Impacts of the UNCLOS III Consent Regime on U. S. Marine Scientific Research, 1982-1989

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IMPACTS OF THE UNCLOS III CONSENT REGIME ON U.S. MARINE
SCIENTIFIC RESEARCH, 1982-1989

BY

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
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Abstract

The 1982 Conference on the Law of The Sea (UNCLOS III) has given states jurisdiction over unprecedented scopes of ocean space. Marine scientific research is among the activities under coastal state control. This thesis examines five possible areas of impact of coastal state control on United States research programs. These are: 1. research which was denied outright, 2. reasons for denials, 3. research which was delayed, 4. the extent to which researchers avoid requests in the waters of restrictive states, and 5. the level of interest among UNOLS institutions in cooperative arrangements with foreign governments. The international legal framework for marine scientific research, and the major researcher institutions in the United States are also presented. Data is drawn from State Department files and from a survey of UNOLS ship operators.

The percentage of proposed research projects denied increased steadily from 1982 to 1988, followed by a sharp decline in 1989. The majority of these projects was curtailed by a lack of response by coastal states. Other reasons included required lead times not being met by applicants, excessive or onerous requirements being imposed by coastal states, and military security. In contrast to denials, delays have steadily increased, with a substantial rise in 1989. The extent to which
ship operators indicated that they avoid requests to
restrictive states agrees loosely with State Department
data. Four institutions indicated that they had
established cooperative arrangements with foreign
states, while one indicated three proposed arrangements.

From the opposing trends in denials and delays, it
is speculated that coastal states are cautiously
loosening control. This is considered especially true
for Mexico, which was found to be the most restrictive
state.
Acknowledgement

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Chapter I Introduction

1. Problem Statement

This thesis examines United States coastal ocean research under the Marine Scientific Research (MSR) provisions of the Third United Nations Conference on the Law of the Sea (UNCLOS III). The last forty years have witnessed great changes in the scope of state jurisdiction over areas of ocean space, culminating in UNCLOS III. Associated with these changes has been a major increase in the amount of state control over scientific research in areas of the ocean previously considered to be high seas and thus accessible to all. The following five areas of possible impact are examined in this research:

1) the percentages of total annual requests for permission to conduct research in foreign waters which were denied,

2) The various reasons to which these denials are attributed,

3) the extent to which marine research is being
delayed due to late responses and onerous requirements imposed by coastal states,

4) the extent to which United States' researchers are avoiding requests in the waters of restrictive nations, and

5) the level of interest among University National Oceanographic Laboratory System (UNOLS) institutions in cooperative arrangements for marine science with foreign governments.

2. Significance

Since World War II, the pattern of coastal state jurisdiction over adjacent waters has changed markedly. Prior to 1945, the situation consisted largely of high seas freedoms, with coastal state jurisdiction over narrow territorial seas (i.e. 3-12 miles). In 1945, President Truman issued a proclamation claiming control over the resources of the contiguous continental shelf (Truman Proclamation). Shortly thereafter, other nations began making similar claims, some to complete jurisdiction over all waters out to 200 miles. This trend of creeping jurisdiction over areas previously considered high seas (and thus open to all) has been termed "The Ocean Enclosure Movement" (Alexander, 1986).

Since 1964, the Convention on the Continental Shelf has required that scientists obtain permission from foreign states to conduct research on their continental
shelves (Wooster, 1981). The 1982 United Nations Conference on the Law of the Sea (UNCLOS III) recognized the existence of coastal state jurisdiction over the resources of an Exclusive Economic Zone (EEZ). This zone extends 200 miles from the baseline from which the territorial sea is measured. A consent regime for the conduct of scientific research in foreign EEZs was set up along with this zone; there is a strong set of requirements in this regime.

At the time of UNCLOS III, many researchers recognized that there were serious implications among these provisions; opportunities as well as obstacles. Ross and Knauss (1982) predicted an increase in international programs, especially bilateral agreements, for the conduct of marine scientific research. The treaty encourages this through Article 243, whose purpose is "to create favorable conditions for the conduct of marine scientific research."

The restrictions allowed by UNCLOS III on scientific research have been cause for concern among many investigators (Mangone, 1981; Jacobson, 1981; Ross and Knauss, 1982; Wooster, 1981; Knauss and Katsouros, 1987). This thesis examines five problems related to these restrictions. The following paragraphs explain the significance of each problem area to be considered.

a. **Denied Research**

Wooster (1981) assessed U.S. research vessel
clearance experience from 1972-1978, the time during which unilateral extensions of jurisdiction over greater scopes of area and research (i.e. beyond and above continental shelves) became codified in the Draft Conventions on the Law of the Sea. He found that U.S. scientists had encountered difficulty in obtaining clearance in foreign coastal waters, and that the percentage of request denials had grown over time. On average, it was found that 7 percent of the requests were denied, and 21 percent were delayed for a time significant to damage operations (Wooster, 1981).

Similarly, Knauss and Katsouros (1987) examined the effects of the Law of the Sea Treaty on U.S. marine science from 1979 to 1984. This research found that approximately 9 percent of proposed research did not take place because of "law of the sea" related problems. A number of these denials were found to be the result of the U.S. not submitting requests early enough or because of program modification after the initial clearance request was submitted (Knauss and Katsouros, 1987).

This portion will serve as a follow-up of the predictions of Ross and Knauss (1982) and others, and as an extension of the work done by Wooster (1981) and by Knauss and Katsouros (1987).

b. Reasons for Clearance Problems

The examination of reasons for clearance problems
will consists of two parts. Kildow (1973, pp. 14-18) presents four types of impediments to access to foreign coastal waters: 1) military security, 2) bureaucratic delays, 3) resource exploitation, and 4) political and other reasons. The first part of this analysis will seek to determine the extent to which these impediments are cited as reasons for research project cancellations and will also seek to identify additional reasons for denied research.

The second part is a preliminary assessment of the extent to which economic status of petitioned countries plays a role in their rate of denials. In their analysis of research permit denials from 1979 to 1984, Knauss and Katsouros (1987) found that particular states were more restrictive. Soons (1982) noted that the primary reason for asserting greater restrictions on scientific research has been the advanced economic potential of the world's oceans. Developing nations desire to reap the economic benefits of their coastal oceans, but have limited technical expertise with which to do so. Thus, they maintain tight controls on data collection and distribution off their coasts.

The countries considered in this analysis are those which are among the Group of Seventy Seven. The Group of Seventy Seven is an assembly of Third World states which was established during the 1960s preparations for the United Nations Conference on Trade and Development.
(UNCTAD). During these preparations, a sharp division of interests arose between developed and developing states. On 15 June, 1964, a "Joint Declaration of the Seventy Seven" was adopted. It outlined the "views, needs and aspirations" (Sauvant, 1981: p. 1) of these underdeveloped states. By 1981, the number of member states in the Group of Seventy Seven had grown to 122.

Results of this analysis will be useful in development of a more open rapport with restrictive nations. If the most restrictive nations are LDCs, then steps will be considered toward various cooperative arrangements (i.e. technology transfer, scientist training). If the majority of restrictive nations are found to be developed countries, then the other access impediments listed above must be considered.

c. Delays

Significant delays in the granting of research permits may be as damaging or more damaging than losses caused by outright denials. This is due to the investment of time and money required to plan a research cruise, as well as deadlines associated with research grants. According to Mangone, (1980: p. 308): "Delays in obtaining approval for marine science research can be very costly, disrupting ship plans, discouraging scientists and staff, and leading to failure in funding."
For example, part of a study of global weather patterns, requiring field work in the straits of Indonesia, was halted due to an inordinate delay in permit processing. The research was to be funded by a National Science Foundation (NSF) grant. However, lack of a timely response by Indonesia (the request was in its third year) resulted in the diversion of the grant money to another project (Kiernan, 1989).

d. The extent to which researchers are avoiding clearance requests in the waters of restrictive countries

According to Wooster (1981: p. 231), data concerning cruises which have been abandoned due to anticipated difficulties, while unavailable, was "unlikely to be negligible". Likewise, Soons (1982: p. 268) believed that scientists would respond to the UNCLOS III consent regime by concentrating their efforts in areas which have proven to be of easiest access. Ease of access is defined "in terms of predictability, quickness and clarity of the coastal state's response to request for consent, and the nature and extent of conditions imposed by it."

e. Level of interest in cooperative arrangements between U.S. institutions and foreign governments.

Jacobson (1981: p. 196) forecasted a period of acclimation to the consent regime, during which researchers would have to grow accustomed to new methods
of conducting oceanic research. He suggested that on a broad scale, researcher nations would eventually cooperate in the establishment of bilateral and multilateral agreements for the planning and promotion of MSR. "In the short term," he hypothesized, "ocean science will be impeded, but in longer term the benefits of accelerating cooperative arrangements just might outweigh the costs."

Texas A & M University has recently established a unique agreement with the Mexican government. Researchers from this University are no longer required to request permission of the Mexican government. They provide direct notification to Mexico's Admiral of Oceanography, who subsequently notifies the State Department (Ocean Science News, 1990). The extent to which other institutions are pursuing similar arrangements is not known (Cocke, 1990).

While this portion of the study does not examine historic trends in cooperative arrangements, it does provide a baseline for future studies of this subject.

4. Methodology

The following sections explain the sources of data and the methods employed to gather it.
a. Sources of Data

**State Department Files**

State Department data was provided in the annual "Summary of Clearance Requests" (hereinafter "Summary") compiled by the Bureau of Oceans and International Environmental and Scientific Affairs. These summaries include the name of the research platform, the country to which the application is made, and the proposed period of research. Endnotes provide greater detail on requests which have unique circumstances (i.e. denial, delay, required lead time not met, etc.) Total requests per country, and total denials and delays are provided in the summaries.

It is important to note that definitions employed by the State Department summaries and those employed in the present study differ. The 1982 data illustrates this point. The clearance summary for this year states at its conclusion that two requests were denied for the year. In the present study, these represent three events, for one of the requests covered two cruises. This problem also appears in subsequent years. Given this inconsistency, the summary statistics provided in the clearance summaries are disregarded, and a new set is drawn from the Clearance Summary end notes.

**Survey of Institutions**

A survey of eighteen UNOLS institutions conducting
bluewater research was conducted to discern attitudes toward and status of cooperative arrangements with foreign governments, to determine which countries are most restrictive to individual institutions, and to determine whether these institutions avoid applying to particular countries due to anticipated problems. A copy of the survey is attached in the Appendix.

b. Organization of Thesis

This thesis consists of three phases. The first phase is a literature search, and is divided into three chapters. The first of these, Chapter two, describes the international legal framework for marine scientific research. Chapter three discusses marine scientific research in the United States and includes an examination of the overall importance of research in the coastal ocean. Chapter four presents the results of the two previous studies which this thesis endeavors to extend.

The second and third phases of this work consist, respectively, of an analysis of State Department files on research vessel clearance events and a presentation of results of a survey of U.S. academic institutions conducting bluewater oceanographic research. These results are presented in Chapter 5.
Chapter II  **Marine Scientific Research and International Law**

1. Introduction

As Stated in Chapter I, extended claims of jurisdiction by various states have resulted in the enclosure of areas of ocean previously considered high seas. Included in the Ocean Enclosure Movement have been increased restrictions on the conduct of marine scientific research in foreign coastal waters. The rules governing this research have been codified in UNCLOS III. The following pages examine the history of control over ocean space, the provisions of UNCLOS III for marine scientific research, and the United States clearance process for conducting research in foreign coastal waters.

2. History of Control

The doctrine of freedom of the high seas developed as a reaction to the papal bulls of 1493, which divided the oceans between Spain and Portugal. This exclusive control effectively prohibited other nations from trading with the East and West Indies. In 1588 the...
Netherlands and England conquered the Spanish/Portugese fleet (the Armada) (Franssen, 1973), opening a new era of high seas freedom.

Hugo Grotius, generally considered the father of international law, was first to propose the notion of Freedom of the High Seas. Originally retained by the Dutch East India Company to settle a case concerning a captured Portuiguese vessel, Grotius wrote the original form of Mare Liberum (Freedom of the High Seas) as a chapter of an essay (De Jure Praedae Commentarius, or Commentary on the Law of Prize and Bounty). The revised chapter of this essay was published independently in 1609 as Mare Liberum (Von Glahn, 1986).

Written to defend the interests of Holland, Mare Liberum conflicted with British fishing rights. Thus, John Selden introduced the Mare Clausum concept to defend the English position. Essentially, England accepted the Grotius doctrine of freedom of the high seas, with the addition of a closed narrow band near the coast (Franssen).

The Institute of International Law (Paris) and the International Law Association (Brussels) met in 1894 and 1895, respectively, and discussed principles of maritime law. Among the major features of these meetings was that neither accepted the three-mile limit as the maximum breadth of the territorial sea and both implied that different limits of jurisdiction could be
established by coastal states, for various purposes, during times of peace and war. In each conference, the preamble includes:

"[T]here is no reason to confound in a single zone the distance necessary for the exercise of sovereignty and for the protection of coastwise fishing and that which is necessary to the guarantee of neutrality of non-belligerents in the time of war[.]" (Rosenne, 1980: p. 165)

The resolutions of these conferences were never universally welcomed, especially with regard to the three-mile rule, and attempts were made almost immediately to re-write them. After World War I the major belligerents insisted on maintaining three mile bands of ocean; the Association in 1924, and the Institute in 1928, abandoned their previous approach and created a single purpose band at three miles (Rosenne, 1980).

Grotius' argument for freedom of the high seas was premised partly on the inexhaustibility of ocean resources (Franssen, 1973). Today it is accepted that many of the oceans' physical resources are finite (i.e. minerals), while living resources require careful management to guard against overexploitation and natural fluctuations. Given the recognition of the finite nature of marine resources and concern by developing nations for new political, economic and technological developments (Franssen, 1973), recent decades have seen significant revisions in international
ocean law. These revisions have had a marked impact on the conduct of marine scientific research.

3. The Geneva Conventions

Until recently, the subject of regulation of marine scientific research was not given high priority (Kildow, 1973). As a result of growing interest in offshore resource development potential, and subsequent to the 1945 Truman Proclamation, Chile, Peru, Ecuador, and other nations made varying claims of expanded jurisdiction over offshore areas. Acquiescence to these claims had the effect of extending ocean-space jurisdiction in international customary law (Ross and Landry, 1987). Because these claims produced differing standards of scope of jurisdiction, the United Nations in 1958 convened an international conference of plenipotentiaries whose purpose was:

"to examine the law of the sea, taking into account, not only the legal, but also the technical, economic and biological aspects of the problem, and to embody the results of its work in one or more international conventions, or such other instruments as the conference may deem appropriate." (National Research Council, 1979: p. 5)

Four Conventions were signed on 29 April, 1958: The Convention on the Territorial Sea and the Contiguous Zone (516 UNTS 205), The Convention on the High Seas (450 UNTS 11), The Convention on Fishing and the Conservation of the Living Resources of the High Seas (559 UNTS 285), The Convention on the Continental Shelf
(499 UNTS 311) (Rosenne, 1980). The concept of a consent regime for conducting marine scientific research was first delineated in Article 5 of the Convention on the Continental Shelf, which states:

"The consent of the coastal state shall be obtained in respect of any research concerning the continental shelf and undertaken there. Nevertheless, the coastal state shall not normally withhold its consent if the request is submitted by a qualified institution with a view to purely scientific research into the physical or biological characteristic of the continental shelf, subject to the proviso that the coastal state shall have the right, if it so desires, to participate or to be represented in the research, and that in any event, the results shall be published."

Article 5 was provided as a safeguard against interference of coastal states with the rights of other states. However, since ratification of the Continental Shelf Convention, coastal state control over oceanographic research has increased. Much of this control is not based on the provisions of the 1958 Convention (National Research Council, 1979).

At the time of the Geneva Conventions, few lawyers and scientists recognized the potential ramifications of the new consent regime. In fact, attention to possible adverse effects remained limited until the Preparations for UNCLOS III began in 1971. Early concerns included possible hindrance of research due to administrative delays and possible leverage for political tradeoffs. In addition, there was an increasing awareness among nations of the value of the oceans' resources (Kildow, 1973). Ross (1986) suggests that "...some aspects of
marine science may have been too successful, in particular the promotion of certain ocean mineral resources, especially manganese nodules and hydrocarbons." Anticipation of riches from the ocean floor aided in catalyzing the Ocean Enclosure Movement, which culminated (Ross, 1986) in the 1970 General Assembly vote to convene a Third Law of the Sea Conference to deal with a number of issues, including MSR (National Research Council, 1979).

4. UNCLOS III

The Third Law of the Sea Conference was the result of post World War II economic, political, technological and strategic changes. These changes have accelerated over the last three decades, causing a widening gap between established political and legal principles of ocean use, and the importance and new uses of the ocean. UNCLOS III, which has been described as a "constitution" for the oceans, was convened to bridge this gap (Evensen, 1982).

As noted above, the importance of manganese nodules as a commodity was realized in the early 1960s. As a result, the General Assembly established a 35 member "Ocean Floor Committee" to examine the principles of exploring and exploiting mineral resources beyond areas of national jurisdiction (Evensen, 1982). Fifteen principles were presented to the General Assembly in
1970, and these became the U.N. "Declaration of Principles Governing the Seabed and the Ocean Floor" (GA Resolution 2749, 25th GA). The first principle formed part of the foundation of UNCLOS III, establishing the ocean floor, its seabed and subsoil outside national jurisdiction as "the common heritage of mankind". The General Assembly realized, during the 1970 debate, that questions regarding marine mineral resources could not be dealt with in isolation. In light of this realization, and of the need for a new, modern approach to these questions, the Assembly decided to convene UNCLOS III (Evensen, 1982).

UNCLOS III is the most comprehensive legislative work undertaken by the United Nations. Evensen (1982) identifies four factors which make UNCLOS III a unique and important conference: 1) Its purpose is to establish new rules, not codify existing ones; 2) the size of the geographic area involved (5/7 of the earth's surface); 3) the large number of issues involved; and 4) the number of participants. UNCLOS III is also unique in its decision-making process. Central to the structure of this process is the use of three informal negotiating groups for the preparation of draft texts concerning 1) the "Area" (defined below); 2) the territorial sea, the high seas, straits, archipelagos and islands, fisheries, management of living resources, the EEZ, landlocked and geographically disadvantaged states, and archipelagic
states; and 3) protection and preservation of the marine environment, marine scientific research, and the development and transfer of technology.

The formal negotiations of UNCLOS III concerning MSR began in 1974. On 30 April, 1982, the Treaty was approved by a vote of 130 to 4, with the United States (The U.S. recognizes all of the treaty's provisions except those concerning seabed mining), Venezuela, Turkey and Israel voting against it and 17 nations abstaining. Sixty nations must ratify the treaty for its entry into force (Ross, 1986).

5. Juridical Zones of The Continental Shelf Convention and UNCLOS III

The 1958 Convention delineated 5 regions of the oceans: internal waters, territorial sea, contiguous zone, continental shelf, and high seas (Figure 1). UNCLOS III produced several new juridical regions. These include straits used for international navigation, archipelagic waters, the exclusive economic zone, the continental shelf beyond 200 miles, and "the Area" (Fig. 2). The following paragraphs present the definitions of these zones as established in the two conventions and examine the rules of conduct for MSR in these zones. Where applicable, differences between the 1958 conventions and UNCLOS III are highlighted.
Figure 1

Zones of Jurisdiction Under the 1958 Conventions
(Adapted from Ross and Knauss, 1982)
Figure 2

Zones of Jurisdiction Under the 1982 Convention

The zones of jurisdiction under the 1982 convention are illustrated in Figure 2. The letters (A-E) refer to the possible definitions of the edge of the continental shelf, as follows:

A: 1-200 miles if the shelf is 200 miles wide, or less,

B: 60 nautical miles from the foot of the continental slope,

C: 100 nautical miles from the 2500 meter isobath,

D: the point at which the thickness of the sediments exceeds 1% of the distance from the continental slope, or

E: no greater than 350 nautical miles from the inner boundary of the territorial sea.
Exclusive Economic Zone

Thickness of sediment \( \geq 1\% \) of the distance from the foot of the continental slope.

(Adapted from Ross and Knauss, 1982)
Internal Waters

The territorial sea is measured from a baseline along a state's coast; internal waters are the waters lying on the landward side of the baseline (see Art. 5 par. 1 of Geneva Convention on the Territorial Sea and the Contiguous Zone, 1958). Baselines are normally established as the low water line along a coast, but special circumstances (i.e. a highly irregular coast; a bay with a closure line less than 24 miles) warrant a system of straight baselines (Soons, 1982).

The rules of UNCLOS III concerning marine scientific research in internal waters are similar to those of the 1958 Convention on the Territorial Sea and Contiguous Zone. The coastal state has complete jurisdiction over internal waters, and thus exercises absolute control over scientific research.

Territorial Sea

The territorial sea is the zone seaward, to a given limit, of the baseline. Article 6 of the Convention on the Territorial Sea and the Contiguous Zone defines this limit as "the line every point of which is at a distance from the nearest point of the baseline equal to the breadth of the territorial sea". UNCLOS III places the maximum limit of the territorial sea at twelve miles (Article 4).

The coastal state has complete jurisdiction over
research in the territorial sea, and foreign vessels may conduct research here only with "the express consent of and under the conditions set forth by the coastal state" (Article 245). These provisions, like those for internal waters, are similar to those outlined in the 1958 Convention on the Territorial Sea and Contiguous Zone (Ross, 1986).

The Exclusive Economic Zone (EEZ)

The EEZ was introduced in UNCLOS III to establish in coastal states "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the sea-bed and its sub-soil, and with regard to other activities for the economic exploitation of the zone, such as the production of energy from the water, currents, and winds[.]

Jurisdiction is explicitly provided for, in among other areas, scientific research (Article 56).

Ross and Knauss (1982) identify six conditions regarding the EEZ which are important to marine science:

1) Consent is necessary and shall be granted in "normal circumstances" (Article 246, par. 3). Consent may be denied if the project is of direct significance to the exploitation of resources; involves drilling into the continental shelf, use of explosives or introduction of harmful substances to the marine environment;
involves artificial islands; or if the consent request contains inaccurate information or if the requesting nation has outstanding obligations, from a prior research project, to the coastal state.

2) Specific information, including methods and means to be used, geographical areas to be studied, dates of research, names of those involved and extent of possible foreign coastal state participation, must be supplied at least six months prior to the start of the project.

3) Specific conditions must be met, including provision of reports, provision of access to data and samples, acceptance of coastal state participants, provision of assessment or interpretation of data, making available of data through international channels, and informing the coastal state of any major changes to the research.

4) "Communications concerning the marine scientific research projects shall be made through appropriate official channels unless otherwise agreed" (Article 250). The Department of State is the official U.S. channel.

5) Coastal states may suspend research if it is not being conducted according to the original plan or if there is a major change in the project.

6) "Land locked and geographically disadvantaged states" (Article 254) may request information related to
the project, and may participate, when feasible, through qualified experts.

Article 252 provides for "implied consent" in cases where a response is not issued from the coastal state six months after submission of the request. However, United States researchers do not exercise their right to implied consent (Dieter, 1987).

**Continental Shelf**

Article 1 of the Continental Shelf Convention defines the shelf as:

(a) . . . the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where a depth of the superjacent waters admits of the exploitation of the natural resources of the said areas; (b) to the seabed and subsoil of similar submarine areas adjacent to the coasts of islands."

Article 2 of the Continental Shelf Convention bestows sovereign rights on the coastal over the continental shelf "for the purpose of exploring it and exploiting its natural resources." However, these rights did "not affect the legal status of the superjacent waters as high seas, or that of the airspace above those waters" (Article 3). Nor, as indicated above, were the exploration and exploitation of the continental shelf to interfere with "fundamental oceanographic or other scientific research carried out with the intention of open publication".

UNCLOS III introduced a new juridical continental
shelf of a "complex, nonscientific definition" (Ross, 1986: p. 74). Article 76 of UNCLOS III gives the basic definition of Continental Shelf:

"[T]he sea-bed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance."

However, in circumstances where the continental margin extends beyond 200 miles, the coastal state is granted jurisdiction beyond 200 miles, to the edge of the continental margin. In these cases, the outer limit of the shelf is determined by one of two methods. Both methods involve the delineation of a line 60 miles from an established line "by straight lines not exceeding 60 miles in length, connecting fixed points" (Article 76). The continental margin is drawn through the outermost points. The first method establishes the reference line for measurement of the continental margin as that where "the thickness of sedimentary rocks is at least 1 percent of the shortest distance from such point to the foot of the continental slope. The second method is similar, but the lines of "not more than sixty miles" are measured from the foot of the continental slope. "[T]he foot of the continental slope [is] determined as the point of maximum change in the gradient at its base" (article 76). Regardless of method used, the shelf
margin is not to exceed 350 nautical miles from the baseline from which the territorial sea is measured or 100 nautical miles from the 25-meter isobath. Ross (1986) predicted that these definitions would result in considerable confusion in delineating the outer edge of the continental margin and that the provision concerning sediment thickness would result in excessive claims (Ross, 1986).

The provisions for MSR on the continental shelf are similar to those for the EEZ, with the exception that consent may be denied only if those areas of the continental shelf beyond 200 miles which have been publicly designated, within a reasonable period of time, as subject to exploitation or detailed exploratory operations. However, the coastal state may designate such areas at any time (with reasonable notice) and is not obligated to divulge the nature of the activity (Mangone, 1981). Research conditions for the waters above the continental shelf beyond the exclusive economic zone are similar to those of the high seas (Ross, 1986).

**The High Seas**

High seas are defined in UNCLOS III (Article 86) as those parts of the sea that are not EEZs, territorial seas, internal waters, nor archipelagic waters. The doctrine of freedom of the high seas dictates the legal
regime of this zone (Soons, 1982). Article 2 of the 1958 Geneva Convention on the High Seas states the following four high seas freedoms: 1) freedom of navigation, 2) freedom of fishing, 3) freedom to lay submarine cables and pipelines, and 4) freedom to fly over the high seas. Article 87 of UNCLOS III adds conditions to two of the freedoms established in the 1958 convention, and also adds two new freedoms: freedom to construct artificial islands and other installations permitted under international law (with conditions), and freedom of scientific research (subject to conditions stated above concerning the continental shelf beyond 200 miles).

6. Activities Which Require Consent

The factor which determines whether marine scientific research is being conducted is the nature of the activity and not the platform from which the activity is conducted. Certain equipment which may be used for scientific research may also be instrumental in the safe operation of the vessel (i.e. echo sounders) (Stevens, 1986). According to the UNOLS Handbook For International Operations of U.S. Scientific Research Vessels (Stevens, 1986):

"[m]arine scientific research includes the traditional disciplines of academic oceanography and fisheries science. . .[i]f the intent of the activity is to produce scientific results for publication in an academic journal or other means of open dissemination for scientific purposes it can be generally assumed that
the marine science regime applies."

Certain activities similar to scientific research, including resource exploitation, hydrographic surveys for the production of nautical charts, and military operations which are not used for scientific purposes are covered under an international legal regime separate from that for marine science. The U.S. State Department recognizes complete freedom in conducting activities which facilitate hydrographic surveys seaward of the territorial sea if information is to be made available to all nations (UNOLS, 1986). However, the UNOLS Handbook cautions that certain states may not share the U.S. interpretation of this LOS provision and recommends consultation with the Department of State before conducting these activities.

Although the present paper examines only research from ships, it is worthwhile to note that marine scientific research may also be conducted from air- and spacecraft, and in both of these cases procedures additional to those which apply to ships must be followed. Aircraft must gain landing and overflight clearances, for they enjoy no right of innocent passage over the territorial sea (unlike ships) except in straits used for international navigation (UNOLS, 1986). In the case of spacecraft, no mention is made in Part XIII of UNCLOS III concerning their use for marine scientific research. Early UNCLOS III proposals
concerning the regulation of marine scientific research did include remote sensing devices, but it was later decided to leave this matter to the Legal Subcommittee of the U.N. Committee on Outer Space. Today, access to all research conducted from outer space, whether it be an examination of the earth's surface, or a study of space phenomena, is recognized in international law as free to all nations. This freedom carries certain stipulations, including the requirements that such research should be carried out for the benefit of all countries and that the UN Secretary General and the legal and scientific community should be informed of the "nature, conduct, locations and results of such activities." (Danilenko, 1988: p. 251)

7. The Clearance Process

Wooster (1981) recognized that the clearance process for marine scientific research permits in foreign coastal waters differs significantly from the process of obtaining domestic government permits. Most striking is the fact that the transaction involves different governments and an intermediary is involved (the State Department is the U.S. intermediary). In addition, national legislation may lack a basis in international law or the jurisdiction claimed by the petitioned state may not be recognized by the applicant state. This presents a quandary for applicants, because
the State Department has refused to submit requests for fear of acquiescence to excessive claims. Finally, the scientific research clearance process is unique because the permit may be denied for political reasons, even though the stated conditions are met.

Three channels exist to obtain clearance to conduct research in waters under foreign jurisdiction: private, public, and international organizations (Stevens, 1988).

Private Channels

Private channels may be used if the research platform is not a public vessel. The Department of State grants public status to vessels which are under the direct operational control of the U.S. government. Public vessels are afforded sovereign immunities, and they may not be boarded or searched. Vessels which are owned by the government but operated by private academic institutions are generally not given public status. There are few advantages for individuals submitting requests directly to foreign governments and this approach is often unsuccessful (Stevens, 1988).

Diplomatic Channels

Wooster (1981: p 221) describes the clearance sequence through diplomatic channels as eight steps:

1. A distant-water cruise is scheduled. For academic research vessels, this is a highly complex
procedure. Scheduling of ship time occurs through UNOLS headquarters. Scientists are not placed according to their school affiliation, but rather on those ships which are most convenient to a particular location. Given the need to schedule time in a cost-effective manner, schedule changes frequently occur during this process (Griffin, 1991).

2. The operator seeks clearance through the State Department.

3. The State Department determines an appropriate course of action. The options here include a) the request is not forwarded because the jurisdiction of the petitioned state is not recognized, b) the request is forwarded because clearance is recognized, c) the request is forwarded with modifications to meet recognized jurisdiction, or d) the request is not forwarded because it does not meet the recognized requirements of the coastal state ("d" is added by present author). Common problems under this last category include insufficient lead time by the requestor, prior obligations by the requestor concerning publication and dissemination, and inability to carry guest scientists from the petitioned state.

4. The request is forwarded to the coastal state through the U.S. Embassy.

5. The coastal state either seeks more information, approves or denies the request, or does not
respond.

6. The State Department notifies the operator of the outcome.

7. The operator conducts the research as planned, modifies it to meet the requirements of the coastal state, or cancels the cruise.

8. The operator fulfills post cruise obligations (i.e. data dissemination, publication)

Presently, detailed records of all clearance transactions are maintained by the State Department's Research Vessel Clearance Officer. However, this is a recent phenomenon. Until recently (within the last 25 years), The State Department notified operators by telephone, leaving an incomplete written record.

International Organization Channels

Although rarely used by U.S. marine scientists, the Intergovernmental Oceanographic Commission possesses a mechanism to help member states gain access to waters under foreign jurisdiction. This is supported by Article 247 of UNCLOS III, which states that

"[a] coastal [s]tate which is a member of or has an agreement with an international organization, and whose exclusive economic zone or on whose continental shelf that organization wants to carry out a marine scientific research project, directly or under its auspices, shall be deemed to have authorized the project to be carried out in conformity with the agreed specifications if that state approved the detailed project when the decision was made by the organization for the undertaking of the project, or is willing to participate in it, and has not expressed any objection within four months of notification of the project by the organization to the
coastal state."

This approach may prove useful in large, multi-national projects (Stevens, 1988).

8. Chapter Summary

This chapter has examined the international legal regime for the conduct of marine scientific research. The history of control over ocean space has been traced from 1493, when papal bulls divided the oceans between Spain and Portugal. Defeat of the Spanish/Portuguese fleet opened the era of high seas freedoms. Subsequent history has witnessed a continuing trend in the enclosure of greater areas of ocean space, culminating with UNCLOS III. Several zones of ocean space are codified in UNCLOS III; among these is the EEZ. Included among the provisions of the EZZ is coastal state control over marine scientific research. Three channels exist for gaining access to foreign waters for marine research; the present study is concerned primarily with diplomatic channels. The official diplomatic channel of the United States is the Department of State, through its Research Vessel Clearance Officer. Marine scientific research is defined as activities whose purpose is to create scientific results for open dissemination. Proposed requests are either submitted to the petitioned state for approval/denial, or denied by the Department of
State for any of a variety of possible shortfalls.
Chapter III Marine Scientific Research in the United States

1. The U.S. Fleets

The majority of applications for permission to conduct research in foreign waters are for the ships of four U.S. fleets: The University National Oceanographic Laboratory System (UNOLS), The National Oceanic and Atmospheric Administration (NOAA), the Navy, and the Sea Education Association. This section examines the history, mission, and significance of each of these fleets.

a. Navy

Naval Oceanography provides a good starting point for an examination of the evolution of the U.S. research fleet. The Navy was the first U.S. institution to conduct organized ocean research and, as will be shown, was directly or indirectly involved in the development of all other U.S. oceanographic organizations. The Navy requires information on changes in the oceans and atmosphere, at times on an hour-to-hour basis, in order
to affect the safe passage of ships, correctly interpret sonar signals, and effectively operate weapons systems (Chesborough and Pittenger, 1991). In addition, knowledge of the oceans is a primary variable in effective anti-submarine warfare tactics (Root, 1991). Given these specialized needs, the Navy established the Naval Oceanographic Office in 1962, and in 1966 created the position "Oceanographer of the Navy" (Nelson, 1991).

As an organized activity, Naval oceanography began with the establishment, in 1830, of the Depot of Charts and Instruments in Washington, D.C. Prior to 1830, the instruments, charts, and papers of decommissioned ships were haphazardly piled in a storeroom. Concern by the Naval Board of Commissioners led to the establishment of the Depot. One of the primary functions of the early Depot was to check the errors and rates, by astronomical observations, of chronometers. The responsibilities of the Depot grew with the installation of a lithographic press and a set of hydrographic charts was produced in 1837 (Nelson, 1991).

In 1838, Congress appropriated $300,000.00 for a scientific mission to the South Pacific. The broad objectives of the expedition were

"To determine the existence of doubtful dangers reported in the track of United States trade, to make astronomical observations for locating shoals, islands, reefs, etc., to instruct the natives of the islands visited in agriculture and horticulture and to encourage them to increase their output, to discover if possible a shorter route to China via the Sulu Sea" (Nelson, 1991, p. 14).
Matthew F. Maury, widely recognized as one of the founders of the science of oceanography, became Superintendent of the Depot in 1842. His tenure effectively established naval hydrography (Nelson, 1991). Maury's dedication led to the production of six series of charts: track charts, storm and rain charts, trade wind charts, pilot charts, whale charts, and thermal charts.

In 1866, the Depot was split into separate offices: the U.S. Naval Observatory and the Hydrographic Office. During this period, Maury's allegiance was with the Confederacy. Without his broad vision, the Hydrographic Office fell into a standard of routine activity which included cable laying and surveying fleet anchorages. During World War I, the challenge of trying to locate enemy submarines sparked an interest in marine science, but peace once again brought a period of retrenchment (Nelson, 1991).

Federal support for marine science waned after the war, but philanthropic support led to the establishment of several private institutions (see UNOLS, below). In 1933, by recommendation of a special Navy board, the Section of Oceanography was created under the Hydrographic Office and cooperation with private and academic institutions was accelerated. This cooperation reached a pinnacle during the WW II effort (Nelson,
1991), and led to the advances described in the following subsection.

b. **UNOLS**

(The following information on the history of UNOLS, unless otherwise noted, is drawn from Treadwell, Gorsline and West, pp 1-14) UNOLS, an association of ocean science academic research institutions, was formed in 1971 by the National Science Foundation (NSF). The purpose of the association is to augment the coordination and scheduling of the academic oceanographic fleet (Cullen, no date). To meet this end, panels and committees have been formed under the auspices of UNOLS to define science requirements, set safety regulations, and conduct studies concerning such topics as equipment, design, scheduling and insurance (Dieter).

Academic research vessels fall into one of two categories in terms of management and finance. The first category includes the UNOLS vessels and consists mainly of larger, federally funded vessels run through a national cooperative. The second category consists of smaller vessels which are dependent on states and/or universities for funding. Due to lack of central management of this second category, less information about it is available (Academic Research Vessels, 1985-1990). The present active bluewater fleet consists
primarily of UNOLS vessels.

The UNOLS Fleet Improvement Committee divides the history of the modern academic fleet into four phases: Pre World War II, World War II to 1960, 1960 to 1980, and 1980 to present. These phases are described below.

**Pre World War II**

The pre World War II fleet consisted entirely of privately funded vessels. Due to a depressed economy, political isolationism and a general lack of concern for other parts of the world, oceanographic research during this period was focused mainly on near-coastal areas in the United States; this focus was reflected by the types of vessels in use.

Research facilities remained limited until 1927, when the Rockefeller Foundation established the Woods Hole Oceanographic Institution, expanded the facilities of the University of Washington, and provided funds to the Scripps Institution of Oceanography. In addition, the University of Southern California received private funding from a Captain G. Alan Hancock, who also gave scientists ship time aboard his private yacht. Due to these private contributions, four major oceanographic institutions were established in the 1930s, and each had a ship.
World War II to 1960

During World War II, the U.S. Navy developed a strong interest in marine science, which carried well into the post-war period. Recognizing the implications of marine scientific research in Naval warfare, the Navy worked with WHOI and Scripps in such areas as submarine warfare, amphibious landings, mine warfare, and general surface operations. Important developments during World War II include advances in instrumentation, sediment charts, submarine trim, long-range weather forecasting, beach information for amphibious assaults, submarine detection equipment, sonar operations, and identification of the deep scattering layer (Nelson, 1991). Also, the use of explosives to generate sonic vibrations to determine the earth's crustal morphology was pioneered during this time (Davis, 1978). After the war, with financial support from the Office of Naval Research (ONR), several new institutions emerged. These included Texas A & M University, Chesapeake Bay Institute, University of Miami, Oregon State University, University of Rhode Island, Lamont-Doherty Geological Observatory, and the University of Hawaii. ONR was the principal funder of academic oceanographic research during this period and also supplied ships and operational support. The majority of academic research ships during this period were converted from other uses (i.e. tugs, minesweepers, salvage ships, fishing
vessels); only two vessels, Atlantis and Velero IV, were built specifically for oceanography.

1960-1980

The period from 1960 to 1980 witnessed major growth of federal support for all sciences. Marine science benefitted by the addition of approximately 60 new vessels. Twenty of these were built for research from federal funds, six were privately funded, and the remainder were conversions from other uses. Coupled to this institutional growth was the emergence of a strong body of scientists, the education of whom was facilitated by post war federal education support programs.

The Navy's interest in the academic fleet diminished during this period. The perceived importance of mine warfare was low, and the general principles required for submarine warfare (principles of underwater acoustics, near-surface temperature structure, etc.) were understood. The National Science Foundation (established in 1950) supplemented, and then gradually replaced ONR as the chief funding source for the academic fleet.

The end of this period is marked by a shrinking back of available funds. This is due to at least three factors. First, oceanography has traditionally relied on federal grant money to support research salaries.
The volume of PhDs produced in the 60s and 70s has strained these funds. Second, the energy crisis and national debt have markedly changed the federal budget. According to Treadwell, et al (p. 13):

"Those twenty years may well encompass what we will look back upon as the Golden Age of ocean science in the U.S. and the high point of the post-WW II economic growth curve."

Third, programs and budgets have grown, and funding has not kept pace with this growth (Griffin, 1991).

1980 to Present

The current period of the UNOLS fleet is characterized by shrunken budgets for research efforts; at times the capacity of the research fleet has exceeded needs to the point where ships have had to be temporarily laid up. However, this period has also seen major technological changes which have increased the accuracy of measurements and volume of data and made ocean science data applicable to other fields. Likewise, the nature of the projects is changing, as focus turns to world wide experiments.

c. NOAA

NOAA operates a fleet of research vessels which support a number of the Administration's programs. These include the National Ocean Services (NOS) marine assessment programs, the resource assessment activities of the National Marine Fisheries Service, and the research programs of the Environmental Research
Laboratories. Particular ships' tasks may range from an estuarine hydrographic survey to an ocean-wide oceanographic assessment (NOAA, 1989). The fleet's management and operational support are provided from two Marine centers. The Atlantic Marine Center in Norfolk, Virginia, and the Pacific Marine Center in Seattle, Washington provide support for ships operating from their respective coasts. Additional facilities are located in Woods Hole, Massachusetts, Miami, Florida, Pascagoula, Mississippi, San Diego, California, Anchorage, Alaska, and Honolulu, Hawaii (NOAA, 1989). NOAA ships are operated by the NOAA Corps, the United States' smallest uniformed service.

The history of the NOAA Corps dates to the U.S. Coast and Geodetic Survey, established by Thomas Jefferson in 1807 as The Coast Survey (Davis, 1978). During the early years of the Survey, Naval officers were mandated by Congress to assist the survey in seagoing charting operations, and Army officers were directed to assist in shoreside surveys. During the Civil War, civilians operated the ships and field parties, and during the Spanish-American War all Navy Officers were permanently withdrawn. Commands rested with civilian assistants until 1917. To meet the needs of the Survey, a commissioned officer personnel system was established by legislative act on May 22, 1917. Subsequent to the formation of NOAA in 1970, the
Survey's commissioned officer corps was transformed to the NOAA Corps (NOAA Corps employment information sheet, no date).

NOAA operates five general programs: the National Weather Service (NWS), the National Ocean Service (NOS), the National Marine Fisheries Service (NMFS), Oceanic and Atmospheric Research (OAR), and the National Environmental Satellite, Data and Information Service (NESDIS). The NWS forecasts and reports weather and provides warning of tornadoes, hurricanes, and other severe weather. The NOS operates the federal oceanographic fleet, prepares nautical and aeronautical charts and other aids to navigation, provides a national geodetic reference system, and implements programs in coastal resource management and ocean pollution abatement. NMFS manages the fisheries within the EEZ, protects vital habitats of marine mammals, and conducts research programs. The research and development offices of NOAA implement research programs through a worldwide system of NOAA laboratories and through cooperative arrangements with universities. These offices also provide leadership for multi-agency research efforts. The NESDIS manages the US civil meteorological and remote sensing satellite systems and operate the world's largest environmental data storage and retrieval system (The NOAA Story--Fact Sheet from the Office of the Administrator, no date).
d. **Other Ship-Operating Institutions**

In addition to the above institutions, the following also operate blue water oceanographic vessels: The Sea Education Association, the Department of Transportation (Coast Guard), the National Science Foundation, the Department of the Interior, and the Environmental Protection Agency.

The Sea Education located in Woods Hole, Massachusetts operates two Sailing School Vessels (SSVs) for a college undergraduate program in oceanography. The primary area of operation is the U.S./Canadian east coast, and the Bahamas/Caribbean, but recent voyages have been made to Europe.

2. **Significance of Research in the Coastal Ocean**

The coastal zone, which extends to the outer limit of the continental shelf, is the most important region for marine science; the majority of man's ocean activities occur here. Due to coastal upwelling and nutrient availability, this zone has the highest biological productivity. Ninety percent of the world fish catch was taken from coastal areas in 1982. Although the feasibility of mining the high seas for manganese nodules is currently being explored, marine-derived minerals are presently taken exclusively from
the continental shelves and waters above them. A large volume of the world's marine transportation is coastal, and all marine transportation originates and terminates in coastal areas. Coastal waters also receive a large volume of human and industrial wastes (Soons, 1982). EEZs cover approximately 40% of the Earth's surface, an area equal to the total land mass. The global ocean is a fluid whole, many aspects of which cannot be understood without access to all parts of the ocean (Jacobson, 1981).

Soons (1982) has presented a list of disciplines to which the coastal ocean is of upmost importance. These disciplines include: 1) preservation of the marine environment, 2) management of living resources, 3) food, 4) pharmaceuticals, 5) geological/geophysical research, 6) climate/weather forecasting, 7) alternative energy sources, and 8) fundamental research (This list is an adaptation of that presented by Soons).

4. International Cooperation

Through the last thirty five years, an elevated interest in the oceans has led to the national activity described above. However, the scope and scale of the problems at hand require cooperation among nations (Wooster, 1978). To meet this need, a host of unions and programs have been established. This section describes two major international oceanographic
International Oceanographic Commission

The International Oceanographic Commission (IOC) was established by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1960 to promote scientific investigation of the nature and resources of the oceans through concerted efforts of its members. Membership is open to any UN member (Galey, 1973). The IOC is the only global intergovernmental scientific union concerned exclusively with marine scientific research (Soons, 1982).

The roots of the IOC are traced to the planning meeting for the International Indian Ocean Expedition. During this planning phase, it became obvious that the commitment of governments was necessary to conduct a major international investigation. An intergovernmental conference held in Copenhagen in July 1960 recommended the establishment of the IOC within UNESCO. The recommendation was adopted by UNESCO's General Conference in December 1960, with the provision of an Office of Oceanography to serve as the IOC secretariat.

The Scientific Committee on Oceanic Research

In 1957, the Scientific Committee on Oceanic Research was established by the Executive Board of the International Council of Scientific Unions (ICSU) to
promote all aspects of international ocean science research. SCOR's interdisciplinary nature is illustrated by its direct affiliation with other ICSU bodies (whose presiding officers are ex-officio members of the SCOR executive committee), including the International Association for the Physical Sciences of the Ocean (IAPSO) of the International Union of Geodesy and Geophysics, the International Association of Biological Oceanography (IABO) of the International Union of Biological Sciences, the Commission for Marine Geology (CMG) of the International Union of Geological Science, and the International Association of Meteorology and Atmospheric Physics (IAMAP) of the International Union of Geodesy and Geophysics (Wooster, 1978). SCOR is considered to be the most important non-governmental international organization for marine science (Soons, 1982).

SCOR has close ties with UNESCO and IOC, for both of which it serves as scientific advisor. In 1959 and 1960 UNESCO and IOC, respectively, abolished their own ocean science advisory committees and invited SCOR to serve this function. While much of SCOR's work is conducted by volunteers, keeping costs low, annual contributions are provided by UNESCO and IOC (and others) (Wooster, 1978).
4. **Chapter Summary**

This chapter has presented the fleets of the major U.S. marine research efforts. They are Navy, NOAA, UNOLS, and private institutions. The significance of coastal waters to marine research has been considered and major research topics have been listed. Two international oceanographic organizations, the IOC and SCOR, are described.
Chapter IV Past Research Concerning Vessel Clearance

Before presenting the vessel clearance data for the 1982-1989 period, it is instructive to consider the results of three prior studies. Wooster (1981) studied the clearance experience of United States research vessel operators from 1972 to 1978. Knauss and Katsouros (1987) assessed the situation from 1979 to 1984. Ross and Fenwick studied the trends from 1979 to 1986, and included an analysis of the trends in coastal state claims of extended jurisdiction. The results of these studies are presented in this chapter.


Wooster (1981) examined the occurrence of outright denials and of delays in the 1972-1978 time period. Events were considered only if the onus for the hindrance to research rested with the coastal state. "Delay" was defined as those requests which were not answered within one week of the scheduled operation. Table 1 presents the results of this research.

The "total requests" in this table represent events of known outcome. In his research, Wooster could not
identify the outcome of 34 events, and these were disregarded in the analysis.

In seven percent (30) of the known events, coastal states denied access to U.S. research ships. In 21 percent (85) of the cases, research was delayed by coastal state action. The most restrictive states in terms of denials were Brazil (5), Trinidad and Tobago, Mexico, and India (3 each), and Venezuela, Colombia and Spain (2 each). Mexico was most restrictive in terms of delays, accounting for one third of these events (30). Other states with high rates of delays were Venezuela (7), Canada and France (5 each), Peru, Portugal and the United Kingdom (4 each).

Wooster also examined the rates of denials and delays among various disciplines. These disciplines included seabed, water (physics/chemistry), water (biological), and other. No striking differences were noted, with "the possible exception" of the fact that nearly half of the denials were for seabed studies, while those for water-column physics and chemistry "were more successful than might have been anticipated".

Reasons for denials fell into three categories in instances where responsibility was attributed to the coastal state. These were:

1. Reason not evident
2. Conditions unacceptable or arrangements inadequate
Table 1

Clearance events, 1972-1978

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<tr>
<td>Total Requests</td>
<td>37</td>
<td>58</td>
<td>45</td>
<td>54</td>
<td>52</td>
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<td>1</td>
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<td>12</td>
<td>6</td>
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<tr>
<td>Delays</td>
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<td>7</td>
<td>6</td>
<td>14</td>
<td>10</td>
<td>23</td>
<td>15</td>
</tr>
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</table>

Total events includes only those of known outcome. A delay is defined as an event which is not answered within one week of the scheduled operation. Problems whose onus does not rest with the coastal state are screened from this analysis.
3. Notice of request insufficient. It should be noted in this case that Wooster considers it to be the onus of the coastal state when U.S. researchers did not meet 6 month lead time requirements. This is now a standard lead time accepted by a majority of states. As will be discussed in the subsequent chapter, the State Department often does not forward requests which do not meet this requirement.

2. 1979-1984 Clearance Experience (Knauss and Katsouros, 1987)

Knauss and Katsouros (1987) studied vessel clearance events during the 1979-1984 period. These results are summarized in Tables 2 and 3. 589 clearance events were identified, 41% (242) of which were for research permits in Canada and Mexico. Other U.S. neighbors with proportionally high request rates included The Bahamas, Barbados, the Dominican Republic and Haiti. However, proximity to the United States was not the sole factor in frequency of requests, as western south American Countries received high rates of requests also. These included Chile (20), Peru (15), and Ecuador (7).

Nine percent (53) of the 589 requests drew responses which resulted in the research not being conducted. Four reasons for denials were given in this study. These are:
1. outright denial,
2. permission came too late to conduct research,
3. No response to request, and
4. Terms of permission were unacceptable to researchers.

Unlike the study conducted by Wooster, this study did not screen out those events for which the coastal state was not responsible. Programs which were discarded for reasons unrelated to the Law of the Sea (i.e. funding withdrawal, equipment malfunction) were discarded from the analysis. Delays in the granting of permission which led to program cancellation were regarded as "lost opportunities", while delays which led to lesser research programs were regarded as successful. The authors assert that a trend in results from 1972-1984, if it exists, cannot be discerned among the two studies because of the different methods employed.

Mexico was found to be the most restrictive country, with fifty percent of the fifty-three lost research opportunities. In approximately half of these cases, permission was granted, but it came too late to conduct the proposed research program. The authors speculate that, due to the markedly lower rate of lost research projects from 1982 to 1984 (Table 2), that clearance problems were beginning to ease.

This study, combined with that of Wooster (1981), found a steady increase in the number of total annual
requests to research in waters under foreign jurisdiction. The authors note, however, that this increase is likely not due to an increase in research activity. In fact, the number of blue-water research vessels declined during this period. The increase in requests is assumed to be due to the steady increase in coastal state claims of extended jurisdiction during the study periods. A spike in requests in 1984 is attributed to the changed U.S. policy concerning the EEZ.
Table 2 presents total lost projects, as determined by Knauss and Katsouros. Authors speculate a possible easing of clearance problems.

Source: Knauss and Katsouros, 1987

<table>
<thead>
<tr>
<th>Lost Projects, 1979-1984</th>
<th>79</th>
<th>80</th>
<th>81</th>
<th>82</th>
<th>83</th>
<th>84</th>
<th>Total</th>
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Table 3

<table>
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<th>Categories of problems which led to lost research programs, 1979-1984</th>
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<td>Denial</td>
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<tr>
<td>No Response</td>
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<td>Unacceptable Conditions</td>
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Table 3 presents four categories of problems which led to lost research programs as determined by Knauss and Katsouros, 1987. "Denial" refers to requests which were denied outright. "Delay" refers to permission which was received too late resulting in a cancelled research program. "No Response" refers to those projects which were cancelled to lack of response from the petitioned state. "Unacceptable Conditions" includes those programs which were approved with conditions that the researcher deemed onerous.

Source: Knauss and Katsouros, 1987
3. 1979 Through 1986 Clearance Experience (Ross and Fenwick, 1988)

In addition to assessing the experience of U.S. researchers in gaining access to foreign waters through 1986, Ross and Fenwick analyzed the trend in annual claims of jurisdiction over marine scientific research. Their study examined the situation from 1945 through 1986. A sharp increase in extended claims is found in the mid-seventies, rising from below thirty in 1975 to over 100 in 1986. The trend in claims of jurisdiction over marine scientific research mimics, lagging only slightly behind, the trend in EEZ claims.

The results of the assessment of clearance problems conducted by Ross and Fenwick (1988) are presented in Table 4. These results show a similar trend through 1984 as those found by Knauss and Katsouros. However, the increased percentages of problems in 1985 and 1986 dispute the speculation by Knauss and Katsouros that clearance problems were beginning to ease.
Table 4

Clearance Problems, 1979-1986, as Determined by Ross and Fenwick

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<tr>
<td>% C.S. Blame</td>
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<td>8</td>
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Problems which lead to denials are separated from outright denials. C.S. Blame refers to those problems for which the coastal state is to blame. These problems include late approvals which result in delay or cancellation, denials due to lead-time problems, requests which were not answered, and research which was cancelled due to excessive conditions or fees imposed by petitioned state.

Source: Ross and Fenwick, 1988
Chapter V Data and Analysis

This chapter presents the data obtained in this study. Section one describes the procedures used to collect data, section two presents the results of these procedures, and section three discusses these results and suggests possible future research topics.

1. Procedures

a. Screening for vessel-based research

State Department vessel clearance request summaries are used in this thesis to determine specific problems encountered by U.S. marine researchers in gaining access to waters under foreign jurisdiction. This thesis is concerned with research conducted from vessels. Many requests are for the conduct of land-based research, including archaeology, marine mammal research, and collection of specimens. It is likely that some or all of this research may be carried out by field parties and/or in internal waters. The majority of requests listed in the summaries list the platform from which the research will be conducted. Any proposed projects which

62
do not include a vessel are assumed to be shore-based research, and are eliminated from the following analysis.

In 1987, the State Department revised its method of recording clearance requests. Prior to that year, requests were summarized in the order they were received. The new method records events in the order they are resolved (approved or not approved) (Fenwick, 1991, pers, comm.). This change resulted in repetition of some events on the Summaries of 1986 and 1987. The repeated events have been eliminated from the 1987 data set.

b. **Effective Denials**

"Effective Denial" is defined as any research event which does not take place due to action or inaction by the coastal state.

In some cases, a request is denied and this decision is later reversed. This has occurred in numerous instances with Spain and France. The permit is initially denied because it does not meet a lead time requirement and the decision is subsequently reconsidered. These instances are not recorded as denials, because this study is concerned mainly with the final action taken by the petitioned states.

This definition of denial, as stated above, leads to totals which differ from those provided by the State
Department. Numerous clearance "events" may be included in one request, for multiple cruises may be included in one request. Likewise, the term "effective denial" includes those clearance problems in which the researcher was driven to cancel the proposed research due to the coastal state's action.

c. Delays

"Delay" is defined as:

1) any research which must be revised due to onerous requirements or schedule disruptions imposed by the coastal state, 

2) any clearance event which is approved close to the proposed departure date of the research cruise, or

3) any research which is approved after the proposed departure date.

Certain clearance approvals are held up due to schedule changes by the researchers. These are not included among the delays defined in this section, as they are not necessarily a result of LOS-related problems. However, many of the cases considered in this study are unique, and classification by specific rules is difficult. For example, note 11 of the 1985 Summary states "[a]lthough this research had been previously approved and then rescheduled, Brazilians required resubmission of all documentation with 180-day prior notice." Strict adherence to the rule concerning schedule changes in this case would overlook an excessive lead time for resubmission. Thus, this case
is included as a delay. Like denials, the definition of "delay" used by the present study differs from that of the State Department.

While the second definition listed above may appear somewhat subjective, it is designed to work with the endnotes of the Summaries. Wooster (1981) used a more objective definition, defining delay as those events in which clearance was received within one week of the proposed departure date. Many of the notes do not list the exact time of approval in relation to departure date. Instead, phrases such as "at the last minute" are used. Notes on events which use this wording are assumed to have been cleared in an untimely fashion, thus causing delays.

d. Reasons for halted projects

This analysis is conducted by categorizing halted research according to reasons listed on the Summaries. These events fall into six categories:

1. complications arise due to excessive requirements by the coastal state,
2. approval is received too late to conduct the proposed research,
3. no response is received from the coastal state,
4. permission is denied because the request does not meet the required lead time,
5. the proposed research threatens the coastal state's military security, and
6. permission is denied, no reason is given.
Events which do not fit these categories are included under the heading "other".

Certain clearance events are footnoted "denied outright", while others as listed as "not approved". Both of these are included in the "denied outright" category. Only those cases which are specifically listed as "no response" are included in the no response category.

In addition to this analysis, a preliminary attempt is made to determine the extent to which economic factors play a role in stifling distant-water research. This is done by listing countries which have issued a total of five or more denials between 1982 and 1989, and considering their economic status. If they are among the Third World states recognized by the U.N., economic concerns are regarded as playing a partial role in their restrictions. Economic status is determined by establishing whether the states in question are among the Group of Seventy Seven.

e. Extent to which U.S. researchers are avoiding research requests in the waters of restrictive states.

Data for this hypothesis is drawn from survey results. Respondents were queried as to whether their institutions avoid applications to conduct research in the waters of restrictive countries. Eighteen institutions were surveyed. Two surveys were discarded
when results indicated that the activities of these institutions were not relevant to the study (i.e. the institution conducts research only in domestic waters). Two institutions did not respond by mail. Response from one of these was obtained by telephone Therefore, of the eighteen institutions surveyed, fourteen are relevant to this study.

f. **Level of interest in cooperative arrangements between U.S. institutions and foreign governments.**

The prevalence of cooperative arrangements between UNOLS institutions and foreign governments is also drawn from survey results. Institutions were asked for information concerning present and proposed cooperative arrangements and were asked whether they desire to establish such arrangements.

2. **Results**

a. **Research which did not take place due to LOS-related problems.**

Table 5 presents all proposed research events from 1982 to 1989 which did not take place due to LOS-related problems. The percentage of proposed research projects which did not take place due to LOS-related problems consistently increases, save for a slight dip in 1985, from 1982 to 1988. 1989 witnessed a sharp decline in these problems to 25% of the previous year's level. The number of requests from 1988 to 1989 remained fairly
consistent.
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Table 5

Denied Research, 1982-1989
Denials (cont.)

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Total annual effective denials are presented in Table 5. "Total req." refers to total annual requests. "% denied" is the percentage of these requests which were denied.
b. Reasons for Clearance Problems

Projects which did not take place due to LOS-related problems are categorized in Table 6. The majority of clearance problems which resulted in cancelled research were due to lack of response from the petitioned state. This category represented almost 23% of all halted research events. For 17.1% of these proposed projects, no reason is given for the denials. 20.7% of the halted projects did not occur for reasons other than those listed. Projects listed under "other" include those which did not have sufficient detail to categorize and those whose circumstances were unique. 14.3% of these projects were cancelled because clearance was received too late, while 16.4% were denied because the applicant did not meet the required lead time of the petitioned state. 7.1% of these events were due to excessive requirements imposed by the coastal state. 1.4% were recorded as due to military security reasons.

Categories C through F on Table 6 represent those projects which were denied explicitly. That is, they were not approved, either by action or inaction, by the petitioned state. The total of these is 81 events. In addition, many of the requests denied for "other reasons" included denials which were due to action or inaction by the coastal state. The breakdown of this category is outlined in Table 7.

Of the 140 proposed projects which did not take
place due to LOS-related problems, 102 were due to actions taken (or not taken) by the petitioned state.

Eight countries effectively denied research in five or more cases from 1982 to 1989. These are ranked by percentage of requests denied in Table 8. In terms of percentage of requests denied, the U.S.S.R. was the most restrictive, denying 75% of its requests. Mexico denied almost 30% of its requests. However, the number of denials issued by Mexico is almost five times that of any other state. Of these countries, only the U.S.S.R. and Spain are not among the Group of Seventy Seven (Sauvant, 1981).

c. Research which was delayed due to LOS-related problems

Table 9 lists all research projects from 1982 to 1989 which were delayed by LOS-related problems. No clear trend is evident in the annual percentages of delayed research projects from 1982 to 1989. The level has fluctuated between 1.1% and 5.5% from 1982 to 1988. However, it has been steadily increasing since 1987, with a significant rise in 1989 to 8.1%.

The majority of footnotes pertaining to delays in the annual summaries do not list reasons. Instead, it is merely noted that approval was received late, and the research was conducted on a revised schedule. Noted reasons include incomplete requests (i.e. the name of the charter research vessel is not known), late
submissions of requests, and conflicts with military exercises.
Table 6

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<td>6</td>
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<td>12</td>
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<td>3</td>
<td>6</td>
<td>8</td>
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<td>6</td>
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<tr>
<td>Total:</td>
<td>3</td>
<td>7</td>
<td>13</td>
<td>18</td>
<td>28</td>
<td>22</td>
<td>39</td>
<td>10</td>
<td>140</td>
</tr>
</tbody>
</table>

Categories of clearance problems which led to abandoned projects are presented. These categories are as follows:

A Excessive requirements  
B Approved too late to conduct research  
C No response from coastal state  
D Required lead time not met by applicant  
E Outright denial, no reason noted  
F Research did not take place for reasons other than those categorized  
G Military security Reasons
Table 7

Responsibility for Research Hindered for "Other" Reasons

<table>
<thead>
<tr>
<th>Onus</th>
<th># of cases</th>
</tr>
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<tbody>
<tr>
<td>Coastal state blame</td>
<td>21</td>
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<tr>
<td>Researcher blame</td>
<td>5</td>
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<tr>
<td>Third party blame</td>
<td>2</td>
</tr>
<tr>
<td>Responsibility unknown</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
</tr>
</tbody>
</table>
Table 8

Countries with Five or More Denials, 1982-1989

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Denials</th>
<th>% of Requests Denied</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.S.R.</td>
<td>6</td>
<td>75.0</td>
</tr>
<tr>
<td>*Indonesia</td>
<td>5</td>
<td>71.4</td>
</tr>
<tr>
<td>*Trinidad/Tobago</td>
<td>5</td>
<td>45.4</td>
</tr>
<tr>
<td>*Mexico</td>
<td>32</td>
<td>29.6</td>
</tr>
<tr>
<td>*Colombia</td>
<td>5</td>
<td>29.4</td>
</tr>
<tr>
<td>*Venezuela</td>
<td>7</td>
<td>29.2</td>
</tr>
<tr>
<td>Spain</td>
<td>5</td>
<td>27.7</td>
</tr>
<tr>
<td>*Haiti</td>
<td>7</td>
<td>20.6</td>
</tr>
</tbody>
</table>

*State is among Group of Seventy Seven
Table 9

Delayed Research, 1982-1989

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kiribati</td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Peru</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Venezuela</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>2</td>
<td>9</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>14</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total req</strong></td>
<td>71</td>
<td>109</td>
<td>164</td>
<td>266</td>
<td>250</td>
<td>172</td>
<td>255</td>
<td>247</td>
</tr>
<tr>
<td><strong>% delayed</strong></td>
<td>1.4</td>
<td>1.8</td>
<td>5.5</td>
<td>1.1</td>
<td>3.6</td>
<td>2.3</td>
<td>5.5</td>
<td>8.1</td>
</tr>
</tbody>
</table>

Total req: total annual requests to conduct research
d. Extent to which operators avoid requests to restrictive countries

Nine institutions listed one or more states which they perceive as the most restrictive. The results of this portion of the survey are listed in Table 10. These results agree with the State Department Summaries, with the exception of the absence of Haiti and Trinidad and Tobago from the survey, and the inclusion of Canada, Fiji, and Honduras.

Four institutions indicated that they avoid making applications to foreign governments because of anticipated clearance problems. These institutions and their responses are outlined in Table 11.

e. Level of interest in cooperative arrangements among UNOLS Institutions

Four institutions indicated on their survey responses that they currently have some sort of cooperative arrangement with a foreign government. In addition, the University of Delaware indicated that it had proposed cooperative arrangements with three foreign states. These results are outlined in Table 12.

Harbor Branch works directly with the Bahamian government for clearance, but must apply for clearance for each individual project. The University of Alaska is part of a multi-lateral agreement called the "International North Pacific Ocean Climate Program"
(INPOC), to which several Soviet, Canadian and U.S. institutions and agencies belong. The agreement outlining the purpose and scope of the arrangement indicates that Scripps and the University of California are also members of this agreement, but these institutions did not indicate this in their survey responses.
Table 10

Most Restrictive Countries, from Survey

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>5</td>
</tr>
<tr>
<td>Venezuela</td>
<td>3</td>
</tr>
<tr>
<td>U.S.S.R.</td>
<td>3</td>
</tr>
<tr>
<td>Brazil</td>
<td>3</td>
</tr>
<tr>
<td>Ecuador</td>
<td>3</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1</td>
</tr>
<tr>
<td>Spain</td>
<td>1</td>
</tr>
<tr>
<td>Colombia</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>1</td>
</tr>
<tr>
<td>Honduras</td>
<td>1</td>
</tr>
<tr>
<td>Fiji</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 10 lists the most restrictive countries according to the survey results. The numbers indicate the institutions which stated that a particular state was restrictive.
Table 11

Institutions Which Avoid Applications to Particular Countries due to Anticipated Clearance Problems

<table>
<thead>
<tr>
<th>Institution</th>
<th>Avoided Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.C. San Diego</td>
<td>Mexico</td>
</tr>
<tr>
<td>Oregon State</td>
<td>Mexico</td>
</tr>
<tr>
<td>Harbor Branch</td>
<td>Mexico</td>
</tr>
<tr>
<td>University of Alaska</td>
<td>U.S.S.R.</td>
</tr>
</tbody>
</table>

Table 11 lists the countries which UNOLS ship-operators avoid due to anticipated clearance problems. The omission of obvious political "hot spots" is likely due to the possibility that these states are not considered to be among the pool of "researchable" states.
<table>
<thead>
<tr>
<th>Institution</th>
<th>State(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univ. of Delaware</td>
<td>Bermuda</td>
</tr>
<tr>
<td></td>
<td>Panama*</td>
</tr>
<tr>
<td></td>
<td>Costa Rica*</td>
</tr>
<tr>
<td></td>
<td>Colombia*</td>
</tr>
<tr>
<td>Texas A &amp; M</td>
<td>Mexico</td>
</tr>
<tr>
<td>Harbor Branch</td>
<td>Bahamas</td>
</tr>
<tr>
<td>Univ. of Alaska</td>
<td>Soviet Union</td>
</tr>
</tbody>
</table>

*Denotes a proposed arrangement
3. Discussion

a. "Implied Denial"

Close to 23% of all clearance problems which resulted in cancelled research projects were due to lack of response from the petitioned states. 14.3% of the effective denials listed in this study were due to untimely approvals by the petitioned states. These two categories, accounting for approximately 37% of the effective denials from 1982 to 1989, qualify for the "implied consent" regime. Established in Article 252 of UNCLOS III, this regime allows researchers to conduct their research if a response is not received from the coastal state within four months of a request's submission. U.S. researchers have a right to, but choose not to, use the "implied consent" principle. Thus, a regime of "implied denial" has effectively been established.

b. Lead times

Some (approximately 16%) of the halted projects were due to U.S. researchers not meeting required lead times. While one could argue that this is the fault of researchers, the complex procedures involved in cruise planning must be considered. According to one ship operator "...the lead times (9mos.+ ) are so long that logistics become nearly impossible." (McWilliams, 1991, pers. comm.)
c. **Cautious loosening of control?**

The continued growth in percentage of proposed projects denied through 1988 is contrary to the speculation of Knauss and Katsouros (1987) that clearance problems were beginning to ease. However, 1989 witnessed a marked decline in denials and a sharp increase in delays. This could be an indication of a cautious loosening of control over research by coastal states. As the rate of approvals increases, the associated increase in delays may be the result of a willingness on the part of petitioned states (especially Mexico) to cooperate on a conditional basis. However, as illustrated by the speculation of Knauss and Katorous in 1987, forecasts based on one year's data are tenuous.

d. **Economic status of restrictive states**

The rate of denials by states of the Group of Seventy Seven supports the hypothesis that economic concerns continue to play a role in denials of permission.

The results concerning economic status of restrictive states are not surprising. Given the relative (to the U.S.) technological ignorance of these states, a heavily equipped research vessel is an intimidating presence. The consent regime provides a mechanism for protection of possible future resources.
Also, the highly publicized Pueblo incident of 1968, in which a U.S. intelligence vessel disguised as a research vessel was seized in North Korean waters, likely made all research vessels suspect for years to come.

e. Mexico, source of most restrictions

As stated earlier, Mexico has denied nearly five times more proposed projects than any other state. This trend has developed during the period covered by this study; as a 1981 Notice to Research Vessel Operators states, "Mexico rarely denies a clearance request, but it does expect compliance with stated requirements and conditions." (NTRVO #63). This NTRVO also states that requests to Mexico were averaging more than thirty per year for the few years preceding this; these requests were for research within a three mile band of Mexico's coast, for the U.S. at that time recognized neither Exclusive Economic Zones nor 12 mile territorial seas.

Mexico is also the primary source of delays. For five of the eight years considered in this study Mexico had two or more delays, with an all-time high of nine in 1989. Only three other countries had more than one delay in a single year, and these were isolated cases. Barbados had three in 1988, and Brazil and Colombia had two and three, respectively, in 1989.
f. Institutions which are avoided due to anticipated clearance problems

Only Mexico and the Soviet Union were listed as avoided by survey respondents. While data indicate that these states are the most restrictive (Mexico in terms of number and the Soviet Union in terms of percentage) both also have a record of allowing research. This indicates that survey respondents based their answers only on those states which may issue an approval, and not those from which a denial is nearly certain. It is likely that areas of great political turmoil would not appear in the survey results. If relations with a particular state are highly strained, respondents will likely not state the obvious. Fenwick and Ross (1991) have compiled a list of 38 coastal states to which no requests have been made between 1972 and 1987 (Table 13). A review of this list illustrates the problem. This also explains why military security appears to play a very limited role in halting research projects. Researchers avoid requests to areas of high political strain, and the present results are based only on processed applications.

g. State Department record keeping

For 17.1% of halted projects, no reason is given for the denial. The extent to which this is an inconsistency in recording procedures by the State Department is not known. To determine this, the
Table 13

Coastal States to which U.S. Researchers Have not Made Requests, 1972-1987

<table>
<thead>
<tr>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
</tr>
<tr>
<td>Bangladesh</td>
</tr>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td>Brunei</td>
</tr>
<tr>
<td>Bulgaria</td>
</tr>
<tr>
<td>Comoros</td>
</tr>
<tr>
<td>Cyprus</td>
</tr>
<tr>
<td>Djibouti</td>
</tr>
<tr>
<td>Ethiopia</td>
</tr>
<tr>
<td>Finland</td>
</tr>
<tr>
<td>German Democratic Republic</td>
</tr>
<tr>
<td>Iran</td>
</tr>
<tr>
<td>Jordan</td>
</tr>
<tr>
<td>Kenya</td>
</tr>
<tr>
<td>N. Korea</td>
</tr>
<tr>
<td>Kuwait</td>
</tr>
<tr>
<td>Lebanon</td>
</tr>
<tr>
<td>Libya</td>
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<tr>
<td>Madagascar</td>
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<tr>
<td>Malta</td>
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<tr>
<td>Monaco</td>
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<tr>
<td>Mozambique</td>
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<td>Namibia</td>
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<td>Qatar</td>
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<td>Sao Tome and Principe</td>
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<td>Singapore</td>
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<td>Sweden</td>
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<td>Syria</td>
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<td>Togo</td>
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<tr>
<td>Vietnam</td>
</tr>
<tr>
<td>N. Yemen</td>
</tr>
<tr>
<td>Yugoslavia</td>
</tr>
</tbody>
</table>

Adapted from Ross and Fenwick, 1991
original files must be reviewed. Revisions in the State Department's format for Clearance Summaries would be useful to future studies. For example, recorded reasons have proven very instructive in the present study. Their inclusion in a uniform format in future State Department Summaries would be useful in updates of the present work. Likewise, the use of standardized terms would be useful in assessing future clearance trends. For example, note 4 in the 1984 Summary states "Haitian clearance never received." This does not indicate whether a negative response was received or whether Haiti simply did not reply. The inclusion of key dates would add detail to future studies. These include date of request to State Department, date of submission to embassy, and date(s) of coastal state action.

h. Future Research

Global environmental research programs will expand in the coming decades, new pharmaceuticals will be sought from the oceans, new energy sources will be required and living resources will increasingly require more attention. If coastal states continue to tighten controls on research in waters under their jurisdictions, these projects will be impacted. The cost to society should be assessed.

Given the need for, and level of interest in global
environmental research, pharmaceuticals, fisheries management, and pollution research, one may hypothesize that these areas are suffering due to restrictions placed on marine scientific research by UNCLOS III. A worthy next step would be to examine, through direct analysis of State Department files, the types of research which have been hindered. Wooster (1981) included an analysis of the general types of research being impacted by clearance problems. However, a specialized investigation of the types of research projects being affected is required. Such an analysis would afford a broader view of the negative impacts of the consent regime on research in coastal waters.

A future study may also examine the actual number of proposed projects which do not meet lead time requirements. The present study provides a conservative estimate, but those proposals which were denied, and later reconsidered, and those for which permission has been granted on an exceptional basis, have been eliminated here. Excessive lead times, as noted above, place great burdens on ship operators. This problem warrants a separate investigation.
Literature Cited, Chapter 1


Cocke, Thom, 1991. Personal Communication


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Literature Cited  Chapter 3


Cullen, Vicky (ed.), The Research Fleet: The University National Oceanographic Laboratory System. no date

Treadwell, T.K., D.S. Gorsline and R. West, History of the U.S. Academic Fleet and the Sources of Research Ships, UNOLS Fleet Improvement Committee, 55 pp., UNOLS Fleet Improvement Committee Office, Texas A& M University, College Station, TX 77843-3146, 1988.


Griffin, Dr. James, University of Rhode Island Graduate School of Oceanography. Personal communication.
Literature Cited, Chapter 4


Appendix: Survey of UNOLS Marine Superintendents

The following survey is being conducted to augment data concerning restrictions on marine scientific research in foreign coastal waters. The "cooperative arrangements" referred to below are those which have been established to streamline the foreign clearance process for United States researchers. Your response is greatly appreciated.

1. Does your institution currently have cooperative arrangement(s) with foreign government(s) for the conduct of marine scientific research in their coastal waters?
   () Yes
   () No

2. If yes, please list nations and describe the arrangement(s) (use the back of this sheet, or include separate literature if necessary).

3. Has your institution proposed a cooperative arrangement with any government (Please give details).
   () Yes
   () No

4. Does your institution wish to establish a cooperative arrangement with any foreign government(s).
   () Yes
   () No

5. Which nations have been most restrictive to research by your institution? Please list up to five, 1. being most restrictive.
   1.
   2.
   3.
   4.
   5.

6. Does your institution generally avoid applying to any foreign governments for research clearance because of anticipated problems? Please list nations, and give details.
Bibliography


Cullen, Vicky (ed.), The Research Fleet: The University National Oceanographic Laboratory System. no date. 32 pp.


G.A. Resolution 2749, 25th General Assembly.


Nelson, Stuart B. "Naval Oceanography: A Look Back,"


