral deposits on earth. One particularly rich deposit covers approximately two million square miles, and the Pacific Ocean floor contains an estimated one and a half million tons of nodules.<sup>11</sup> This is a far greater amount than the annual world consumption of the nodules' constituent minerals. One mining operation alone could provide twenty-five percent of the United States' annual requirements.<sup>12</sup> Although manganese nodules are found in all oceans, the most attractive and readily exploitable fields are found in a triangle connecting Hawaii, Panama, and Southern California.<sup>13</sup>

In an age of increasing mineral scarcity, the potentially vast resources of the ocean can provide innumerable economic benefits and can reduce America's dangerous dependence on foreign, politically unstable mineral sources.<sup>14</sup> The nodules contain significant amounts of minerals deemed crucial to American industry and national security. Currently, the United States imports nearly one hundred percent of its cobalt and manganese, ninety-one percent of its nickel, and eighteen percent of its copper needs.<sup>15</sup> United States national security is jeopardized by dependence on foreign suppliers of strategically vital minerals. Currently, the United States imports most of its cobalt, nickel, and manganese requirements from some of the most politically unstable countries in the world.<sup>16</sup> A complete cutoff of these minerals could be

11. Collins, *supra* note 1, at 606; see Keith, *Manganese Nodule Processing in Hawaii: An Environmental Prospectus*, 14 HAWAII B.J. 103, 103 n.1 (1978).

12. Crutchfield, *Resources from the Sea*, in OCEAN RESOURCES AND PUBLIC POLICY 105, 129 (T. English ed. 1973); Collins, *supra* note 1, at 606.

13. Collins, *supra* note 1, at 606; Eckert, *supra* note 8, at 145-46.

14. See Nigrelli, *Ocean Mineral Revenue Sharing*, 5 OCEAN DEV. & INT'L L. 153, 167 (1978).

Projected U.S. Consumption and Percentage of Imports Satisfied by Nodule Mining in 1985 and 2000

Mineral	Projected U.S. Consumption in Short Tons		Estimated Recovery from Nodules by U.S. Interests		% of U.S. Consumption from Nodules		% Reduction of U.S. Imports from Nodules	
	1985	2000	1985	2000	1985	2000	1985	2000
Manganese	420,000	560,000	400,000	500,000	95.0	90.0	95.0	90.0
Nickel	340,000	530,000	60,000	120,000	18.0	23.0	24.0	31.0
Copper	3,400,000	5,600,000	52,000	105,000	1.5	1.9	8.5	10.4
Cobalt	13,000	23,000	12,000	24,000	92.0	100.0	94.0	100.0

*Id.*

15. M. SPANGLER, *NEW TECHNOLOGY AND MARINE RESOURCES DEVELOPMENT* 35 (1970). The constituent minerals contained in Pacific Ocean nodules break down as follows: 24.2% manganese, 14% iron, 9.4% silicon, 2.9% aluminum, .99% nickel, .80% potassium, .67% titanium, .53% copper, .35% cobalt, .18% barium. *Id.*

16. See Kotz, *supra* note 1, at 78 n.64. These countries include Bolivia, Brazil, Chile, Tai-

economically and strategically disastrous.

National security is further endangered by the burgeoning balance of payments deficits incurred to pay for imported minerals.<sup>17</sup> The mineral producing countries of the Third World are forming cartels patterned after the OPEC model to obtain monopoly benefits in the world mineral markets, significantly increasing the potential of economic and political duress. Therefore, the exploitation of ocean mineral deposits will help make the markets competitive once again, hopefully with worldwide benefits.

Minerals and politics aside, the increasing knowledge and technological advances being made are of substantial value as well. One need only recall the great discoveries and developments achieved through the space programs to see that the potential benefits to the world are enormous. The ocean may be the earth's last great frontier.

## B. *Deep-Sea Mining Technology*

### 1. Methods of Nodule Recovery

Deep seabed mining technology has dramatically advanced over the last decade and the requisite technology now exists to commercially exploit the deep-sea nodule deposits. This technology is predominantly owned by five private international consortia,<sup>18</sup> thus the details of the methods are not readily available.

Three methods of nodule recovery are proposed. The first method employs a pneumatic lift device that functions like a giant vacuum

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wan, Cuba, Gabon, Ghana, Guyana, Haiti, India, Indonesia, Ivory Coast, Mexico, Morocco, Nicaragua, New Caledonia, Peru, Philippines, South Korea, Trinidad-Tobago, Uganda, Zaire, and Zambia. *Id.*

17. See Murphy, *The Politics of Manganese Nodules: International Considerations and Domestic Legislation*, 16 SAN DIEGO L. REV. 531, 534 (1979). The balance of payments deficit for imports of the nodules' constituent minerals was \$1.5 billion in 1976. *Id.*

18. The five consortia are:

1. Kennecott Copper Corp. (USA), includes Noranda (Canada); British Petroleum (UK); Mitsubishi (Japan).

2. Ocean Mining Associates, owned jointly by U.S. Steel Corp., Union Miniere (Belgium); Sun Oil Company (USA). This group does business as Deep Sea Ventures, Inc. (USA).

3. Ocean Minerals Co., includes Lockheed Missiles & Space Co. (USA); Billiton B.V. & Royal Bos Kalis Westminster Group N.V. (Netherlands).

4. Ocean Management, Inc., owned by INCO, Ltd. (Canada); SEDCO, Inc. (USA); AMR Group (W. Germany); DOMCO (group of 23 companies led by Sumitomo of Japan).

5. CLB Consortium, includes Phelps Dodge Corp. (USA); CNEXO (France); DOMCO (Japan); INCO (Canada); AMR Group (W. Germany); Broken Hill Proprietary Co., Ltd. (Australia).

Keith, *supra* note 11, at 103-05 n.3.

cleaner, sucking the nodules up to the surface ship.<sup>19</sup> The second method utilizes a central, stationary base placed on the ocean floor with an attached rotating arm fitted to a moveable carriage that, moving in and out along the arm, acts as a dredge.<sup>20</sup> The nodules are crushed within the base and pumped to the surface ship; the entire system is relocated when the nodules within the base's radius are collected.<sup>21</sup> The third method involves the use of a line to which specially designed buckets are attached at specific intervals.<sup>22</sup> This line forms a loop that passes through the bow and stern of a surface ship, with the bottom end of the loop touching the ocean floor. The buckets scoop up the nodules in the ship's path as the ship moves about laterally over the nodule field.<sup>23</sup>

## 2. Economic Factors of Deep-Sea Mining

Given the enormous quantities of capital investment required to mine the deep seabed, extensive exploration and examinations are required to discover whether any particular nodule deposit can be economically mined with any specific recovery technique over any given period of time.<sup>24</sup> One of the threshold economic criteria is the nodule composition within the deposit selected for exploitation. The nodules' physical characteristics vary considerably from deposit to deposit, and even within the deposit itself.<sup>25</sup>

Another significant factor is the abundance and distribution of nodules within the selected deposit. This factor not only determines

19. Eckert, *supra* note 8, at 147-48.

20. *Id.* at 148.

21. *Id.*

22. *Id.*

23. *Id.*

24. The most relevant general factors in the decision-making process are the ore grade of the nodule deposit; the areal extent of the deposit; nodule concentration per square foot within the deposit; the depth, topography, and sediment condition on the ocean floor; the weather conditions on the ocean surface; the distance between the mining site and the onshore processing plant (this factor's importance will diminish as the mining, processing, and environmental protection technology develops to safely allow on-site processing); the nature of the miner's rights; and the nature of the regulatory regime governing both mining and environmental protection. Substantial alterations in any of these factors will increase or decrease the economic attractiveness of exploiting any given nodule deposit. *Id.* at 146, 164-65.

25. Nodule fields near the continents generally have a rich iron content, fields in the central ocean regions have a rich cobalt content, and fields near the equator are rich in copper and nickel. Collins, *supra* note 1, at 606. Currently, only nodules with combined copper and nickel assays of at least 2% are deemed economical to exploit. However, assays may vary by as much as a factor of two within any given deposit, creating the problem that a substantial portion of the ore contained in extracted nodules may be below the established economic grade. Eckert, *supra* note 8, at 146-49.

the viability of the decision to exploit the selected deposit, but will determine the type of recovery technology selected as well. Nodule deposits do not generally occur in broad, continuous, readily exploitable fields, but rather in irregular patches, with the concentration of nodules per square foot varying dramatically over short distances. The richest deposits are not found on the smooth, spacious ocean floor areas most suitable for dredging, but rather occur in regions of canyons and hills of changing slope and undulation where dredges could not operate without risk.<sup>26</sup> Thus, the nature of the technology chosen will affect the economics of nodule mining. None of the existing technologies are capable of mining all of the nodules in a given field. An estimated one-third to one-half of the nodules will most likely be unharvested in any given field. The most likely response of the mining concerns to alleviate these particular economic impediments will be either to tailor the mining equipment to the nature of the deposit or to tailor the locations to the recovery technique employed.<sup>27</sup>

### 3. Investment Protection Under Domestic Law

The deep seabed mining industry has long sought legislation providing for any losses occasioned by the ratification and implementation of the Third United Nations Conference on the Law of the Sea Convention (UNCLOS III).<sup>28</sup> Significantly, the Deep Seabed Hard Mineral Resources Act of 1980 (Act) neither protects "grandfathered" rights nor establishes any legal or moral obligation for the government to compensate investors for any impairment of their investment's value that may result from the Convention's ratification.<sup>29</sup>

Substantial investment capital is required to invest in mining and processing technology. Approximately \$650 million is required to con-

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26. Eckert, *supra* note 8, at 147.

27. *Id.* at 146-49.

28. Third Conference on the Law of the Sea, Draft Convention, U.N. Doc. A/CONF.62/WP.10/Rev.3 (1980), reprinted in 19 INT'L LEGAL MATERIALS 1131 (1980) [hereinafter cited as Draft Convention]. In 1978, the industry specifically proposed that the government insure investors on a per site basis to cover treaty-related losses up to \$350 million or up to 90% of the investment, whichever amount was smaller. However, the Carter Administration strongly opposed this effort and the proposal was subsequently deleted from the then-existing draft of the Act. Miller & Delehant, *Deep Seabed Mining, Government Guaranteed Financing under the Maritime Aids of the Merchant Marine Act, 1936, as an Alternative to Treaty-Related Loss Compensation*, 11 J. MAR. L. & COM. 453, 454 (1980).

29. Obligations of the United States are expressly disclaimed in 30 U.S.C. § 1444 (Supp. IV 1980). However, Congress recognized the possible need to protect existing rights and compensate investors, and accordingly directed the Administrator to propose methods by which these needs might be met. *Id.* §§ 1442-1443.

struct a full size on-shore processing plant, and approximately \$350 million is necessary to purchase the ocean mining system.<sup>30</sup> Start-up investment costs are thus approximately \$1 billion, while the expected income from the sale of copper, nickel, and cobalt is about \$260 million per year.<sup>31</sup>

These large sums are not, however, wholly unprotected. The Act requires that at least one United States documented vessel be used in deep-sea mining operations and that the vessels be used in an essential service in foreign trade and commerce.<sup>32</sup> By satisfying these requirements, the investor qualifies for all governmental maritime subsidies.<sup>33</sup>

Three forms of assistance are available. First, the investor may utilize the "construction differential subsidy" (CDS), which requires the federal government to pay the difference between the costs of constructing ships in American rather than in foreign shipyards.<sup>34</sup> The CDS thus provides at least indirect investment protection by significantly reducing the amount of investment capital at risk in complying with the domestic-built vessel requirement. Second, the investor may utilize the "operating differential subsidy" (ODS), which requires the federal government to pay the difference between certain costs of operating vessels under a United States flag as opposed to under a foreign flag.<sup>35</sup> This subsidy helps to compensate for the higher domestic regulatory and labor costs. Finally, tax deferrals through the use of a "capital construction fund" (CCF),<sup>36</sup> coupled with the federal government's financial guarantees under title XI of the Merchant Marine Act,<sup>37</sup> will also enable the investor to lessen the amount of investment capital at risk.<sup>38</sup>

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30. *Deep Seabed Mineral Resources Act: Joint Hearings on S. 493 Before the Subcomm. on Energy Resources and Materials Production of the Senate Comm. on Energy and Natural Resources and the Senate Comm. on Commerce, Science, and Transportation*, 96th Cong., 1st Sess. 273 (1979). These cost determinations do not include the accompanying maintenance and operations costs, the construction costs of the special mining vessels, the license and permit application fees, and the environmental impact statements and regulatory expenses involved. *See id.*

31. *Id.*

32. *See, e.g.*, 30 U.S.C. § 1412(c) (Supp. IV 1980). Ships engaged in deep seabed mining are deemed to be used in an essential service in United States foreign trade and commerce. *Id.* § 1412(c)(4).

33. Miller & Delehant, *supra* note 28, at 454.

34. *Id.* at 454, 471 n.106; *see* 46 U.S.C. §§ 1151-1161 (1976), *as amended by* 46 U.S.C.A. §§ 1151-1161 (West Supp. 1982).

35. Miller & Delehant, *supra* note 28, at 471 n.107; *see* 46 U.S.C. §§ 1171-1176, 1178-1183 (1976), *as amended by* 46 U.S.C.A. §§ 1171-1176, 1178-1183 (West Supp. 1982).

36. 46 U.S.C. § 1177 (1976 & West Supp. 1982).

37. *Id.* §§ 1271-1280 (1976 & West Supp. 1982).

38. Miller & Delehant, *supra* note 28, at 471.



There is no apparent legal impediment to the use of these maritime aids in the deep seabed mining context. Thus, if title XI can be used to guarantee financing for recovery, transportation, and processing vessels, the investment capital at risk would only be twelve and a half percent of the actual cost for transportation and processing vessels, and twenty-five percent of the actual cost for recovery vessels. To the extent the equity in these vessels is funded through the withdrawal of tax-deferred funds from a CCF, the effective cost of such equity is reduced by one-half. Further benefits include investment tax credits and accelerated depreciation for United States documented vessels, and guarantees in title XI covering defaults in payments of principal and interest.<sup>39</sup>

These programs and maritime aids enable the investor to significantly reduce the amount of capital at risk, albeit indirectly. These financial aids are of substantial importance indeed because deep seabed mining vessels must be specially designed or modified for that activity. The most direct benefit to the investor would be realized by establishing a separate corporation, with its assets limited to deep seabed mining vessels, and financing these vessels with one or more of the above programs. By this approach, a substantial portion of the initial investment would be subsidized by the federal government.

## II. REGULATORY REGIME FOR ENVIRONMENTAL PROTECTION

### A. *Environmental Impacts*

Environmental hazards associated with first-generation deep seabed mining remain largely conjectural because no full-scale operation exists from which environmental impact evidence can be adduced. Several federal agencies are statutorily charged with assessing the envi-

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Under Title XI, a United States citizen may obtain a guarantee of debt incurred to finance a new vessel built in, and documented under, the laws of the United States. The maximum guarantee is 87-1/2% of the actual cost of the vessel (75% for certain types of vessels or vessels built with CDS). If the owner of the vessel has in existence or establishes a CCF, then tax deferred earnings from the owner's other vessels may be used to pay for the construction of the new vessel, and earnings from those vessels and/or the new vessel may be used to retire the debt incurred to finance the new vessel. Thus, the combination of these two programs allows one to build a new vessel using Title XI guaranteed financing for the debt and tax-deferred funds from a CCF to fund the required equity and amortize the debt.

*Id.* at 471-72 (footnotes omitted). The government subsidized cost of construction (CDS) mentioned by Miller & Delehant is found at 46 U.S.C. §§ 1159, 1273(c), 1274(b)(2) (1976), as amended by 46 U.S.C.A. §§ 1159, 1273(c), 1274(b)(2) (West Supp. 1982). The similarly mentioned CCF used to retire debt incurred to finance the new vessel's construction is found at *id.* § 1177.

39. Miller & Delehant, *supra* note 28, at 472-73.

ronmental impact on ocean areas of private exploration and recovery.<sup>40</sup> In addition, the National Environmental Policy Act (NEPA)<sup>41</sup> requires the preparation of an environmental impact statement for major federal actions "significantly affecting the quality of the human environment."<sup>42</sup> Recognizing the need for an environmental data base to meet NEPA requirements, the National Oceanic and Atmospheric Administration (NOAA) initiated a comprehensive five-year (1975-80) Deep Ocean Mining Environmental Study (DOMES) at three sites within the area of maximum commercial interest.<sup>43</sup> DOMES had three objectives:<sup>44</sup>

1. To establish environmental (i.e., biological, geological, physical, and chemical) baselines in areas representative of selected environmental situations likely to be encountered during mining.
2. To develop predictive capabilities concerning the environmental effects of nodule recovery.
3. To help develop an information base to be used in preparing environmental guidelines for industry and government.<sup>45</sup>

The DOMES project examined five types of activity: mining, nodule transfer, offshore processing, offshore support activities, and offshore waste disposal.

### 1. Mining

Environmental concerns surrounding mining operations involve both the nodule collector's contact with the ocean floor, and the sedi-

40. The National Oceanic and Atmospheric Administration (NOAA), in consultation with the Environmental Protection Agency (EPA) and other appropriate agencies, is required to study the marine environment and, if necessary, to prepare and publish a programmatic environmental impact statement (PEIS) "assess[ing] the environmental impacts of exploration and commercial recovery" in areas where commercial exploration and recovery are permitted by the statute. 30 U.S.C. § 1419(c)(1) (Supp. IV 1980).

41. 42 U.S.C. § 4332 (1976).

42. *Id.* § 4332(2)(C).

43. 1 OFFICE OF OCEAN MINERALS & ENERGY, NATIONAL OCEANIC & ATMOSPHERIC ADMIN., U.S. DEP'T OF COMMERCE, DEEP SEABED MINING: FINAL PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT 17-18 (Sept. 1981) [hereinafter cited as NOAA-PEIS]. Each site selected was "representative of a peculiar set of environmental conditions likely to be encountered in mining." *Id.* at 18. Site selection was based "on the need to characterize the range of environmental variability in the region, with particular emphasis given to biological productivity." *Id.*

44. In 1980, Congress ordered the NOAA to "expand and accelerate" the DOMES program to further assist in licensing procedures and PEIS preparation. 30 U.S.C. § 1419(a)(1), (b)-(d) (Supp. IV 1980).

45. NOAA-PEIS, *supra* note 43, at 17-18.

ment discharge plumes resulting from nodule extraction. Although collector heads cut only slightly into the seabed, some destruction of marine life is inevitable, as is the release of sediment at various points in the water column.<sup>46</sup>

*Impact on the Ocean Floor.* Although the depths at which nodules occur typically are areas of low macrobiological activity, benthic (bottom-dwelling) organisms in the dredge head's path certainly will be destroyed. Macrobenthic organisms modify the physical and chemical properties of ocean sediments, although their precise role in the marine food chain is virtually unknown. Their reproductive cycle is very slow and their ability to repopulate mined areas also is unknown.<sup>47</sup> However, microbenthic organisms, such as protozoans, microbes, and bacteria, release plant nutrients into the ecosystem and convert detritus and dissolved organic material into particulates used by larger organisms.<sup>48</sup> Further, the nodules themselves are habitats for various microbenthic organisms.<sup>49</sup>

Still, a significant risk is posed by bottom sediment disturbances great enough to disrupt the chemical and absorptive equilibrium between the ocean floor and the water column. The equilibrium may take decades to reestablish, the nutrient level of the water may decrease, and the rate of nodule formation may be impaired by the destruction of microbenthic organisms. However, the DOMES project, in compiling the data used to formulate the programmatic environmental impact statement (PEIS), monitored the environmental effects of pilot-scale mining operations conducted by two deep seabed mining consortia and concluded that there were no potentially catastrophic adverse effects.<sup>50</sup>

*Impact on the Water Column.* Both economically and ecologically,

46. Kotz, *supra* note 1, at 81.

47. *Id.* at 82.

48. *Id.* at 83. The bacterial activity triggers high nutrient levels as well, and some of the world's richest fisheries are located where the nutrient-rich, deep ocean water wells to the surface. *Id.*

49. [T]hese microbes . . . appear to play a significant role in the development of the nodules. Certain bacteria oxidize the manganous ion to an insoluble tetravalent state, which ion then precipitates onto the growing nodule; the resultant manganese oxide then acts as a scavenger, attracting other cationic components of nodules, such as iron, copper, cobalt, and nickel, which are known to adsorb strongly on manganese oxide.

*Id.* (footnote omitted).

50. NOAA-PEIS, *supra* note 43, at 61-62, 66. The benthic plumes raised by the dredge head settled rapidly. *Id.* at 62.

the greatest technical problem lies in minimizing the amount of sediment discharged into the water column. This is the area where the environmental impact of nodule extraction could be extremely damaging.<sup>51</sup>

Nodules are often found in red clay deposits, which form the finest of all ocean sediments. Given its size, this sediment could remain suspended almost indefinitely and may turn the ocean mining areas a reddish brown hue. Along with being undesirable from an aesthetic standpoint, the sediment could also interfere with light penetration into the euphotic zone (the upper 100 meters of the water column). Light entering the euphotic zone is utilized through photosynthesis by plants to begin the marine food cycle upon which all other sea life depends.<sup>52</sup>

While monitoring surface discharge from a pilot mining ship, DOMES tests revealed that the sediment unavoidably dredged to the surface actually settled more rapidly than expected, suggesting that the particles agglomerate and sink rapidly along with the cold bottom water. The concentration of particulates near the surface was so low after five hours that the discharge plume was no longer instrumentally detectable.<sup>53</sup>

All of the currently existing mining systems are designed to separate the nodules from surrounding sediment. The bucket system works best because the finer sediment is washed out of the buckets as they rise.<sup>54</sup> However, the pumping systems will raise a substantial amount of sediment through conduits to the surface ship unless special trap valves are installed along the pipeline.<sup>55</sup>

The quantities of sediment raised will have a significant impact on the feasibility of a given mining operation for two primary reasons. First, large amounts of sediment will strain the mining machinery, increasing repair costs and decreasing the efficiency of its operation and its useful life.<sup>56</sup> Second, because the dangers of sedimentary discharge into the water column are potentially great, the international and domestic environmental regimes will impose substantial costs to minimize

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51. Although data is lacking to confidently state whether the consequence of circulating bottom sediments will be beneficial, harmful, or innocuous, the potential dangers are substantial.

52. Kotz, *supra* note 1, at 85-86.

53. NOAA-PEIS, *supra* note 43, at 62. The instrument used in measuring particulate suspension is called a nephelometer. It measures concentration or particulate size by means of transmitted or reflected light. *Id.* at 215.

54. Kotz, *supra* note 1, at 86.

55. *Id.*

56. *See id.*

the discharges, the sedimentary content of the discharges, or both.<sup>57</sup> Therefore, the mining consortia's economic self-interest dictates that equipment be designed to leave most of the bottom sediment in place while maximizing large-scale nodule collection.

*Impact on Endangered Species: Marine Mammals and Sea Turtles.* During the DOMES study, a list of endangered and threatened marine mammals and turtles that could inhabit both the DOMES and the prime mining areas was compiled.<sup>58</sup> The presence of these mammals and sea turtles is significant because they either inhabit, migrate through, mate, or feed in the areas best suited for deepsea mining, and the mining processes may inhibit these activities.<sup>59</sup>

## 2. Nodule Transfer

Nodules could be transferred from the mining ship to a transport carrier by slurry hose, pneumatic hose, or conveyor. The slurry hose is the method currently favored by the mining consortia.<sup>60</sup> The nodules would be crushed either by the mining equipment on the ocean floor or in the mining ship, thus facilitating their transfer to the transport ship via slurry hose.<sup>61</sup> No significant environmental hazard seems to be posed by this activity.

## 3. Offshore Processing

Environmental risks escalate substantially if nodule refinement oc-

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57. Sedimentary discharges into the water column are controlled internationally by the Intergovernmental Conference on the Convention on the Dumping of Wastes at Sea, *done* Nov. 13, 1972, 11 INT'L LEGAL MATERIALS 1291, 1294 (1972) [hereinafter cited as Intergovernmental Conference], although the Convention by its terms covers only the dumping of wastes produced from on-shore processing plants and explicitly does not cover "[t]he disposal of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources." *Id.* at 1296. Domestic regulation is required by article 211 of UNCLOS III's draft convention, Draft Convention, *supra* note 28, and is also currently provided by the Marine Protection, Research, and Sanctuaries Act, 33 U.S.C. §§ 1401-1444 (1976 & Supp. IV 1980), and by the permit issuance regulations of 40 C.F.R. §§ 221-228 (1981).

58. The DOMES study's list of species included the humpback, blue, sperm, boshead, sei, fin, right, and gray whales; the green, hawksbill, loggerhead, leatherback, Kimp's, Flatback, Atlantic, Pacific, Ridley, and Olive sea turtles; the Hawaiian monk seal; the sea otter; and the West Indian and Florida manatee. NOAA-PEIS, *supra* note 43, at 287-91.

59. United States policy concerning endangered species, as embodied in the Endangered Species Act, 16 U.S.C. §§ 1531-1543 (1976 & Supp. IV 1980), and the Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1407 (1976 & Supp. IV 1980), does not pose a major barrier to deep-sea mining operations.

60. NOAA-PEIS, *supra* note 43, at 70.

61. *Id.* at 232.

curs at sea.<sup>62</sup> Although ocean disposal technology is available, it would have to be adapted to handle the particular types and quantities of wastes produced in extracting minerals from the nodules.<sup>63</sup> Currently, the mining consortia generally reject the notion of nodule refining at sea because the transportation of reagents, power supply, and the long-term maintenance of personnel at sea are substantial, economically complicating factors.<sup>64</sup> Nevertheless, strong profit incentives exist to encourage the industry to overcome these problems<sup>65</sup> and such operations may eventually occur, probably after the first generation of deep seabed mining.<sup>66</sup>

NOAA envisions three classes of treatment schemes that might be used to process the nodules at sea: "1. A minimum treatment to upgrade nodules by physical means (beneficiation). 2. Partial treatment of nodules by chemical and physical means to produce an intermediate product whose volume is less than that of raw nodules. 3. Complete at-sea treatment to produce finished metal products."<sup>67</sup>

The first two treatment schemes are not presently viable options. The nodules are not amenable to beneficiation under currently known principles of nodule mineralogy and the installation of a processing plant or any of its constituent elements for complete at-sea treatment would subject that equipment to the rolling motions of the ship at sea.<sup>68</sup> The crucial leaching operation, normally performed in mixer-settler tanks, would be particularly affected. Because these units depend on gravity, even small vessel motions would adversely affect the process.<sup>69</sup> Therefore, complete at-sea nodule processing will probably require the development of new metal separation and reduction technology.

The technological breakthroughs necessary for either beneficiation or complete at-sea processing are unlikely to emerge in the first generation of deep seabed mining activities. Thus, the most practicable current proposal would be to partially process the nodules at sea and complete the production of marketable metals onshore.<sup>70</sup>

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62. *Id.* at 59-61, 73.

63. *See id.* at 231.

64. Kotz, *supra* note 1, at 87; *see* NOAA-PEIS, *supra* note 43, at 229.

65. Kotz, *supra* note 1, at 87.

66. *Id.*; NOAA-PEIS, *supra* note 43, at 230.

67. NOAA-PEISS, *supra* note 43, at 229.

68. *Id.*

69. *Id.*

70. *Id.* at 230.

#### 4. Offshore Support Activities

No significant environmental impacts are likely to result from the presence of support ships at the mining site. Garbage disposal and incineration units, and sewage treatment and holding devices are common on ships, and could be required as part of the regulatory regime for older ships. Oil spills would be insignificant because of the small volumes of oil involved.<sup>71</sup>

#### 5. Offshore Waste Disposal

The dumping of wastes at sea poses the greatest single threat to the marine environment. Efficient regulation will require international cooperation and domestic oversight to ensure that the quality of the marine environment is not adversely affected. Because there is no real intent to process the nodules at sea during the first generation of mining operations, on-site dumping is not a current problem. However, international and domestic regulations are in place to govern the dumping of wastes at sea produced by on-shore processing plants, and could probably be easily amended to cover on-site dumping when it becomes a viable option.

*International Regulation.* The Convention on the Dumping of Wastes at Sea (Convention),<sup>72</sup> to which the United States is a signatory, recognizes the international importance of the marine environment and the limited ability of the sea to regenerate itself and espouses the conviction that the problem be addressed without delay.<sup>73</sup>

Articles I and II obligate signatories to "promote the effective control of all sources of pollution of the marine environment, and [to] pledge themselves especially to take all practicable steps to prevent the

71. *Id.* at 231.

72. Intergovernmental Conference, *supra* note 57, at 1294.

73. The Preamble to the Convention in part provides:

*The Contracting Parties to this Convention*

*Recognizing* that the marine environment and the living organisms which it supports are of vital importance to humanity, and all people have an interest in assuring that it is so managed that its quality and resources are not impaired;

*Recognizing* that the capacity of the sea to assimilate wastes and render them harmless, and its ability to regenerate natural resources, is not unlimited;

. . . .

*Being Convinced* that international action to control the pollution of the sea by dumping can and must be taken without delay . . . ;

*Have agreed* as follows . . . .

*Id.* at 1294-95.

pollution of the sea by the dumping of waste.”<sup>74</sup> Under this agreement, the contracting parties are to work both individually and collectively in harmony toward this end.<sup>75</sup>

“Dumping” is defined in article III as the “deliberate disposal at sea of wastes or other matter.”<sup>76</sup> However, the Convention, by its terms, is limited to the dumping of wastes produced on land. The disposal of wastes from the exploration or exploitation of deep seabed minerals is specifically excepted from coverage.<sup>77</sup>

Article IV contains specific guidelines and prohibitions regarding the types of wastes contemplated by the Convention. The dumping of the wastes enumerated in annex I of the agreement, such as mercury, cadmium, and organohalogen compounds, high-level radioactive wastes, and materials produced for biological or chemical warfare, is strictly prohibited.<sup>78</sup> Annex II wastes, such as materials with significant amounts of arsenic, lead, pesticides, and lower-level radioactive wastes, require special prior permits.<sup>79</sup> The dumping of all other types of wastes requires a general prior permit.<sup>80</sup> Permits are issued only after careful consideration of all the factors enumerated in annex III, such as the total amount, concentration, form, composition, toxicity, persistency, and accumulation of the wastes.<sup>81</sup>

Article V provides for exceptions to the restrictions of article IV when an emergency arises from a force majeure, endangering the safety

74. *Id.* at 1295.

75. *Id.*

76. *Id.*

(a) “Dumping” means:

(i) any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea;

(ii) any deliberate disposal at sea of vessels, aircraft, platforms or other man-made structure at sea;

(b) “Dumping” does not include:

(i) the disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels, aircraft, platforms or other man-made structures at sea and their equipment, other than wastes or other matter transported by or to vessels, aircraft, platforms or other man-made structures at sea, operating for the purpose of disposal of such matter or derived from the treatment of such wastes or other matter on such vessels, aircraft[,] platforms or structures.

(ii) placement of matter for a purpose other than the mere disposal thereof, provided that such placement is not contrary to the aims of this convention.

*Id.* at 1295-96.

77. *Id.* at 1296.

78. *Id.* at 1297, 1310. Art. IV(3) permits contracting states to prohibit the dumping of other materials not listed. *Id.* at 1297.

79. *Id.* at 1297, 1310-11.

80. *Id.* at 1297.

81. *Id.* at 1297, 1311-13.



of human life or property at sea, or where there is an emergency that poses an unreasonable risk to human health that admits of no other feasible solution. Article V also allows the issuance of a special dumping permit for the prohibited wastes in article IV(1)(a) and annex I in these emergency cases, upon due consultation with any other countries likely to be affected by the dumping.<sup>82</sup>

Article VI obligates each contracting state to designate an appropriate domestic authority to issue special or general dumping permits; to keep records of the types, quantities, locations, times, and methods of dumping; and to monitor the sea's condition to enable prompt discovery of any real or potential environmental threat to the marine environment.<sup>83</sup>

Article VII obligates each signatory to apply the Convention's measures to all vessels registered or loaded in its territory and to any vessels or platforms, fixed or floating, within its jurisdiction. Each state is further obligated to prevent and punish any dumping in violation of the Convention.<sup>84</sup> Indeed, signatories undertake, through article X, to develop procedures for the assessment of liability and the settlement of disputes. These procedures are to be developed in accordance with principles of international law regarding state responsibility for damages to the environment.<sup>85</sup>

Article VIII encourages the signatories to cooperate on a regional basis, where there are "common interests to protect in the marine environment in a given geographical area," by entering into "regional agreements consistent with [the] Convention for the prevention of pollution, especially by dumping."<sup>86</sup> Convention signatories are encouraged to cooperate "in the field of monitoring and scientific research."<sup>87</sup>

Article XII enumerates pollutants from which the contracting states pledge to protect the marine environment.<sup>88</sup> Although the Con-

82. *Id.* at 1298.

83. *Id.* at 1299-300.

84. *Id.* at 1300-01.

85. *Id.* at 1302. However, the Convention itself is inapplicable to any vessels entitled to sovereign immunity under international law (e.g., naval vessels). Nevertheless, those vessels are encouraged to abide by the Convention's terms. *Id.* at 1301.

86. *Id.*

87. *Id.*

88. These pollutants are,

- (a) hydrocarbons, including oil, and their wastes;
- (b) other noxious or hazardous matter transported by vessels for purposes other than dumping;

vention is specifically inapplicable to waste disposal from deep-sea mining operations, article XII(f) encourages signatories to promote the protection of the marine environment, through competent specialized agencies, from harmful effects of waste disposal from deep-sea mining operations.<sup>89</sup>

The international community has thus expressed its concern for the safety of the marine environment by creating this Convention to comprehensively establish an international environmental regulatory regime. The Convention recognizes, however, that each signatory should construct a domestic regulatory regime to supplement and refine its terms. The proposed draft of the UNCLOS III Convention supplements the Convention on Marine Pollution by requiring states to adopt pollution control laws at least as strict as those generally accepted internationally.<sup>90</sup> The United States has strict anti-dumping laws and regulations already in place.

*Domestic Regulation.* The Marine Protection, Research, and Sanctuaries Act (MPRSA)<sup>91</sup> was enacted in recognition of the dangers posed to the human and marine environment by the unregulated dumping of materials at sea.<sup>92</sup> The congressional policy underlying the MPRSA is to regulate all marine dumping by prohibiting or strictly limiting any dumping that would adversely affect the ocean's environment, ecological system, or economic potentialities.<sup>93</sup> The MPRSA's scope is broad. It regulates all vessels from the United States and American vessels from abroad which dump into the ocean or into the United States' territorial sea or contiguous zone,<sup>94</sup> thus probably cover-

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- (c) wastes generated in the course of operation of vessels, aircraft, platforms and other man-made structures at sea;
  - (d) radioactive pollutants from all sources, including vessels;
  - (e) agents of chemical and biological warfare;
  - (f) wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources.

*Id.* at 1303.

89. *Id.*

90. Art. 211 is set forth in Draft Convention, *supra* note 28.

91. 33 U.S.C. §§ 1401-1444 (1976 & Supp. IV 1980).

92. *Id.* § 1401(a). This subsection states, "Unregulated dumping of material into ocean waters endangers human health, welfare, and amenities, and the marine environment, ecological system, and economic potentialities." *Id.*

93. *Id.* § 1401(b).

94. *Id.* §§ 1401(c), 1411. MPRSA's scope apparently does not affect the common practice of registering vessels under a "flag of convenience" for the purpose of circumventing U.S. laws and regulations. *See id.*

ing the dumping of wastes at sea resulting from on-site nodule processing operations.

The Administrator of the EPA may issue dumping permits upon application.<sup>95</sup> In no case, however, will permits be issued to dump radiological, biological, or chemical warfare agents, high-level radioactive wastes, or any other material which will violate applicable water quality standards, or would unreasonably impair navigation in the territorial sea.<sup>96</sup> The MPRSA provides for the recognition and acceptance of dumping permits issued by a foreign state only if the permit is issued in accordance with the Convention's requirements and under the MPRSA's provisions.<sup>97</sup> The same criteria apply when applications for permits to dump dredged materials are made.<sup>98</sup> Thus, the MPRSA is more comprehensive and restrictive than the Convention. This fact is consistent with the Convention's recognition that it was merely intended to serve as an outline that each state was free to restrictively supplement.<sup>99</sup>

The dumping permits issued pursuant to the MPRSA designate the type and amount of material authorized to be dumped, the location and duration of the dumping, and any other special or appropriate pro-

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95. *Id.* § 1412(a). Factors that the Administrator may consider are enumerated in the statute, although the statute expressly states that the list is not exhaustive. These factors are:

- (A) The need for the proposed dumping.
- (B) The effect of such dumping on human health and welfare, including economic, esthetic, and recreational values.
- (C) The effect of such dumping on fisheries resources, plankton, fish, shellfish, wildlife, shore lines and beaches.
- (D) The effect of such dumping on marine ecosystems, particularly with respect to—
  - (i) the transfer, concentration, and dispersion of such material and its byproducts through biological, physical, and chemical processes,
  - (ii) potential changes in marine ecosystem diversity, productivity, and stability, and
  - (iii) species and community population dynamics.
- (E) The persistence and permanence of the effects of the dumping.
- (F) The effect of dumping particular volumes and concentrations of such materials.
- (G) Appropriate locations and methods of disposal or recycling, including land-based alternatives and the probable impact of requiring use of such alternate locations or methods upon considerations affecting the public interest.
- (H) The effect on alternate uses of oceans, such as scientific study, fishing, and other living resource exploitation, and non-living resource exploitation.
- (I) In designating recommended sites, the Administrator shall utilize wherever feasible locations beyond the edge of the continental shelf.

*Id.*

96. *Id.* §§ 1412(a), 1416(c).

97. *Id.* § 1412(e).

98. *Id.* § 1413.

99. See arts. I, II, IV(3), VI, VII(5), VIII, IX, X, XII, Intergovernmental Conference, *supra* note 57, at 1295-303.

visions to monitor these activities that the situation may require.<sup>100</sup> These permits are subject to periodic review and may be revised, altered, or revoked, in whole or in part, if the dumping cannot be effected in compliance with the MPRSA criteria.<sup>101</sup>

Any person violating the MPRSA is subject to civil liability.<sup>102</sup> There is a potential \$50,000 fine per violation, with each day of a continuing violation constituting a separate offense.<sup>103</sup> Knowing violations of the MPRSA subject the violator to potential criminal liability.<sup>104</sup> In no case, however, will any person be civilly or criminally liable for dumping materials in an emergency to safeguard life at sea.<sup>105</sup>

To enforce the MPRSA, the EPA, in cooperation with other federal or state entities, may engage in surveillance and other appropriate enforcement activities to prevent unlawful dumping.<sup>106</sup> Additionally, the Secretary of State may seek international action and cooperation to achieve the MPRSA's environmental protection and regulatory aims.<sup>107</sup>

Section 1418 of the MPRSA empowers the EPA to prescribe an appropriate regulatory matrix to carry out its statutory responsibilities regarding the issuance of dumping permits.<sup>108</sup> Any person may seek a dumping permit after the provision of certain requested information<sup>109</sup>

100. 33 U.S.C. § 1414(a).

101. *Id.* § 1414(d).

102. *Id.* § 1414(a), (e). The Act allows for in personam jurisdiction to be conferred under § 1414(a) and for in rem jurisdiction to be conferred over the vessel under § 1414(e). *Id.*

103. *Id.* § 1415(a), (c). Mitigating factors, such as the gravity of the violation, the existence of any prior violations, and the demonstrated good faith of the wrongdoer in attempting to quickly comply with MPRSA requirements after notification of a violation, will be taken into account in considering possible reductions in the penalty levied. *Id.* § 1415(a).

104. *Id.* § 1415(b). Criminal liability may consist of fines of up to \$50,000 per violation or imprisonment for up to one year, or both. *Id.* Violators possessing permits to dump may be enjoined from dumping because of imminent or continuing violations of the MPRSA, or may have their permits revoked or suspended. *Id.* § 1415(d), (f). Violators may also be subject to civil suits brought by private persons with subsequent awards for damages as well as for costs and attorneys' fees. *Id.* § 1415(g).

105. *Id.* § 1415(h). All emergency dumping, however, must be reported to the EPA. *Id.*

106. *Id.* § 1417(a), (c).

107. *Id.* § 1419.

108. *Id.* § 1418.

109. 40 C.F.R. §§ 221.1-4 (1981). The proper information consists of the person's name and address, and the name of the person or firm producing or processing the materials to be dumped and the vessel transporting it out to sea; an adequate physical and chemical description of the materials; the quantity proposed to be dumped; the proposed date, time, site, and method of dumping; an identification of the specific process or activity giving rise to the waste materials; a description of previously-used disposal methods, a statement of the need for the proposed dumping, accompanied by an evaluation of short and long-term alternative disposal methods; an environmental impact statement that specially assesses the duration of the effect on the marine environment and its various uses; and any other relevant information required by the EPA. *Id.*

and the payment of necessary fees.<sup>110</sup> An EPA decision on a permit, regarding issuance, denial, or imposition of special conditions, would be made, if possible, within 180 days from the filing of a complete application.<sup>111</sup>

If a permit is issued, it must be displayed on the vessel used for dumping and must generally contain all the information required by the EPA in the permit application.<sup>112</sup> All permits are subject to periodic review, and may be revised or revoked, in whole or in part, if the cumulative impact of the dumping has a detrimental effect on the surrounding waters.<sup>113</sup> Before a revision or revocation decision is made final, any person may request a hearing on the decision.<sup>114</sup> The proce-

110. *Id.* § 221.5. The processing fee is \$1,000. An additional \$3,000 fee is charged for each application to dump in a site other than those designated in the regulations. *Id.* A list of approved interim dump sites is found at *id.* § 228.12 (amended at 47 Fed. Reg. 17,818 (1982)).

111. *Id.* § 222.1. Within 30 days of the receipt of an application by the EPA, an applicant would be given notice of whether his application is complete and what, if any, additional information is required. *Id.* § 222.2(a). The requirement that the application be complete is probably the single greatest source of delay in the issuance process. Within 30 days after the application is deemed complete, the EPA is required to publish notice of the application, including a tentative determination to issue or deny the permit. If the permit is tentatively granted, the EPA also must tentatively determine the proposed time limit on the permit, the proposed dump site, and any other appropriate proposed conditions. *Id.* § 222.2(b). Within 30 days of the EPA's publication of notice, any person may request a public hearing to consider the issuance or denial of, or any conditions to be imposed upon, the permit. *Id.* § 222.4(a). The EPA also may institute a hearing. *Id.* § 222.4(b). The hearing shall be held within 30 days of the receipt of such a request if the request presents genuine issues, and, whenever practicable, the hearing shall be held in the state closest to the dump site. *Id.* §§ 222.4(b), 222.5.

Within 30 days after the hearing, the presiding officer must submit a written recommendation to the EPA, stating the basis for the recommendation and the evidence relied on in reaching it. *Id.* § 222.8. The EPA has 30 days from the receipt of such recommendation to finally determine whether to issue or deny the permit. *Id.* § 222.9(a). Any interested party who participated in the hearings may appeal the decision in an administrative adjudicatory proceeding with the EPA within 10 days of the receipt of the notice of the final decision. *Id.* § 222.10. During such an appeal, the petitioner carries the burden of going forward with the evidence disputing the EPA's decision. The filing of this appeal is also a prerequisite to obtaining judicial review of the decision rendered in the adjudicatory process. *Id.* §§ 222.11(f), 222.12.

112. *Id.* § 223.1. Such permits may be of a special, interim, emergency, general, or research nature. *Id.*

113. *Id.* §§ 223.3(a)(1), 228.10(c)(1). Dumping which has a detrimental effect is defined as that which causes the detectable movement or accumulation above normal ambient values of any waste within 12 nautical miles of any shoreline or marine sanctuary; an adverse effect on the biota, sediments, or water column, to the extent there is a statistically significant decrease in the population of specific biota species or of valuable commercial and recreational species, or an adverse effect on the taste or odor of important recreational or commercial species; an accumulation of solid waste that significantly impairs major uses of the dump site or adjacent areas; or the toxic concentration of wastes above normal ambient values outside the disposal site more than four hours after disposal. *Id.* This decision may also be influenced by changes in circumstances relating to the dump site's management, whether the authorized dumping would violate applicable water quality standards, and whether the dumping can be carried out consistently with the environmental and managerial regulatory criteria. *Id.* § 223.3(a)(2)-(4).

114. *Id.* § 223.4(a).

dures involved thereafter is substantially similar to that involved in the permit application process.<sup>115</sup>

The regulations also require extensive record-keeping and reporting by permit holders.<sup>116</sup> Records must be kept available at all times for inspection by the EPA and the Coast Guard and the reports must be made every six months, or as specially required by the permit itself.<sup>117</sup>

The regulatory criteria for the environmental evaluation necessary to the issuance of a dumping permit are extensive and complex. The general rule is that if the applicant satisfactorily demonstrates that the material to be dumped meets the relevant environmental impact criteria, a dumping permit will be issued.<sup>118</sup> The EPA also has the discretion to allow temporary dumping of materials that do not otherwise satisfy the environmental impact criteria, if the materials do not contain certain specified materials that may never be dumped or contain only trace amounts of other specified materials; when there is a need to ocean dump the materials and no alternatives exist; and where the need to dump outweighs the public interest in preventing adverse effects on the ocean.<sup>119</sup>

Paralleling the Convention, the regulations absolutely prohibit the ocean dumping of high-level radioactive wastes; materials in any form produced for radiological, chemical, or biological warfare; persistent materials which may materially interfere with navigation, fishing, or other legitimate uses of the ocean; and any other materials so insufficiently described as to their composition and properties that the environmental impact criteria cannot be applied.<sup>120</sup> Further, the dumping of materials containing more than trace amounts of certain materials is prohibited except on an emergency basis.<sup>121</sup> Limits also are placed on

115. See *id.* §§ 223.4-.5.

116. Complete records of the following information must be maintained: "(a) The physical and chemical characteristics of the material dumped pursuant to the permit; (b) The precise times and locations of dumping; (c) Any other information required as a condition of a permit by the Administrator or the Regional Administrator, as the case may be." *Id.* § 224.1.

117. *Id.* §§ 224.1-.2. Explanative reports of any emergency dumpings must also be made. *Id.* § 224.2(b).

118. *Id.* § 227.2(a). This is true unless: "(1) There is no need for the dumping, and alternative means of disposal are available . . . (2) There are unacceptable adverse effects on esthetic, recreational or economic values . . . (3) There are unacceptable adverse effects on other uses of the ocean . . ." *Id.*

119. *Id.* §§ 227.2(b), 227.3. The materials that may never be dumped into the ocean are listed at §§ 227.5-.6.

120. *Id.* § 227.5.

121. *Id.* § 227.6(a). Those materials are organohalogen, mercury, cadmium compounds, oil of

other wastes<sup>122</sup> and on the disposal rates of toxic wastes, the quantities of waste materials that may be dumped, and wastes in containers.<sup>123</sup>

The need for ocean dumping will be decided on a case by case basis, rather than by the promulgation of specific quantitative criteria for each permit application.<sup>124</sup> If a thorough consideration of relevant factors demonstrates the need for ocean dumping in a particular case, the permit will be issued if the adverse environmental impact cannot be reduced through: (1) Practicable improvements in process technology or waste treatment; (2) practicable alternative locations; and (3) other methods of disposal and recycling.<sup>125</sup> Additional regulatory factors weighed in the permit issuance process are the impact of the proposed dumping on aesthetic, recreational, and economic values, and on other uses of the ocean.<sup>126</sup> A quantitative assessment of these factors will be based on criteria such as the percentage of a resource lost, the reduction in use of recreational areas, and the dollars lost in commercial uses and

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any kind or in any form, and known carcinogens, mutagens, or teratogens. *Id.* However, these materials could be dumped if,

the applicant can demonstrate that such constituents are . . . non-toxic to marine life and non-bioaccumulative in the marine environment . . . or . . . will be rapidly rendered non-toxic to marine life . . . by chemical or biological degradation in the sea; provided they will not make edible marine organisms unpalatable; or will not endanger human health or that of domestic animals, fish, shellfish, or wildlife.

*Id.* § 227.6(f).

122. *Id.* § 227.7. Limits are placed on wastes containing materials that are insoluble or only slightly soluble in sea water, radioactive materials, living organisms, and materials that consume oxygen in any fashion, and on wastes that are highly acidic or alkaline. *Id.*

123. *Id.* §§ 227.8-11, 227.21.

124. The following factors will be considered in determining the need for dumping:

- (a) Degree of treatment useful and feasible for the waste to be dumped . . . ;
- (b) Raw materials and manufacturing or other processes resulting in the waste, and whether or not these materials or processes are essential to the provision of the applicant's goods or services, or if other less polluting materials or processes could be used;
- (c) The relative environmental risks, impact and cost for ocean dumping . . .
- (d) Irreversible or irretrievable consequences of the use of alternatives to ocean dumping.

*Id.* § 227.15.

125. *Id.* § 227.16(a). The practicability of improvements in process technology and waste treatment discussed in the regulations is essentially a decision based on a cost-benefit analysis, i.e., whether they are available at a reasonable incremental cost and energy expenditures. *Id.* § 227.16(b). The logical extension of this notion is that the permit may contain conditions causing the permittee to phase out or cease dumping as these technologies and treatment processes become available. This consideration thus also becomes part of the periodic review process. *Id.* § 227.16(c).

126. *Id.* §§ 227.17-22. A multitude of factors are relevant here, such as the effect on commercial and recreational fishing in the open ocean, coastal, and estuarine areas; recreational use of shorelines and beaches; navigation; exploitation of marine resources; and scientific research. *Id.* § 227.21. Other factors considered are water quality, human health due to the accumulation of pathogenic organisms or toxic chemicals, and the marine environment generally. *Id.* § 227.18.

enterprises.<sup>127</sup>

Finally, technical regulations are imposed so that the concentration of waste constituents after dumping does not exceed maximums termed the "limiting permissible concentration" (LPC).<sup>128</sup> Briefly, the LPC seeks to prevent high toxicity in the water column or the accumulation of the wastes or toxic substances in the human food chain.<sup>129</sup>

The regulations also govern the management of the ocean dumpsites.<sup>130</sup> Selection of a dumpsite requires consideration of many factors, including interference with other marine activities, such as fishing and navigation, and the ability of the water to return to normal quality levels before reaching shorelines, beaches, fisheries, or marine sanctuaries.<sup>131</sup>

The EPA would be the dumpsite's management authority,<sup>132</sup> and may regulate dumping by time and rate once it designates an area as a dumpsite.<sup>133</sup> The EPA also may monitor the site to assure compliance with permit conditions, environmental regulations, and the applicable law.<sup>134</sup> The impact of waste disposal at the site would be periodically reviewed, through trend assessment and monitoring surveys, and the use of the site may be modified if the cumulative effect of the dumping has an adverse effect on the surrounding waters.<sup>135</sup> These precautions,

127. *Id.* § 227.19.

128. *See id.* § 227.27.

129. The regulations deal with the liquid, solid, and suspended particulate phases of dumped material. *Id.* §§ 227.27-32. The LPC of the liquid waste following the "initial mixing" period (within four hours of dumping, *id.* § 227.29) must not exceed applicable marine water quality criteria or, if there are no criteria, must not exceed a toxicity threshold defined as one percent of a concentration shown to be acutely toxic to the appropriate sensitive marine species. *Id.* § 227.27(a). For the suspended particulate and solid phases, the LPC is that concentration which will not cause unreasonable acute or chronic toxicity in appropriate sensitive marine species, and which will not cause the accumulation of toxic materials in the human food chain. *Id.* § 227.27(b).

For technical information regarding initial mixing, radioactive waste, marine water quality standards, and the particulate phase of materials, see *id.* §§ 227.29-32.

130. *Id.* §§ 228.1-13.

131. *Id.* § 228.5. More specific criteria include geographic position; water depth; bottom topography; distance from the coast; location relative to breeding, spawning, nursery, feeding, or passage areas of juvenile or adult living resources; location relative to beaches; waste types, quantities, packaging, and disposal methods; feasibility of enforcement surveillance and monitoring; velocity and direction of prevailing currents; dispersal, horizontal transportation, and vertical mixing characteristics of the area; cumulative effects of any current and pre-existing dumping; interference with science, fish and shellfish, recreation, and mining; existing water quality; and location at or near a site of significant natural, cultural, or historic importance; as well as any other relevant factors. *Id.* § 228.6(a).

132. *Id.* §§ 220.4, 228.3(b).

133. *Id.* § 228.3(a).

134. *Id.* §§ 228.7-9.

135. *Id.* §§ 228.10-11.



along with the migratory nature of the most commercially valuable marine species and the sheer size of the oceans, will minimize or prevent substantial environmental damage, at least in the short run. Further experience and technological advances may also lessen the long-term damage to the marine environment.

One final piece of potentially applicable federal domestic legislation is the Resource Conservation and Recovery Act (RCRA).<sup>136</sup> The RCRA prohibits open dumping and requires safe and adequate treatment, storage, and disposal of toxic wastes.<sup>137</sup> The Act also requires conversion to dumping facilities which do not pose environmental or health dangers.<sup>138</sup> A substantial impediment to the land disposal of nodule mining wastes would occur if they are classified as "hazardous."<sup>139</sup> Presently, it is unclear whether nodule tailings are hazardous wastes within the provisions of the RCRA. Although the tailings are unlikely to cause an increase in mortality, serious irreversible or incapacitating reversible illnesses, improper land storage may cause leaching, which could possibly affect the water supply and human health within the meaning of the statute.<sup>140</sup> Like the MPRSA, the RCRA has extensive statutory and regulatory control over the generation, transportation, storage, treatment, and disposal of hazardous wastes, and essentially parallels the MPRSA's methods of permit issuance, review, liability, and enforcement.<sup>141</sup>

### III. THE DEEP SEABED HARD MINERAL RESOURCES ACT

#### A. *The Impetus, Need, and Premise for Domestic Legislation*

The Deep Seabed Hard Mineral Resources Act of 1980<sup>142</sup> repre-

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136. 42 U.S.C. §§ 6901-6987 (1976 & Supp. IV 1980). Implementing regulations are found at 40 C.F.R. §§ 33.001-750 (1981). State laws also regulate land disposal of mining wastes, thus providing extensive environmental protection and regulation.

137. 42 U.S.C. § 6902 (1976).

138. *Id.* § 6902(3).

139. Hazardous wastes are defined in the RCRA as, a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may—

(A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or

(B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

*Id.* § 6903(5).

140. Keith, *supra* note 11, at 119.

141. *See* 42 U.S.C. §§ 6921-6931.

142. 30 U.S.C. §§ 1401-1473 (Supp. IV 1980).

sents the culmination of nine years of congressional effort to develop a legal framework conducive to investment and technological development, while assuring other nations that the United States does not assert exclusive ownership of deep seabed mineral resources.<sup>143</sup> Passage of the Act also manifested Congress' frustration over the inability of UNCLOS III to conclude a satisfactory Law of the Sea Treaty.<sup>144</sup>

Congress recognized that the existing legal uncertainties caused many potential investors and miners to defer their plans and threatened stagnation in the development of deep-sea mining technology. Congress was therefore faced with the difficult choice of waiting indefinitely for the conclusion of the UNCLOS III treaty or enacting domestic legislation that would allow investment, technological development, and mining to proceed. Domestic regulation, however, might have quashed any hope of ever reaching an international agreement.<sup>145</sup> Since the Act was first proposed in 1971, successive administrations have resisted it as an impediment to the successful balancing of delicate international, political, and diplomatic considerations.

In general, the Act was intended to assure American access, on reasonable terms, to the manganese nodules; to provide a reasonably stable legal framework (pending the conclusion and Senate ratification of the UNCLOS III treaty); to assure security of tenure to attract development capital; to assure the protection of the marine environment; to preserve American interests in the maintenance of the traditional freedom of the high seas; and to enable the United States to gain some measure of mineral independence from its current politically unstable suppliers of crucial strategic minerals.<sup>146</sup>

The United States premised its authority to enact legislation and begin commercial recovery of deep seabed resources on the freedom of the high seas doctrine.<sup>147</sup> The strongest legal support for the United

143. *Id.* § 1402(a).

144. *Id.* § 1401(a)(9)-(10).

145. "The question is how the Congress should act to protect legitimate American interests at this time . . . . Those interests include the pursuit of a reasonable and comprehensive Law of the Sea Agreement, but not to the indefinite exclusion of other actions." 125 CONG. REC. S18,547 (daily ed. Dec. 14, 1979) (remarks of Senator Javits).

146. Collins, *Deep Seabed Hard Mineral Resources Act—Matrix for United States Deep Seabed Mining*, 13 NAT. RESOURCES LAW. 571, 573 (1981) (citing 125 CONG. REC. S18,526 (daily ed. Dec. 14, 1979)).

147. "[E]xploration for and commercial recovery of hard mineral resources of the deep seabed are freedoms of the high seas subject to a duty of reasonable regard to the interests of other states in their exercise of those and other freedoms. . . ." 30 U.S.C. § 1401(a)(12) (Supp. IV 1980).

States position is the Convention on the High Seas.<sup>148</sup> The United States took the general position that, until and unless the UNCLOS III treaty prescribes a different set of rules, the nodules are subject to the rule of capture and possession under the *res nullius* ("belonging to no one") principle. However, this approach is rejected by many nations, particularly developing states, as indicated by such United Nations resolutions as the Moratorium Resolution.<sup>149</sup>

The Act is interim in nature, clearly to be superseded by Senate ratification of the UNCLOS III treaty.<sup>150</sup> It is designed only to provide a temporary legal framework for seabed exploration and mining, encourage technological development, accelerate environmental assessment programs, and establish an international revenue sharing fund.<sup>151</sup> However, there is a possibility that the Act may permanently survive if UNCLOS III is unable to conclude the treaty or if the Senate fails to ratify it.<sup>152</sup>

Furthermore, the Act does not repudiate the "common heritage of mankind" principle, which the United States supported as part of the U.N. Resolution of the same name.<sup>153</sup> Congress specifically found that, legislation is required to establish an interim legal regime under which technology can be developed and the exploration and recovery of the hard mineral resources of the deep seabed can take place until such time as a Law of the Sea Treaty enters into force with respect to the United States.<sup>154</sup>

The argument most often raised by critics is that, while delicate negotiations are in progress, this unilateral action severely prejudices

148. Article 2 of this Convention provides that all states have the freedom to, inter alia, navigate, fish, lay submarine pipelines and cables, and fly over the high seas. The Convention's wording is significant because it clearly indicates that the enumerated freedoms do not form an exhaustive list, but that other unenumerated high seas freedoms also exist. 13 U.S.T. 2312 (1958).

149. G.A. Res. 2574D, 24 U.N. GAOR Supp. (No. 30) at 10, U.N. Doc. A/7630 (1969).

150. 30 U.S.C. §§ 1401(a)(9), (10), (13), (14), (16); 1401(b)(1)-(4); 1441-1443 (Supp. IV 1980).

151. *Id.* § 1401(b).

152. Because of its comprehensiveness and complexity, there is some concern that conclusion and ratification will not occur for some time. For example, certain provisions of the UNCLOS III treaty may substantially impede United States ratification. Articles 37-44, regarding the right of coastal states to regulate passage through international straits, would have a detrimental impact on the United States' submarine leg of the strategic triad defense system. If a coastal state were to require submarines to surface, their viability as a deterrent and the secrecy of their location would be compromised. Provisions such as this may be so unacceptable to the United States that ratification would be impossible, absent an amendment or special reservation.

153. 30 U.S.C. § 1402. The findings in the Act state that the United States voted for the United Nations Common Heritage of Mankind Resolution 2749 (XXV) on December 17, 1970. *Id.* § 1401(a)(7).

154. *Id.* § 1401(a)(16). Section 1402(b)(1) directs the Secretary of State to negotiate the Law of the Sea Treaty. *See id.* § 1402(a)(2).

the United States' position at UNCLOS III.<sup>155</sup> This argument has been disproven by events thus far, because aside from the expected pro forma denouncements from the Third World, the latest draft text of the treaty is essentially similar to the prior one and no negative impact has been readily apparent.<sup>156</sup> On the other hand, the similarity between the latest draft and the prior one also shows that the congressional purpose of encouraging the conclusion of a comprehensive Law of the Sea Treaty,<sup>157</sup> responsive to the developed nations' concerns, has not been a sufficient catalyst in hastening the resolution of outstanding disputes to enable the treaty's quick conclusion.

Although the United States clearly remains supportive of the "common heritage" principle and considers the ultimate conclusion of the treaty to be in its national interest,<sup>158</sup> Congress has specifically established the criteria by which any treaty will be judged in order to receive Senate ratification.<sup>159</sup> Whether these requirements are met will be determined "by the totality of the provisions of such agreement."<sup>160</sup>

### B. *Provisions of the Act*

The Act does not authorize wholesale, ruthless exploitation of the deep seabed mineral resources. Ongoing pre-Act exploration, scientific research, mapping, sampling, or the testing of equipment and facilities may be continued without a license. No other United States citizen, however, may engage in any exploration or commercial recovery unless

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155. 125 CONG. REC. S18,530 (daily ed. Dec. 14, 1979).

156. Collins, *supra* note 146, at 573.

157. 30 U.S.C. § 1401(b)(1) (Supp. IV 1980).

158. *Id.* § 1401(a)(7)-(8).

159. *Id.* § 1441. To be approved, the treaty must,

(A) provide *assured and nondiscriminatory access*, under reasonable terms and conditions, to the hard mineral resources of the deep seabed for United States citizens, and

(B) provide *security of tenure* by recognizing the rights of United States citizens who have undertaken exploration or commercial recovery . . . before such agreement enters into force with respect to the United States to continue their operations under terms, conditions, and restrictions which do not impose significant new economic burdens upon such citizens with respect to such operations with the effect of preventing the continuation of such operations on a viable economic basis . . . .

*Id.* § 1441(1) (emphasis added).

160. *Id.* § 1441(2). The Act further defines the relevant treaty provisions as, including, but not limited to, the practical implications for the security of investments of any discretionary powers granted to an international regulatory body, the structures and decisionmaking procedures . . . for the settlement of disputes, and any features that tend to discriminate against exploration and commercial recovery activities undertaken by United States citizens . . . .

*Id.*

that citizen has first received a license or permit authorization under the Act, or from a "reciprocating state," or under an international agreement to which the United States is a party.<sup>161</sup> Even permitted or licensed activities can be immediately suspended or modified by executive order if necessary to avoid conflict with any of the United States' international obligations, to avoid any situation that might reasonably be expected to lead to a breach of international peace and security involving armed conflict, to prevent a significant adverse effect on the environment, or to preserve the safety of life and property at sea.<sup>162</sup> Further, United States citizens are enjoined from interfering with authorized activity conducted by any permittee or licensee and must exercise their rights on the high seas "with reasonable regard for the interests of other states in their exercise of the freedoms of the high seas."<sup>163</sup>

Licensees and permittees under the Act must diligently pursue their exploration and recovery plans,<sup>164</sup> and comply with the permit and license provisions to prevent waste and to preserve future opportunities for the recovery of the remaining mineral resources in the area to which the permit applies. The Act disclaims, however, any intent to prescribe production controls or price regulation.<sup>165</sup>

For auditing purposes, licensees and permittees must keep records fully disclosing expenditures for exploration and commercial recovery. They must also submit any data reasonably required by NOAA regarding the issuance and status of licenses or permits.<sup>166</sup> Furthermore, licensees and permittees must allow federal officials to board their vessels to monitor compliance with permit or license conditions and must

161. *Id.* § 1411(a)(1).

162. *Id.* §§ 1411(b)(2), 1416(a)(2)(B). The Administrator is authorized to suspend activity on the first two grounds without any action by the President. The latter two require an affirmative finding as evidenced by executive order. *Id.* § 1416(a)(2)(B).

163. *Id.* § 1411(c). Licenses or permits issued shall include restrictions to ensure that due regard be given the rights of others, *id.* § 1421, and that appropriate safety standards be met, *id.* § 1422.

164. *Id.* § 1418. Each licensee or permittee is required to diligently pursue the activities outlined in its plan and periodic expenditures must be made. *Id.* § 1418(a). Permittees generally must maintain commercial recovery activity throughout the period of their permits. *Id.* § 1418(c).

165. *Id.* § 1420. The Act makes clear that regulation shall not "affect the volume of production, prices, profits, markets, or the decision of which minerals or metals are to be recovered, except as such effects may be incidental to actions taken pursuant to this section." *Id.*

166. Section 1423(b) requires the submission of such data "as the Administrator may reasonably need for . . . determinations with respect to the issuance, revocation, modification, or suspension of any license or permit; compliance with the reporting requirement contained in section 1469 of this title; and evaluation of the exploration or commercial recovery activities conducted by the licensee or permittee." *Id.* § 1423(b).

themselves properly monitor the environmental effects of the exploring or mining activities to enable environmental impact assessment.<sup>167</sup> Although the license or permit holder remains liable for existing violations or damages caused by activity under his license or permit, he may surrender it at any time.<sup>168</sup> The license or permit may also be transferred to another United States citizen under some circumstances.<sup>169</sup>

Any person having a "valid legal interest which is or may be adversely affected"<sup>170</sup> by a violation of the Act, by a term of a permit or license, or by the failure of NOAA to perform any nondiscretionary duty under the Act may bring a suit for equitable relief.<sup>171</sup> The court also may award litigation costs, including reasonable attorney and expert witness fees, but this appears to be the extent of the monetary relief available to private parties suing solely under the Act.<sup>172</sup>

Any person violating the Act or its regulations may be subjected to civil or criminal liability.<sup>173</sup> Moreover, United States vessels may be

167. A license or permit holder is required,

(1) to allow the Administrator to place appropriate Federal officers or employees as observers aboard vessels used by the licensee or permittee in exploration or commercial recovery activities (A) to monitor such activities at such time, and to such extent, as the Administrator deems reasonable and necessary to assess the effectiveness of the terms, conditions, and restrictions of the license or permit, and (B) to report to the Administrator whenever such officers or employees have reason to believe there is a failure to comply with such terms, conditions, and restrictions;

(2) to cooperate with such officers and employees in the performance of monitoring functions; and

(3) to monitor the environmental effects of the exploration and commercial recovery activities in accordance with guidelines issued by the Administrator and to submit such information as the Administrator finds to be necessary and appropriate to assess environmental impacts and to develop and evaluate possible methods of mitigating adverse environmental effects.

*Id.* § 1424.

168. *See id.* § 1425(a) (providing for the surrender of a license or permit and for the partial or complete relinquishment of any right to conduct exploration or mining activities).

169. *Id.* § 1425(b). The transferee, in addition to being a United States citizen, must meet all of the statutory and regulatory provisions which applied to the transferor. Additionally, the transfer must be shown to be in the public interest. *Id.*

170. *Id.* § 1427(a).

171. *Id.*

172. *See id.* § 1427(c). The rights of any person or class to seek enforcement or other relief under other law, however, are not restricted. *Id.* § 1427(d).

173. Prohibited activities are defined as including exploration or mining activities which violate a license or permit; obstruction of monitoring, inspection, or enforcement activities of federal officers; and selling, shipping, purchasing, or possessing mineral resources recovered, processed, or retained in violation of the Act. *Id.* § 1461. Civil violations carry fines of up to \$25,000 for each day of a continuing violation. *Id.* § 1462(a). Criminal violations carry fines of up to \$75,000 per day and imprisonment for up to six years. *Id.* § 1463. Use of a dangerous weapon or assault on a federal officer engaged in monitoring, inspection, or enforcement activities carries a fine of up to \$100,000 and imprisonment for up to ten years. *Id.* § 1463(b).

NOAA has power to enforce the Act generally, and the "Secretary of the department in which the Coast Guard is operating" has exclusive responsibility for enforcing measures that pro-

liable in rem to secure the civil or criminal penalties assessed by NOAA,<sup>174</sup> with these vessels and their contents subject to forfeiture to the United States.<sup>175</sup> However, proprietary and privileged information seized during enforcement activities is not to be made available for public inspection.<sup>176</sup>

To further the worthy objective of international cooperation in this area, the United States recognizes permits and licenses issued by a "reciprocating state."<sup>177</sup> In effect, the Act gives this status to any foreign state recognizing the same rights, duties, and obligations as the United States.<sup>178</sup> Moreover, this status is the mechanism by which a smooth transition can be made from the unilateral, domestic Act to a multilateral or regional treaty between all reciprocating states, if the Law of the Sea Treaty is not concluded by UNCLOS III. Other technologically capable and reciprocating states can work together to assure maximum freedom and cooperation in the exploration and recovery of the deep seabed's hard mineral resources. The Act manifests this spirit of cooperation: "No license or permit shall be issued . . . permitting any exploration or commercial recovery which will conflict with any license, permit, or equivalent authorization issued by any foreign nation which is designated as a reciprocating state."<sup>179</sup>

The Act is transitional by its terms, pending either the conclusion of the UNCLOS III treaty and its ratification by the Senate or, if that

protect lives and property at sea. *Id.* § 1464(a). Officers authorized by NOAA to assist in enforcing the Act are empowered to board, search, and seize vessels, evidence, or improperly recovered minerals; to execute warrants; and to exercise any other lawful authority. *See id.* § 1464(b).

174. *Id.* § 1465.

175. *Id.* § 1466(a).

176. *Id.* § 1464(d).

177. *See id.* § 1411(a)(1)(B). Reciprocating states are foreign nations which regulate, in a manner compatible with the Act, the conduct of their citizens engaged in exploration and recovery activities; which recognize American permits and licenses, and prohibit conflicting acts; and which provide an interim legal regime for deep sea exploration and recovery that does not unreasonably interfere with the interests of other states in their exercise of high-seas freedoms recognized under general principles of international law. *Id.* § 1428(a).

178. *See id.* § 1428(a).

179. *Id.* § 1428(b). The Act empowers the President to negotiate "mini-treaties" or other agreements leading to cooperative reciprocity. *Id.* § 1428(e). Such treaties would be particularly important if UNCLOS III fails to conclude, or if the Senate fails to ratify, the Law of the Sea Treaty.

To facilitate in the designation of reciprocating states, the Act also allows cooperation between NOAA and the Secretary of State in consulting with nations "which enact, or are preparing to enact, domestic legislation" similar to the Act. *Id.* § 1428(f).

The reciprocating state status may be revoked, however, if a state discontinues compliance with § 1428(a). *Id.* § 1428(a). Nevertheless, a permit or license issued by that state when it enjoyed reciprocating state status may, at the discretion of NOAA in consultation with the Secretary of State, nonetheless be recognized. *Id.*

does not occur, the negotiation and ratification of a multilateral or regional treaty based on the reciprocating state principles outlined above.<sup>180</sup> If any international agreement is effectuated with respect to the United States, only those provisions of the Act that are consistent with the agreement's terms would survive.<sup>181</sup>

The Act does not provide a grandfather clause to protect the rights of American investors or miners adversely affected by treaty provisions.<sup>182</sup> The Act clearly states that the congressional intent to assure nondiscriminatory access to the deep seabed's mineral resources and NOAA's duty to try, within the bounds of practicability, to protect ongoing operations,<sup>183</sup> does "not create or express any legal or moral obligation on the part of the United States Government to compensate any person for any impairment of the value of that person's investment"<sup>184</sup> in exploration or commercial recovery occurring as a result of an international agreement involving the United States.<sup>185</sup> The best security for investors and operators is recourse to the political forum, the maritime aids discussed in Part I of this Article,<sup>186</sup> through the reciprocating state status, or by the failure of UNCLOS III to conclude or of the Senate to ratify the Law of the Sea Treaty.

Generally, these provisions demonstrate that the United States has neither repudiated the "common heritage of mankind" principles embodied in U.N. Resolution 2749 (XXV),<sup>187</sup> nor asserted sovereign claims over the deep seabed and its mineral resources. Instead, the United States merely has asserted jurisdiction over,

[its] citizens and vessels, and foreign persons and vessels otherwise subject to its jurisdiction, in the exercise of the high seas freedom to engage in exploration for, and commercial recovery of, hard mineral resources of the deep seabed in accordance with generally accepted principles of international

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180. *See id.* § 1441(3); *supra* note 177 and text accompanying notes 178-79.

181. *See id.* § 1442.

182. The Act does offer the following directive, however:

[T]he Administrator [of NOAA], in consultation with the Secretary of State, *shall make every effort*, to the maximum extent practicable consistent with the provisions of that [treaty], to provide for the continued operation of exploration and commercial recovery activities undertaken by United States citizens prior to entry into force of the [treaty].

*Id.* (emphasis added).

183. *Id.*

184. *Id.* § 1444.

185. *Id.*

186. *See supra* text accompanying notes 32-38.

187. *See supra* text accompanying notes 153-54.



law recognized by the United States.<sup>188</sup>

At the same time the Act specifically disclaims "sovereign or exclusive rights or jurisdiction over, or the ownership of, any areas or resources in the deep seabed."<sup>189</sup> This clear statement of intent and disclaimer should be sufficient to calm Third World fears of "undersea colonization."<sup>190</sup>

The United States regards manganese nodules as being akin to fish, and thus subject to the rules of capture and possession under the *res nullius* principle.<sup>191</sup> Therefore, the disclaimer of ownership relates to nodules not yet reduced to possession and ownership under the rule of capture. Thus, a consistent application of the *res nullius* theory requires that the United States claim ownership of only those deep seabed resources already "captured." The rule of capture allows deep seabed miners to obtain marketable commercial title to the extracted nodules, a crucial incentive to mining and development. The United States' position is, therefore, consistent with generally recognized principles of the high seas doctrine. The Act is not violative of the U.N.'s Moratorium Resolution since the United States does not recognize it as a binding rule of international law. Further, the Act's specific disclaimer of any moral or legal obligation to indemnify investors is additional proof that the United States is generally sympathetic to the fears and goals of UNCLOS III. Otherwise, the United States' massive capital and technical resources could be marshalled to facilitate deep sea mining and to establish "undersea colonies" so extensive that the aims of UNCLOS III would be subverted before the international regime could be established.

Of final solace to UNCLOS III and the Third World should be the Act's establishment of the Deep Seabed Revenue Sharing Trust Fund.<sup>192</sup> The Fund is to receive monies collected by the United States Treasury pursuant to the Internal Revenue Code, with proceeds to "be used for sharing with the international community pursuant to [the Law of the Sea] Treaty."<sup>193</sup> Taxes are imposed on "any removal of a

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188. 30 U.S.C. § 1402(a)(1) (Supp. IV 1980).

189. *Id.* § 1402(a)(2).

190. *See supra* text accompanying notes 3-4.

191. *Res nullius* is defined as "[t]he property of nobody. A thing which has no owner, either because a former owner has finally abandoned it, or because it has never been appropriated by any person, or because (in the Roman law) it is not susceptible of private ownership." BLACK'S LAW DICTIONARY 1174 (5th ed. 1979).

192. 30 U.S.C. § 1472(a) (Supp. IV 1980).

193. *Id.* § 1401(b)(2). Section 1472(b)(1) provides that proceeds generated by this tax will go into the Fund. *Id.* § 1472(b)(1).

hard mineral resource from the deep seabed pursuant to a deep seabed permit.<sup>194</sup> The tax imposed is 3.75% of the imputed values<sup>195</sup> of the resource, payable by the permittee upon commercial use, sale or disposition, or the lapse of one year from the time the mineral was recovered.<sup>196</sup> The permit holder may elect to suspend his tax liability for minerals that will not be processed within one year of their recovery, with tax liability attaching when the holder later sells or processes the minerals.<sup>197</sup> Interest payable is computed from the time that liability first arose until the date of the processing or sale.<sup>198</sup> Tax liability will terminate after an international treaty enters into force with respect to the United States or ten years after the tax statutes were enacted, whichever is earlier.<sup>199</sup>

The Fund is further evidence that the United States accepts the common heritage of mankind principle and is acting in anticipation of obligations under the UNCLOS III treaty. Upon the treaty's ratification, the Fund's proceeds will be available for sharing deep seabed mining revenues among the nations.<sup>200</sup> This is the goal underlying the common heritage of mankind principle. Yet, this beneficence is not indefinite. If an international deep seabed mining treaty is not in effect with respect to the United States by 1990, the tax liability of the permit or license holder will terminate, and the "amounts in the Trust Fund shall be available for such purposes as Congress may hereafter provide by law."<sup>201</sup>

### C. *Deep Seabed Mining Licensing and Permit Issuance Procedure*

NOAA is the licensing authority under the Act.<sup>202</sup> Permits and licenses issued by NOAA authorize the holder to explore or exploit the deep seabed in a manner consistent with the Act and the provisions in the license or permit. These licenses and permits are exclusive and an

194. I.R.C. § 4495(a) (1981).

195. This value is equivalent to "20 percent of the fair market value of the commercially recoverable metals and minerals contained in" the reserve. *Id.* § 4497(a).

196. *Id.* § 4497(b)-(d). The Internal Revenue Code provides that "manganese, nickel, cobalt, and copper shall be treated as commercially recoverable." *Id.* § 4497(b)(1). The Secretary of the Treasury may prescribe quantities or percentages below which the metal or mineral shall be deemed not commercially recoverable. *Id.* § 4497(b)(2).

197. *Id.* § 4497(c).

198. *Id.*

199. *Id.* § 4498(a).

200. 30 U.S.C. § 1472(d) (Supp. IV 1980).

201. *Id.* § 1472(e).

202. *Id.* § 1412(a). The regulations for this process are found in Deep Seabed Mining Regulations for Exploration Licenses, 15 C.F.R. § 970 (1982).

exploration license entitles eligible holders to a commercial recovery permit. This permit secures the holder's right to recover, own, transport, use, and sell hard mineral resources.<sup>203</sup>

The Act restricts the circumstances under which licenses and permits may be issued.<sup>204</sup> The permittees and licensees are subject to regulations regarding actual mining activity.<sup>205</sup>

If these restrictions are inapplicable, a United States citizen may apply for the issuance or transfer of an exploration license or a recovery permit.<sup>206</sup> Each applicant must submit both an exploration plan and a recovery plan.<sup>207</sup> Priority for permits is generally established by the order in which applications are received. This priority is not lost despite less than full compliance, provided the defects are corrected within a reasonable time.<sup>208</sup>

203. 30 U.S.C. § 1412(b)(1)-(3) (Supp. IV 1980).

204. NOAA may not issue any licenses or permits after the effective date of any international agreement if they would be inconsistent with that agreement; where any license or permit application would be in conflict with any preexisting permit or license covering the same area or would conflict with any previously acquired priority held by another person or reciprocating state; any commercial recovery permit before January 1, 1988; any license or permit covering an area which the applicant surrendered or relinquished rights to, or where the applicant held a permit or license that has been revoked; or approve the transfer of a license or permit to a non-United States citizen. *Id.* § 1412(c)(1). January 1, 1988 marks the outer limits of United States patience with the failure at UNCLOS III to conclude a workable treaty, and gives the Conference another eight years from the Act's enactment as a "last chance" before allowing any commercial recovery by United States citizens.

205. For example, permittees must use at least one United States-documented vessel in transporting mined nodules to processing facilities, and all vessels used for the actual mining and on-site nodule processing must be documented under United States laws. Further, land-based nodule processing must occur within the United States, unless the President finds that this restriction contravenes some overriding national interest or if NOAA determines that the processing abroad is necessary for the continuing economic viability of the permittee's commercial recovery activities and that the permittee has given satisfactory assurances that the resource will be returned to the United States for domestic use. *Id.* § 1412(c)(2)-(5).

206. *Id.* § 1413(a)(1).

207. *Id.* § 1413(a)(2)(A)-(C). The exploration plan must describe proposed activities and describe the area to be explored, as well as provide exploration schedules, methods, and any other appropriate information. *Id.* § 1413(a)(2)(B)-(C). The size and location of the site selected in these plans will be approved unless NOAA finds that the area is not a "logical mining unit" or that recovery in the proposed area "would result in a significant adverse impact on the quality of the environment which cannot be avoided by the imposition of reasonable restrictions." *Id.* § 1413(a)(2)(D).

A logical mining unit is defined by the Act to be an area that can be explored in "an efficient, economical, and orderly manner with due regard for conservation and protection of the environment," considering the resource data, the state of the technology used, and other relevant physical and environmental characteristics. In the case of commercial recovery, a logical mining unit is an area of sufficient size where minerals can be recovered in sufficient quantities to satisfy the permittee's production requirements, allowing an efficient, economical, and orderly recovery thereof with due regard for environmental considerations. *Id.* at § 1413(a)(2)(A)-(E).

208. *Id.* § 1413(b).

An applicant is certified to receive a license or permit if NOAA finds, after consultation with other departments and agencies, that the applicant has demonstrated the financial and technological capability required for exploration or commercial recovery, has satisfied all obligations under other licenses or permits, and has an exploration and recovery plan that meets all of the Act's statutory and regulatory requirements.<sup>209</sup> NOAA must then complete certification action on the application within 100 days of its submission.<sup>210</sup> Throughout this procedure, NOAA is to consult and cooperate with other federal agencies whose activities would be affected by deep seabed exploration or exploitation.<sup>211</sup>

A further requirement for a permit or license is an authorization by either NOAA or the President, based on a consideration of recognized high seas freedoms, treaty or convention obligations imposed on the United States, possible adverse environmental effects, the safety of life and property at sea.<sup>212</sup> These factors can cause the application to be denied or, if already granted, it could be revoked, suspended, or modified.<sup>213</sup>

Exploration licenses are valid for ten years, and may be extended for periods not exceeding five years each. Following exploration, commercial recovery permits are issued for a twenty year term, "and for so long thereafter as hard mineral resources are recovered annually in commercial quantities."<sup>214</sup>

Taken as a whole, the Act is a rather remarkable piece of legislation that allows deep seabed exploration and exploitation without violating any international obligations recognized by the United States or any accepted norms of international law. The United States has demonstrated a prudent regard for the opinions of the international

209. *Id.* § 1413(c).

210. *Id.* § 1413(g).

211. *Id.* § 1413(e). A \$100,000 license or permit application fee must be submitted, theoretically reflecting "reasonable administrative costs incurred in reviewing and processing the application." *Id.* § 1414; 15 C.F.R. § 970.208(b) (1982). If actual administrative costs differ significantly from the \$100,000 estimate, the applicant will either be required to submit an additional payment or be entitled to a refund, whichever is appropriate. 15 C.F.R. § 970.208(b) (1982).

212. 30 U.S.C. §§ 1415(a); 1416(a), (c) (Supp. IV 1980).

213. *Id.*

214. *Id.* § 1417(a), (b). Permittees not recovering minerals in commercial quantities at the end of ten years will lose their permits absent a showing of good cause for their failure to diligently exploit. Permittees showing good cause may retain their permit, but only for the remainder of the initial twenty year term. *Cf. id.* § 1418 (exploration and recovery plans must be designed to assure diligent development). This requirement prevents a licensee or permittee from holding the rights without developing the mineral resources.

community and has accepted the obligation, as a matter of domestic law, to share with developing nations the wealth generated by deep seabed mining. Critics have charged that the United States is undermining global negotiations and is attempting to colonize the deep seabed. The Act refutes these arguments by acknowledging treaty obligations, accepting the common heritage of mankind principle, and by affirmatively refusing to assert sovereign claims over the deep seabed and its minerals. Furthermore, the interim nature of the Act and its consonance with recognized international law effectively rebuts the criticism. Indeed, the United States is the only country which has already undertaken in advance to fulfill its obligations under the UNCLOS III treaty.

#### IV. INTERNATIONAL REGULATORY PROPOSALS: UNCLOS III AND THE "COMMON HERITAGE OF MANKIND"

##### A. *Current International Law Regime*

The crucial issue surrounding the Deep Seabed Hard Mineral Resources Act is whether a state may authorize nonexclusive deep seabed mineral collection and processing activities. If so, the legal structure unilaterally provided by the United States to facilitate investment, technological progress, and mineral recovery is not a violation of international law. Whether the United States action is justified requires a brief examination of current international law.

International law has three sources: properly ratified treaties; state practice undertaken with a sense of obligation, commonly referred to as customary international law; and general principles of law recognized by all civilized nations. Of these three sources, customary practice is perhaps the most important with respect to the law of the sea.<sup>215</sup>

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215. *In re Martinez*, 28 I.L.R. 170 (Italy, Corte cass. 1959).

[C]ustom is a manifestation of social life which hardens by means of constant and uniform repetition of certain acts on the part of States or individuals, extending over a period of time, to which municipal law attributes legal relevance. In the international field this presupposes the existence of a substantive element, namely, the constant repetition of certain rules of conduct between States, and a psychological element, namely, the conviction that such conduct is obligatory for everybody, so that others can insist upon it, and which does not depend on purely subjective judgment.

*Id.* at 172. *Cf.* *Filartiga v. Pena-Irala*, 630 F.2d 876, 884 n.15 (2d Cir. 1980) (quoting J. BRIERLY, *THE OUTLOOK FOR INTERNATIONAL LAW* 4-5 (1944)) ("The best evidence for the existence of international law is that every actual State recognizes that it does exist and that it is itself under an obligation to observe it."); Burton, *Freedom of the Seas: International Law Applicable to Deep Seabed Mining Claims*, 29 STAN. L. REV. 1135, 1148 n.51 (1977) ("State practices qualify as evidence of international customary law only when there is evidence that the practice is undertaken under a sense of obligation.").

Customary international law is oftentimes codified into treaties. Treaties are of a positivistic nature in that a state is not bound by a treaty unless it has been expressly ratified.<sup>216</sup> However, regardless of whether a state ratifies a treaty, it is still bound by any customary international law that the treaty may have codified.

The freedom of the high seas doctrine arose from the customary practice of states, and secured the right to fish and navigate on the high seas free from unreasonable interference by other states. This doctrine protecting fishing and navigation interests has been broadened over the years, especially in the twentieth century, as new uses have arisen. These new uses of the high seas will have to be balanced against the traditional fishing and navigation rights, and may result in some restrictions thereof. Of particular significance in the deep seabed mining context is that there never has been any conventional or customary international law limiting a state's oceanic jurisdiction. Therefore, the Act and any unilateral appropriation of deep seabed resources by the United States are neither inconsistent with existing international law nor an unreasonable interference with the high seas freedoms.

This conclusion is buttressed by two further points. First, neither international law nor international practice have ever held that the submarine areas automatically share the *res communis* status of the high seas.<sup>217</sup> The true and sole purpose of the freedom of the high seas doctrine is to "ensure freedom of navigation, unhampered by exclusive claims of individual states, and freedom of utilization of the resources of the sea to a degree to which they can be equitably utilized by all."<sup>218</sup> Thus, while the ocean surface is arguably *res communis*, the deep seabed is arguably *res nullius*. Because of this legal distinction between the water column and the seabed, the nodules would be subject to the normal rules of capture and possession because they belong to no one until they are either "captured," or until the UNCLOS III treaty is concluded and establishes different rules. This is one of the Act's underlying premises. Deep seabed mining will probably not unreasonably interfere with the freedom of navigation because commercial recovery activities will be carried on by either floating, navigable vessels, or by

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216. Vienna Convention on the Law of Treaties (1969) art. 34, 24 U.N. GAOR at —, U.N. Doc. A/Conf.39/27 (1969); North Sea Continental Shelf Case, 1969 I.C.J. 47.

217. Lauterpacht, *Sovereignty Over Submarine Areas*, 27 BRIT. Y. B. INT'L L. 376, 414 (1950).

218. *Id.* at 407. The context of this statement would exclude deep seabed minerals from falling under the rubric of "the resources of the sea."

deep-sea platforms that can be easily marked and mapped so that ships can avoid them.

Further, the existing conventional international law clearly does not prohibit deep seabed mining. Article 2 of the U.N. Convention on the High Seas secures, *inter alia*, the freedoms of fishing, navigation, laying submarine cables and pipelines, and overflight, and creates the duty to exercise these freedoms with reasonable regard for the interests of other states.<sup>219</sup> The "inter alia" terminology of article 2 makes it clear that the list of freedoms is not exclusive. The United Nations International Law Commission that drafted the Convention to codify existing customary international law was of the same opinion.<sup>220</sup> The Commission's statement that "[deep-sea mineral] exploitation had not yet assumed sufficient practical importance to justify special regulation,"<sup>221</sup> however, can be interpreted as advising the promulgation of special regulations by treaty when deep seabed mining technology improves to the point where exploitation is possible. Until such promulgation occurs and a new rule to the contrary is established, article 2 cannot be fairly read to contain any prohibition regarding deep seabed mining. Indeed, such activity is arguably within the *inter alia* language of the Convention. One commentator has suggested that, given the nodules' apparent renewability, nodule exploitation is a technologically sophisticated form of fishing, falling literally within the purview of article 2.<sup>222</sup> Therefore, until UNCLOS III concludes the Law of the Sea Treaty, the United States is merely exercising currently existing rights under conventional and customary international law in authorizing deep seabed mining.

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219. United Nations Conference on the Law of the Sea, Convention on the High Seas, Apr. 29, 1958, 13 U.S.T. 2312, T.I.A.S. No. 5200, 415 U.N.T.S. 82. The United Nations Convention on the Continental Shelf is silent on the issue of resource exploitation in the deep seabed because it was clearly intended to apply only to the seabed "adjacent" to the shore. United Nations Conference on the Law of the Sea, Convention on the Continental Shelf, Apr. 29, 1958, 15 U.S.T. 471, T.I.A.S. No. 5578, 499 U.N.T.S. 311.

220. Report of the International Law Commission to the General Assembly, 12 U.N. GAOR Supp. (No. 9) para. 33, U.N. Doc. A/3159 (1956), *reprinted in* [1956] 2 Y.B. INT'L L. COMM'N 253, 278, U.N. Doc. A/CN.4/SER.A/1956/Add. 1.

The list of freedoms of the high seas contained in [Article 2] *is not restrictive*. The Commission has merely specified four of the main freedoms, but it is aware that there are other freedoms . . . . The Commission has not made specific mention of the freedom to explore or exploit the subsoil of the high seas. It considered that . . . such exploitation had not yet assumed sufficient practical importance to justify special regulation.

*Id.* (emphasis added).

221. *Id.*

222. Collins, *supra* note 1, at 633.

## B. UNCLOS III

One of the reasons for the United States' unilateral action on deep seabed mining legislation was its utter frustration with UNCLOS III's lack of progress toward the conclusion of a Law of the Sea Treaty. Convened in Caracas, Venezuela in 1974, UNCLOS III has failed for eight years to produce a final draft of a treaty. The Conference itself has degenerated into a dysfunctional exchange of "rich North versus poor South" rhetoric and a series of extreme demands by the numerically superior Group of 77.<sup>223</sup>

The Group of 77 has demanded that the nations with deep seabed mining technology transfer that technology to the developing nations and that the wealth generated by mining activities be used to redress the economic inequities between the North and South.<sup>224</sup> Furthermore, the developing nations demand that they be allowed to nationalize these assets without providing just compensation.<sup>225</sup> These demands are made principally and most vociferously by nations having a historic tendency of expropriating wealth rather than creating it, and they generally have no means of either applying the technology acquired or using the resources recovered. Further, because many of these nations are members of cartels holding virtual monopolies on world production of the nodules' more valuable constituent minerals, they demand the imposition of production quotas, price controls, and trade preferences for their land-produced minerals in order to protect their monopoly positions. The trade-preference demand has been especially troublesome to the United States: first, due to America's dependence on politically unstable foreign sources of cobalt and manganese, which are considered vital to American defense and industry, and second, because of the potential for OPEC-style political duress.

From their perspective, those nations with deep seabed mining technology have made many significant concessions.<sup>226</sup> The United States, for instance, has offered to allow production controls on mining activities and has agreed to allow the Seabed Authority to operate competitively with American mining companies.<sup>227</sup> Furthermore, the United States has accepted a "banking arrangement" whereby the Au-

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223. The Group of 77 currently is comprised of considerably more than 77 developing nations.

224. Alexander, Cameron & Nixon, *The Costs of Failure at the Third Law of the Sea Conference*, 9 J. MAR. L. & COM. 1, 21 (1977).

225. *Id.*

226. *Id.*

227. *Id.* at 22.



thority can use one of the two mining sites proposed by each applicant for its own mining activities, and has created the legal and taxation structure to transfer vast amounts of money to the developing nations through the Act's revenue sharing Fund.<sup>228</sup> Despite these almost revolutionary concessions, the Group of 77 has adamantly refused to make concessions and has used UNCLOS III as a platform for their political and ideological goal of forcing the creation of a new international economic order that they can dominate by their sheer numbers. The developed nations are willing to accommodate the Group of 77 to a certain point, but understandably resist attempts to create an international Authority not responsive to their interests, especially given that the successful operation of that Authority depends wholly on technology and risk capital that only the developed nations can provide. This squabbling has effectively prevented UNCLOS III from concluding a Law of the Sea Treaty. The United States has, in effect, given UNCLOS III until 1990 to produce the treaty at which time the Fund established by the Act may be used by Congress for other purposes.<sup>229</sup> At that late date, the United States may even opt out of the UNCLOS III process altogether.

#### 1. Pardo Speech and the "Common Heritage of Mankind" Principle

The notion that the mineral wealth of the ocean floor could rapidly redress the economic inequities between the developed and developing nations was first proposed on August 17, 1967, by Arvid Pardo, Malta's Ambassador to the U.N. Pardo asserted that the ocean's vast mineral wealth was readily and easily exploitable and would solve all of the developing nations' economic woes. Therefore, he proposed that the ocean floor and its mineral resources be deemed the common property of mankind, not subject to national or sovereign appropriation, to be developed cooperatively, not competitively, with the resources usable only for peaceful purposes, and that these principles be codified in an international agreement.<sup>230</sup>

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228. *Id.*

229. See 30 U.S.C. § 1472(e) (Supp. IV 1980).

230. N. LEECH, C. OLIVER & J. SWEENEY, *THE INTERNATIONAL LEGAL SYSTEM* 223 (2d ed. 1981). Pardo's phrase, "common heritage of mankind," was not necessarily a new concept when it was first uttered. The Commission to Study the Organization of Peace, Senator Frank Church, and the World Peace Through Law Conference had all previously proposed to vest the title to the entire seabed and its mineral resources in the "international community" through its agent, the United Nations. The ostensible purposes behind this proposal were to make the U.N. financially

Unfortunately, Pardo's exaggerated assertions that the seabed's mineral resources were readily and easily exploitable likely misled the developing nations into thinking that these minerals could fuel rapid industrial development and eliminate poverty. The developed nations, however, recognizing the massive costs, advanced technology, and the enormous risks involved, were shocked by the proposal. Nevertheless, UNCLOS III negotiations pertaining to deep seabed mining have proceeded on the premise that the development of ocean resources somehow requires the preferential sharing of benefits with the developing nations.<sup>231</sup> This notion has caused the polarization of the developed and the developing nations, resulting in UNCLOS III's remarkable lack of progress.<sup>232</sup>

*Moratorium Resolution.* To effect the essence of Pardo's proposals, the developing nations initiated and passed, over the strenuous objections of many developed nations, the Moratorium Resolution.<sup>233</sup> The Resolution was intended to prevent the technologically advanced nations from "colonizing" the deep seabed and presenting UNCLOS III with a *fait accompli* before the treaty could even be negotiated or put into place.<sup>234</sup>

The question thus arises whether this Resolution is binding on the United States and thereby renders the Act violative of international law. The United States objected to and voted against the Resolution, and does not therefore recognize it as a binding rule of international law.<sup>235</sup> General Assembly resolutions are normally not legally binding, even though they may either restate a rule of international law that is

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independent; to avoid future controversy over competing national and individual seabed claims; to assure economically efficient exploitation of the ocean's resources; to prevent the military use and abuse of the ocean's resources, and to avoid the destruction of the marine environment by unregulated pollution. Collins, *supra* note 1, at 635-37.

231. Collins, *supra* note 1, at 637.

232. *Id.* at 638.

233. G.A. Res. 2574 D, 24 U.N. GAOR Perm. Comm. at 11, U.N. Doc. A/PV.1833 (1969). Canada, France, the Netherlands, Norway, the USSR, the United Kingdom, and the United States all either voted against the resolution or else abstained in a rare showing of unanimity. Collins, *supra* note 1, at 640.

234. G.A. Res. 2574 D, *supra* note 233. The Moratorium Resolution declared that, pending the establishment of the . . . international regime:

(a) States and persons, physical or juridical, are bound to refrain from all activities of exploitation of the resources of the area of the sea-bed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction;

(b) No claim to any part of that area or its resources shall be recognized.

*Id.*

235. Burton, *supra* note 215, at 1148-50 & nn.51-55.

otherwise binding or facilitate the development of the *opinio juris*, thus focusing the practice of states.<sup>236</sup> General Assembly resolutions become evidence of customary international law only in the exceptional cases where they are unanimously adopted and observed by state practice.<sup>237</sup> Therefore, the Act and activities thereunder are not violations of any international law currently recognized by United States custom or practice.

*Common Heritage of Mankind Resolution.* Shortly after adopting the Moratorium Resolution, the General Assembly adopted the Common Heritage of Mankind Resolution.<sup>238</sup> The Resolution provided that “[t]he seabed and ocean floor, and the subsoil thereof, beyond the limits of national jurisdiction . . . , as well as the resources of the area, are the common heritage of mankind,”<sup>239</sup> essentially restating Pardo’s proposals. The United States supported the Resolution by affirmative vote;<sup>240</sup> thus, the common heritage of mankind principle became binding on the United States. The major issue raised by the Resolution, however, is whether the phrase “common heritage of mankind” has any legal meaning and effect apart from the Declaration of Principles in the Resolution.

Pardo defined the phrase to mean that the seabed has a special status and is to be used only for peaceful purposes. He emphasized that it does not involve the civil law concept of *res omnium communis*, which would allow exploitation by anyone.<sup>241</sup> Thus, the phrase is probably *sui generis*, capable of future definition and elaboration, but it has been criticized as an example of “politicians using legal terms and creating an undefinable and as yet unworkable concept.”<sup>242</sup> Most commentators agree that the common heritage concept is a moral commitment, not a legal one, and that considered alone, the phrase is devoid of legal meaning.<sup>243</sup> While accepting the common heritage of

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236. *Id.* at 1148-51.

237. *Id.* n.53.

238. G.A. Res. 2749, 25 U.N. GAOR Supp. (No. 28) at 24, U.N. Doc. A/8028 (1970).

239. *Id.*

240. See 30 U.S.C. § 1401(a)(7) (Supp. IV 1980). The Act was circumspectly drafted to reflect the acceptance of the common heritage principle and to lay the groundwork for the revenue sharing requirements of that principle and the UNCLOS draft convention.

241. Pardo, *An International Regime for the Deep Seabed: Developing Law or Developing Anarchy?*, 5 TEX. INT’L L.F. 204, 214 (1970); see Collins, *supra* note 1, at 642.

242. Collins, *supra* note 1, at 642.

243. See, e.g., *id.* at 642-43; Arnold, *The Common Heritage of Mankind as a Legal Concept*, 9 INT’L LAW 153 (1975); Gorove, *The Concept of “Common Heritage of Mankind”: A Political, Moral or Legal Innovation*, 9 SAN DIEGO L. REV. 390 (1972); Saffo, *supra* note 5, at 513-15.

mankind principle, the United States rejects the developing nations' interpretation of it that title to the seabed and its resources is vested in the international community or in any individual state.<sup>244</sup>

## 2. Draft Convention on the Law of the Sea

On the same day that the Common Heritage of Mankind Resolution was passed, the General Assembly called for the convocation of the Law of the Sea Conference.<sup>245</sup> The Conference was to produce a treaty to achieve two purposes: to codify existing rules of customary international law and to create new law.<sup>246</sup> The former presents no problem for the United States because it already recognizes these rules. The latter, however, would not be binding on the United States (or on any other nation) if it objects or makes special reservations thereto. If a large number of states ratify the treaty—if and when it emerges from UNCLOS III—and make their state practices conform thereto, the United States might quickly be bound to follow those new provisions as a matter of customary international law, particularly if it fails to object to those provisions deemed not in its best interest. This problem might be avoided, however, because there are very few states in the world with the present technological or financial capability to mine the deep seabed. Therefore, even if a large number of states ratify the treaty, mere ratification alone, unaccompanied by widespread state practice (i.e., actual engagement in mining activities), may not ripen into a rule of customary international law.

The draft Convention itself can only be described as exhaustively comprehensive. The preamble to the Convention reveals its broad objectives, including: A spirit of cooperation; a legal structure to facili-

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244. The Group of 77 argues that the common heritage of mankind phrase means that no state may undertake resource exploitation activities without the international community's consent. Charney, *The International Regime For the Deep Seabed: Past Conflicts and Proposals For Progress*, 17 HARV. INT'L L.J. 1, 34 (1976). The main reason for this interpretation is the Third World's aversion to anything even remotely resembling colonialism. This interpretation clarifies the word "heritage," which, although relatively neutral in English, is translated "patrimonio" in Spanish and "patrimoine" in French, both words strongly suggesting possessory or property rights. Thus, the Group of 77 wants a clear understanding that the seabed is a heritage owned by all, not just by those countries technologically and financially capable of "colonizing" the deep seabed. Because of the wide divergence in perspectives, the phrase cannot soon become a normative concept constituting customary practice, although its continual use by various states does indicate that a consensus regarding its meaning may eventually be reached. See Saffo, *supra* note 5, at 514-15. Under the circumstances, the United States' interpretation of the phrase is as valid as that of the developing countries.

245. G.A. Res. 2750(c), 25 U.N. GAOR Supp. (No. 28) at 26, U.N. Doc. A/8028 (1970).

246. *Id.*

tate equitable utilization of resources; recognition of the interest of developing countries within the context of an equitable international economic order; recognition of deep seabed mineral resources as the common heritage of mankind; and a codification of the law of the sea to promote economic advancement of all the world's peoples.<sup>247</sup>

Part XI of the Convention is aimed specifically at the deep seabed, defined as the "Area" in the Convention, and governs all activities respecting the recovery of the mineral resources therein.<sup>248</sup> Confirming anew that "[t]he Area and its resources are the common heritage of mankind,"<sup>249</sup> the Convention provides that "[n]o State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources," that "[a]ll rights in the resources of the Area are vested in mankind as a whole" and "[t]hese resources are not subject to alienation," that "[n]o State or natural or juridical person shall claim, acquire or exercise rights with respect to the minerals of the Area except in accordance with . . . this Part," and that "no such claim, acquisition or exercise of such rights shall be recognized."<sup>250</sup> States are expected to act in consonance with the goals of "maintaining peace and security and promoting international cooperation and mutual understanding."<sup>251</sup> Each state party is obligated to take any necessary and appropriate measures to ensure compliance with the Convention and to

247. Draft Convention, *supra* note 28, at 20.

The Convention has further codified some of Pardo's proposals by providing that:

Activities in the Area shall . . . be carried out for the benefit of mankind as a whole . . . taking into particular consideration the interests and needs of the developing States . . . . The Authority [the organization through which the parties to the Convention will organize and control Area activities] shall provide for the equitable sharing of financial and other economic benefits derived from activities in the Area . . . on a non-discriminatory basis . . . .

*Id.* art. 140. Further, "[t]he Area shall be open to use exclusively for peaceful purposes . . . ."

*Id.* art. 141. While the intent of the "peaceful purposes" article to prevent military uses and abuses of the Area seems clear, whether the resources extracted from the Area are restricted to peaceful purposes is unclear. The Convention provides no tracing mechanism to ensure that the resources will be used for peaceful purposes. The nodules' constituent minerals, particularly cobalt and manganese, have significant industrial uses and are also vital strategic minerals for United States national defense. Whether the Convention would prohibit the use of deep-sea cobalt in jet engines that power military aircraft, for example, is unclear. Further, whether the Convention would prohibit the Third World from using the transfer payments for arms purchases is also unclear. Presumably, these uses would not be prohibited by the terms of the Convention itself, because Article 141 appears to cover only a case where the Area itself would be used as a weapons storehouse or as a battleground. *Id.*

248. *Id.* arts. 1(1), 133, 134(1), 134(5). The "Area" is defined as "the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction." *Id.* art. 1(1).

249. *Id.* art. 136.

250. *Id.* art. 137.

251. *Id.* art. 138.

impose liability on noncomplying persons within its respective jurisdiction.<sup>252</sup> These provisions are obviously at odds with the Act. However, until the United States ratifies the treaty, the Act is the supreme relevant law and activities thereunder are not contrary to any existing conventional or customary international law.<sup>253</sup>

The Convention requires that all appropriate and necessary steps be taken to protect the marine environment and human life.<sup>254</sup> The United States has been the leader in taking steps to effect these requirements. Indeed, the statutory and environmental regulations, in the Act and elsewhere, on United States citizens engaged in deep seabed mining are so comprehensive that the world community need not fear that the United States will cause extensive environmental damage or will inefficiently exploit ocean resources.

Another of Pardo's proposals that the Convention codifies is that the Authority "shall take measures . . . to acquire technology and scientific knowledge relating to activities in the Area; and . . . to promote and encourage the transfer to developing States of such technology and scientific knowledge so that all States Parties benefit therefrom,"<sup>255</sup> and that "[t]he effective participation of developing States in activities in the Area shall be promoted."<sup>256</sup> No specific means of effecting these goals are delineated in the Convention. The mining technology is proprietary, belongs largely to private firms, and has taken many years and enormous capital expenditures to develop. Whether the states with this technology are willing or able to effect this transfer remains to be seen—they may well balk at it. The Act itself does not provide a mechanism to effect this provision. Although article 144(2)(a) does state that the transfer shall be "under fair and reasonable terms," the context indicates that this provision is for the benefit of the developing nations in acquiring the technology and does not provide for or require adequate compensation for the technology owners. While the developed nations might be willing to share the seabed-generated wealth, they may be unwilling or legally unable to transfer the technology in the manner envisaged by the Convention. An additional problem would be whether the developing nations would actually have the expertise or the resources for deep seabed mining, or the industrial, economic, and

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252. *See id.* art. 139.

253. *See supra* notes 233-42 and accompanying text.

254. Draft Convention, *supra* note 28, arts. 145-46.

255. *Id.* art. 144(1).

256. *Id.* art. 148.

legislative frameworks to efficiently use the extracted minerals or the transfer payments to improve economic conditions within their borders.

Article 150 of the Convention provides policy guidelines under which resource development in the Area is to be accomplished.<sup>257</sup> The goals of international cooperation, a healthy world economy, and the promotion of the interests of the developing nations are repeated, as well as a more specific listing of objectives.<sup>258</sup>

Exploration and exploitation activities in the Area are to be organized and controlled by the Authority on behalf of all mankind. Activities in the Area may be carried out by state entities, natural or juridical persons, or by "the Enterprise" (the Authority's business organ) by means of a contract, following a form to be prescribed in the Convention's annex III.<sup>259</sup> Significantly, these contracts shall provide for security of tenure, being suspendable or terminable only in accordance with requirements to be prescribed in annex III.<sup>260</sup> The Authority is entitled to take any measures required to ensure compliance with the Convention, including the right to inspect all mining facilities in the

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257. *Id.* art. 150. Activities are to be conducted in light of the following underlying policies: The orderly, safe, and rational management of Area resources; the expansion of participation opportunities; revenue participation by the Authority; the promotion of just and stable prices remunerative to producers and fair to consumers that promote equilibrium between supply and demand; the prevention of monopolies on Area activities; and the protection of developing countries from adverse impacts on their mineral export earnings; nondiscriminatory market access preventing more favorable treatment of Area resources; and the development of the common heritage for the benefit of all mankind. *Id.* To effect these policies and the technology and revenue transfers, the Authority must apply its powers without discrimination, while at the same time giving "special consideration for developing States." *Id.* art. 152.

To protect the markets and prices of the developing countries' mineral exports, article 151 provides for "production authorization" and complicated quotas on mineral production. In the abstract, this article seems to prevent market play with respect to the prices of these vital minerals and seems to protect the developing countries' cartel position. Keeping the prices high also causes income transfers to these countries independently of the Convention. The "prices remunerative to producers and fair to consumers" language of article 150 is subject to widely divergent interpretations, with the developing countries essentially asserting that market forces should not be allowed to freely operate and assuming that the industrialized countries can pay whatever price the cartels ask for their minerals. Eventually, this may backfire on the developing countries because the artificially high prices may spur the development of alternatives. Further, without appropriate Convention tracing mechanisms or domestic programs to ensure that these countries' peoples are bettered by this influx of wealth, there is the possibility that only the rich and powerful will benefit, and that the money will be diverted to military or political uses, rather than for the social programs that might increase the standard of living in these countries.

258. *Id.* art. 150.

259. Third Conference on the Law of the Sea, Draft Convention, 35 U.N. GAOR Annex III, Art. 13, U.N. Doc. A/CONF.62/WP.10/Rev.3 (1980), *reprinted in XI NEW DIRECTIONS IN THE LAW OF THE SEA 150* (M. Nordquist, K. Simmonds eds. 1981).

260. *Id.*

Area.<sup>261</sup>

The Convention establishes a new international body to organize, regulate, and enforce the Convention's provisions. Called the "International Sea-bed Authority," all signatory states are ipso facto members thereof, "based on the principle of the sovereign equality of all its members."<sup>262</sup> The Authority is comprised of five principal organs: an Assembly, a Council, a Secretariat, the Enterprise, and a Sea-Bed Disputes Chamber.<sup>263</sup>

Each signatory is a member of the Assembly and each has one vote therein.<sup>264</sup> All decisions on substantive questions require a two-thirds quorum majority.<sup>265</sup> The Assembly is the Authority's supreme organ, to which all others are accountable, and it has the power to establish general policies in conformity with the Convention.<sup>266</sup> This authority includes the responsibility for determining the equitable sharing of revenues and other economic benefits with the developing countries.<sup>267</sup> The guidelines for performing this latter function are not found in the Convention, but rather will be promulgated by the Authority itself, functioning almost in the capacity of a supranational congress with broad judicial, legislative, and administrative powers.

The Council will consist of thirty-six Authority members, each serving four year terms and having one vote. Article 161 of the Convention provides criteria for Council members to ensure proper representation of all nations.<sup>268</sup> Factors such as geographic distribution,

261. Draft Convention, *supra* note 28, art. 153.

262. *Id.* art. 157(3). See generally *id.* arts. 156-57 (setting forth the general nature of the Authority).

263. *Id.* arts. 158(1)-(2), 187. Other subsidiary organs may be created as necessary. *Id.* art. 158(3).

264. *Id.* art. 159.

265. *Id.*

266. *Id.* art. 160. The Assembly also has the power to elect members of the Council, the Secretary-General, and the Governing Board of the Enterprise; to establish any needed subsidiary organs; to assess the contributions of members according to the scale used for the U.N. budget until the Authority has sufficient income from other sources to meet its administrative expenses; and to suspend members. *Id.*

267. *Id.*

268. *Id.* art. 161(1). Representation on the Council is governed by the Convention as follows:

- (a) Four members from the eight states which have the largest investment in mining activities, including at least one Eastern European state;
- (b) four members from those states which have either consumed at a rate greater than two percent of the total world consumption, or have net imports of greater than two percent of the total world imports of the nodules' constituent minerals, including at least one Eastern European state;
- (c) four members from those countries that are major net exporters of the nodules' constituent minerals;
- (d) six members from among developing nations, representing "special interests,"



export/import rates, and consumption levels are considered.<sup>269</sup> Article 161's representational criteria, however, appear to be weighted against the developed nations. Without including representation by Eastern European socialist states, which do not yet have deep seabed mining technology and would likely vote with the developing nation bloc, the developed nations can place as few as six and, depending on the actual interpretation of "geographic region" in Article 161(1)(e), as many as eight, members on the Council.<sup>270</sup> Thus, the developed states could be outnumbered by as much as nine to one, enabling the developing nations to dominate the Council by their numerical majority, even though the success of this entire regime depends upon the private capital and technology that only the developed nations can provide. Thus, the notion of "sovereign equality" assures the Third World of perpetual control of the Council and all of its far-reaching functions.

The Council is the Authority's executive organ to supervise the implementation of the Convention, possessing the power to establish specific policies to be pursued by the Assembly.<sup>271</sup> Control over all Area activities is vested in the Council and it will recommend rules to the Assembly for the distribution of revenue from deep seabed mining.<sup>272</sup> It can also recommend the suspension of privileges for gross and consistent convention violations.<sup>273</sup> Additionally, the Council can enter into agreements with the United Nations or other international organizations, subject to Assembly approval.<sup>274</sup> Thus, the obvious control over the Assembly and Council by the Third World given by the

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*i.e.*, land-locked or geographically disadvantaged states that are major mineral importers, that are potential mineral producers, and that are the least developed;

(e) eighteen members elected according to an equitable distribution of Council seats, with at least one from each "geographic region," *i.e.*, Africa, Asia, Eastern Europe, Latin America, Western Europe, "and others."

*Id.*

The Assembly must ensure that the election results provide reasonably proportionate representation to land-locked, geographically disadvantaged, and coastal states that do not qualify under (a) through (d) above. *Id.* art. 161(2).

269. *Id.* art. 161(1).

270. *Id.*

271. *Id.* art. 162(1)-(2)(a). The list described in the text is not all-inclusive. Additionally, articles 163-64 establish two subsidiary organs for the Council: the Legal and Technical Commission and the Economic Planning Commission. These two organs, with fifteen members each, are charged with the drafting of rules and regulations and the making of recommendations for Council, and, derivatively, for Assembly action. No membership criteria are specified by the Convention, aside from the requirement that all nominees possess the requisite expertise pertaining to the Commissions' functions.

272. *Id.* art. 162(2)(k), (n).

273. *Id.* art. 162(s).

274. *Id.* art. 162(f).

Convention is significant considering the powers that are vested in those bodies.

The Secretariat, the Authority's administrative organ, is comprised of a Secretary-General, who serves a four year term, and other staff that the Authority might require.<sup>275</sup> This staff is to consist of experts meeting the highest standards of competence and will be recruited from a wide geographical base.<sup>276</sup> Except for its responsibility to the Authority, the Secretariat will be wholly independent of any government and its members must have no financial interest in any activities in the Area.<sup>277</sup> The Convention requires each state party "to respect the exclusively international character of the responsibilities of the Secretary-General and the staff and not to seek to influence them in the discharge of their responsibilities."<sup>278</sup>

The Enterprise is the business organ of the Authority to carry out activities in the Area, including the mining, transportation, processing, and marketing of minerals.<sup>279</sup> It is to acquire the expertise to engage in these activities through the transfer of technology and scientific knowledge from the developed states, as proposed by article 144(2). Specific activities of the Enterprise will be established and controlled by the Council.

The Authority will be funded by assessed contributions from the states parties, revenue transfers from the Enterprise, receipts from Area activities, loans, and voluntary state contributions.<sup>280</sup> The annual budget will be prepared by the Secretary-General and passed along to the Assembly for approval upon the Council's recommendations.<sup>281</sup> The contributions received pursuant to article 171(a) will be used to meet the Authority's administrative expenses, which have first priority on the budget, until it has sufficient income from other sources. After administrative expenses have been paid, the remaining funds will be equitably distributed for the "benefit of all mankind," to provide the Enterprise with revenue, and to assist and compensate developing

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275. *Id.* art. 166. Article 169 authorizes the Secretary-General to make any suitable arrangements, subject to Council approval, for consultation and cooperation with international and non-governmental organizations recognized by the U.N.'s Economic and Social Council. *Id.* art. 169.

276. *Id.* art. 167.

277. *Id.* art. 168(1), (2).

278. *Id.* art. 168(1).

279. *Id.* art. 170(1).

280. *Id.* art. 171. The Authority's borrowing power is to be exercised by the Council. *Id.* art. 174.

281. *Id.* art. 172.

states who suffer adverse economic effects from a reduction in the price of minerals they mine and export because of deep seabed mining activities.<sup>282</sup>

The Authority will enjoy an international legal personality and will have immunity from legal process, search and seizure, and from any type of regulations or taxation.<sup>283</sup> Representatives of states attending Authority meetings will also enjoy immunity from legal process in the exercise of their functions and from immigration restrictions, alien registration requirements, and national service obligations.<sup>284</sup> Authority archives, all proprietary data, and industrial secrets are to be "inviolable."<sup>285</sup>

A state that is two years in arrears in financial contributions to the Authority will suffer the suspension of its voting rights unless the failure to pay is due to conditions beyond the state's control.<sup>286</sup> Gross and persistent violations of the Convention's pertinent provisions can also result in a guilty state's suspension by the Sea-Bed Disputes Chamber.<sup>287</sup>

The Sea-Bed Disputes Chamber is the Authority's judicial organ. The Chamber is given jurisdiction over interpretative, contractual, interstate, and state-Authority disputes.<sup>288</sup> These disputes may also be heard by a special chamber of the International Tribunal for the Law of the Sea, an ad hoc chamber of the Sea-Bed Disputes Chamber, or may be submitted to binding arbitration.<sup>289</sup> However, the Chamber does not have jurisdiction over the exercise by the Authority of its discretionary powers and in no case may the Chamber substitute its discretion for the Authority's.<sup>290</sup> The Chamber may render advisory opinions, "as a matter of urgency," when so requested by the Assembly or the Council.<sup>291</sup>

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282. *Id.* art. 173; *see* arts. 140, 160(2)(j) (equitable distribution of funds); art. 170(4) (funding the Enterprise); arts. 151(4), 160(2)(1) (economic assistance to mineral exporting states, probably in the form of mineral price subsidies).

283. *Id.* arts. 176-80, 183.

284. *Id.* art. 181.

285. *Id.* art. 182.

286. *Id.* art. 184. In order for an entity to be found to be in arrears, the amount owed by the party must equal or exceed the contribution due from it in the two prior years. *Id.*

287. *Id.* art. 185.

288. *Id.* art. 187.

289. *Id.* art. 188.

290. *Id.* art. 190.

291. *Id.* art. 189.

### 3. The Cost of Failure at UNCLOS III

The Convention comprehensively codifies, without exception, the demands of the developing countries. Their unwillingness to compromise, a controlling factor due to their overwhelming numbers, stalled progress at UNCLOS III.

Perhaps the thoroughness of the Convention is the greatest impediment to its conclusion. The lumping together of so many highly charged issues, especially those pertaining to navigation, fishing zones, and massive wealth and technology transfers, has probably prevented the Convention's speedy conclusion. Some provisions are clearly undesirable from a strategic and national security viewpoint. Delay and disagreement by the superpowers over these provisions may cause the more desirable provisions to languish.

If the UNCLOS III process fails, some of the rules it attempted to codify will revert to their status as customary international law. Nevertheless, the important North-South dialogue will be impaired and some developing nations may resort to such economic reprisals as resource boycotts.<sup>292</sup> Further, some states, particularly developing ones, might unilaterally extend their offshore jurisdictional claims in an attempt to impair the existing traditional freedom of the high seas.<sup>293</sup> There is also a risk of increased superpower rivalry over the deep seabed, although the Soviet Union does not yet have the technological competence to mine the ocean floor. Finally, the lack of a uniform, central management authority may lead to the irreparable damage of the marine environment and to the inefficient use of seabed resources.<sup>294</sup> The UNCLOS III process is a laudable one, forcing the world to recognize the need for cooperative management and conservation of finite resources. However, the political and ideological bickering, largely by the Group of 77, has detracted from meaningful negotiation. This dissension has caused many to overlook the common interests that exist in acquiring the knowledge and technology needed to develop the deep seabed. Whether these conflicts have irreparably harmed the process itself remains to be seen.

## V. CONCLUSION

The commercial recovery of manganese nodules is of great con-

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292. *But see* Alexander, Cameron & Nixon, *supra* note 224, at 22.

293. *See id.* at 17-20.

294. *See id.* at 17.

cern to the economy and national security of the United States. Currently, the supplies of vital strategic minerals which will eventually be recoverable from the seabed are available almost exclusively from very unstable Third World countries, from which the United States obtains virtually its entire supply, often at cartel prices. Such dependence raises the possibility of economic and political duress. Commercial access to the ocean's vast, renewable supply of nodules will enable the United States to diminish its dangerous reliance on foreign suppliers.

Under the current domestic and international environmental regulatory regime, ample safeguards exist to protect the marine environment. Coupled with strong administrative oversight and enforcement, the risks to the marine environment from commercial developments are substantially minimized. Eventually, the need for additional protective measures to combat currently unforeseen harms may be demonstrated, but in many instances the danger to the environment stems from mining or processing methods for which the technology does not yet exist. Therefore, the prudent course would be to promulgate environmental protection regulations as that technology emerges and as the mining becomes economically feasible.

The Deep Seabed Hard Mineral Resources Act allows deep seabed mining companies to prepare for commercial recovery activities, subject to the terms of UNCLOS III when and if it is concluded and ratified. The companies are also subject to any treaty based on the reciprocating states principle<sup>295</sup> and to the Act's own cut-off date.<sup>296</sup> After that date, deep seabed mining on a commercial scale may proceed provided no treaties are in effect with respect to the United States.

The Act itself is not a repudiation of the common heritage of mankind principle. Rather, it specifically embodies the essential principles found in the UNCLOS III draft Convention. For instance, the Convention's provisions involving the distribution of wealth are reflected in the Act by the establishment of the Trust Fund. Nevertheless, the Act assures nondiscriminatory access to the nodule fields by American mining companies. Such access is important, given the nature of the power that UNCLOS III wishes to bestow upon the Authority and the underrepresentation of the developed countries on the Council. The Act is a good faith showing that the United States is willing to unilaterally in-

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295. See *supra* note 177 and accompanying text.

296. See *supra* text accompanying note 199.

corporate the basic principles that the UNCLOS III seeks to codify. No other nation, not even those who criticize the United States for enacting the Act, has gone that far.

The rules and customary practices of international law do not bar the commercial recovery of nodules. Arguably, such activity is within the traditional freedom of the high seas and the *res nullius* principle.<sup>297</sup> The assertion of the *res communis* and common heritage of mankind theories essentially relate to the equitable sharing of the wealth generated by nodule recovery activities. Since the Act establishes a Trust Fund to obtain and retain these revenues and because Congress intends to make them available to the Authority, these assertions and criticisms become virtually irrelevant.

A fundamental source of problems with the draft convention is its attempt at comprehensiveness. It tries to codify virtually every customary practice and meld together most existing treaty law into one document, while adding some new wrinkles to the law of the sea. There are so many controversial provisions unrelated to the common heritage of mankind principle that the ultimate conclusion and ratification of the Convention is problematic. While the United States Senate recently rejected the Convention, Third World pressure to conclude it will probably continue and the common heritage of mankind principle will probably resurface in some form. Clearly, however, the developed nations and particularly the United States will balk at ratifying the Convention or its successor unless its interests are considered and protected. The inadequate representation of these countries on the Council, coupled with the total reliance on them for technology and investment capital and the total lack of protection or adequate compensation for such technology and investment, presents one of the greatest anomalies in the Convention, and is a substantial obstacle to its conclusion. While these developed nations have shown a willingness to accommodate the Group of 77's demands,<sup>298</sup> they are unwilling to allow the creation of a New World economic order that would be dominated by Soviet bloc countries and the Group of 77. UNCLOS III should be used as a forum to reach a reasonable and fair result, rather than as an ideological and political battleground. The Convention will not be ratified until

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297. See *supra* text accompanying note 191.

298. See *supra* text accompanying notes 224-26.

the interests of the owners of the technology and capital are considered, protected, and adequately represented both in the theory of the international law and in its practice.<sup>299</sup>

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299. The Law of the Sea Treaty was signed on Dec. 10, 1982 by 118 nations. The United States was one of 46 nations refusing to sign. *Sea-Law Pact Is Signed By 118 Nations, But U.S. and Others Don't Join*, Wall. St. J., Dec. 13, 1982, at 30, col. 5.