MARINE SCIENCE RESEARCH AND INTERNATIONAL LAW

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In the past few years government officials[1] and observers[2] alike have called attention to the increasing restrictions being placed on scientific investigation in the ocean and have sometimes briefly mentioned the remedial measures that could assist in alleviating or removing these restrictions. Although most of those concerned, including marine scientists,[3] agree that these restrictions are a serious impediment and warrant international action, there appears still to be a body of opinion that this matter has been greatly exaggerated and hence, that there is little or no need for undertaking international action to deal with the supposed problem. The purpose of this paper is to discuss the magnitude of the problem in terms both of past impediments and of some elements now only potential but easily foreseeable, and to elaborate somewhat on the various alternatives in action that might help in removing impediments.[4]

I. Impediments Created by the International Legal Framework

Coastal states are competent under international law to exercise authority over scientific research in various areas subject to coastal jurisdiction. However, it does not necessarily follow that because coastal states may lawfully control scientific research in areas under their jurisdiction that such research will be hampered. Beyond the existence of such controls it is necessary to consider how this framework of authority, including the uncertainties of boundary delimitations, actually operates to affect research detrimentally, The following discussion concerns first internal waters and then all other areas of coastal control. Control over access to internal waters is in some respects a separate problem since entry is more often sought (and sometimes denied) for reasons of logistic support than of investigation, hence this separate discussion.

A. Internal Waters

The major importance of internal waters arises because ports are virtually always entirely within internal waters and for public vessels entry must usually be preceded by a request for a port call. Private research vessels are permitted entry into ports as a matter of routine, with arrangements made for this by the ship's agent in the normal course of events.

As in any instance where affirmative action by the coastal state may be required for a vessel to enter an area, the need for consent for a port call, or other entry into internal waters, can be a hindrance simply because the coastal officials may delay consent until so late that approval can no longer be assumed and alternative or contingency plans must be acted upon. When the contrary assumption is acted upon, i.e., that timely consent has been granted but in fact it has not been, the consequence can be (and has been) harmful both for the immediate operation (as in penalties for unauthorized entry) and for future operations of the same research ship or, even, any research ships with a record of past infractions of law or of unwarranted presumptions of coastal authority.

The harmful effects of refusal of clearance for a port call are significant partially because alternative plans could involve the large added costs of additional running time for diversion to another port of call. Furthermore

the very possibility of a refusal (and in some instances refusals can be expected with some confidence) means that the entire scientific program must be planned to take this into account. On voyages at great distances from home port and of long duration it is obviously essential for logistic purposes to make port calls and it is desirable to build in alternatives at the planning stage. When refusals do occur, however, the shift to another port, whether or not pursuant to contingency plans, can and does diminish the scientific effectiveness of the cruise when the alternate port is not equally convenient.

Entry into internal waters is sometimes sought for purely scientific purposes rather than logistic and consent for this is always required irrespective of the public or private nature of the vessel. In such instances refusal of clearance obviously completely prevents the investigation. Such investigations are occasionally of critical scientific importance, as for example the inquiries into the Amazon River which is wholly within Brazilian internal waters, and refusals are serious setbacks to marine science. The detrimental effect of refusals is compounded if the investigation has some time-dependent quality about it, as occasionally is the case.

One final point about port call clearances is that they seem peculiarly subject to extraneous political considerations which lend added complexity to the problem. Relations between the flag and port states may be strained for reasons having no connection with the ship or its investigations. Sometimes relations between the port state, the flag state, and a third state have such political implications, perhaps only momentarily, that a port call seems undesirable to coastal officials. Occasionally such tense feelings prevail between rival political factions within the host state that visits by foreign vessels are temporarily forbidden.

B. Other Areas Requiring Consent for Research

The purpose of this discussion is to indicate the nature of the impediments that emerge from the requirements of consent for research that are common to the territorial sea, the contiguous fishing zone, and the continental shelf. In any particular instance, of course, there is the preliminary question of whether the specific research contemplated does require clearance and the question and its answer can differ with the region concerned. But for each of these regions clearances are required, however the circumstances may differ, hence it is appropriate to speak generally of the effect of this requirement.

The evidence for the degree of obstruction to marine science presented by the present legal framework is, unfortunately, more fragmented and less direct than is desirable.[5] Nonetheless the conclusion can fairly be reached on the basis of this evidence that marine science now is substantially impeded by legal barriers to research and that, when the future is considered, these barriers are likely to increase. A number of factors suggest the dimensions of the difficulty for marine scientists including:

(1) Diversion of Time, Resources, and Money.
(2) Deterrence of Requests for Clearances.
(3) Influence upon Nature, Scope, and Methods of Marine Research.
(4) Denials of Clearance Requests.
(5) Indications of Private and Public International Concern.
(6) The Creation of a Regime for the Deep Sea-Bed.

(1) Diversion of Time, Resources and Money

Although no comprehensive measuring stick or gauge exists, it is believed by U.S. Government personnel, on the basis of their experience in working with scientists and research vessel operators, that the latter are required to devote substantial time and planning effort to the task of complying with foreign laws governing research. For operators of public vessels in the U.S. (this includes the several universities and laboratories who conduct research using vessels owned by the U.S. government) research clearances must be secured through the State Department and private vessel operators are advised that this avenue is highly desirable. Whether operators utilize this route or not, it is necessary for the applicant seeking a clearance to provide the host state with the information required by its legislation and to comply with any other conditions imposed by the coastal state. Types of information and conditions are increasing in number and complexity and institutions are finding them increasingly difficult to meet. The Brazilian requirements are probably the most onerous to date and require the following categories of information to be supplied:

"I - Name of the entity responsible for the exploration or research and a list of its previous activities.

II - Name of the entity which will finance the exploration or research and list of previous activities financed by the entity in Brazil.

III - Name of explorers, researchers and technicians, mentioning their specialties and providing their curriculum vitae.

IV - Proposed route for the exploration or research, on which working sites are marked (positions of oceanographic stations, location or course on which geophysical prospecting will be carried out). Such route must be presented in nautical chart in easily readable scale.

V - Plans and objectives governing the exploration or research.

VI - Description of all equipment to be used during the exploration or research.

VII - Description of the type of navigation to be utilized when foreign ships or aircraft will be used.

VIII - Proposed duration of activities.

IX - Proposed dates for stop at national ports or airports.

X - Proposed dates for stop at the last foreign port or airport before the beginning of activities in the national territory and at the first foreign port or airport after the end of the activities, in case the exploration or research is carried out by foreign entities.

XI - Technical, scientific and structural specification of any ship or aircraft to be utilized, as well as their photograph.

XII - Declaration that space on board the ship or aircraft which intends to carry out the activities will be reserved, so that observers to be indicated by the Ministry of the Navy may partially or totally accompany those activities.

XIII - Promise to provide the Directory of Hydrography and Navigation of the Ministry of the Navy, which now will become the national institution designated by Brazil to the Intergovernmental Oceanographic Commission sponsored by UNESCO, a copy of all information obtained during the activities to be carried out on the country's submarine shelf, oceanic territorial waters or interior water.

XIV - Declaration by the responsible entity for the activities that it will comply with the country's laws, regulations and the present decree."

Other conditions involve both the execution of cruise plans and certain steps to be taken on completion of the expedition. An increasingly common demand is that a coastal representative be on board during the stay in or over areas subject to coastal jurisdiction. This alone is hardly objectionable, especially if the representative is a scientist, but too frequently valuable time is deverted from the research operation in order to take the representative aboard and then return him to a convenient place. After completion of the cruise it is expected that a report on the investigation will be forthcoming in due course. More recently this wholly reasonable condition has been expanded to a demand that a duplicate of all data and all samples be given to the coastal state. While all data can be produced this turns out to be expensive in the case of the large computer print-outs and there is some doubt that in its raw form the data is of much use to coastal officials, as distinguished from coastal scientists who most often are non-existent. The demand for samples can be particularly vexing since some cannot be shared without giving them up altogether. Since this could defeat the purpose of part or all of an investigation, this condition alone creates concern over the value even of engaging in the operation.

In sum the burden of complying with coastal conditions to grant of a clearance diverts both time and money in sometimes substantial amounts from use in the major purpose of the enterprise, scientific investigation. On occasion the demands are so onerous that many research operators are reported to have been forced to cancel previously planned cruises into the areas claimed to be within the jurisdiction of certain states.[6]

(2) Deterrence of Projects and of Requests for Clearances

It is reasonable to speculate that because of anticipated clearance difficulties there are numerous instances in which the decision is made by an institution not to seek a clearance for a project and, accordingly, decide not to undertake the project. Such instances probably substantially exceed cases of denial of clearances. The frequency of this behavior obviously is difficult to establish except by directly interrogating scientists and so far is known such an inquiry has not been undertaken. Situations do come to light for one reason or another to indicate that deterrence does take place. Some instances of this occur when the prospects of securing a clearance are so patently dim, or even non-existent, that proceeding with a clearance request is clearly not worth further effort. The easiest situation to document occurs where the Department of State advises a research operator that a clearance either cannot, or should not, be requested, and the applicant makes no request. This is known to happen, but, understandably, the frequency of occurrence is not publicly available. It is not difficult to imagine, either, why such advice is sometimes given. To take the most innocuous instance, as when an institution does not make its request in a

timely fashion, it may be reasonable to conclude on the basis of past experience that it is useless to initiate an application to the particular coastal state. Or even when the request is timely it may happen that preliminary inquiries to coastal officials elicit such discouraging response that there seems to be no point in pursuing the matter. Such negative reaction can be associated, for example, with unhappy experiences in the past with a particular institution.[7]

Various kinds of political situations, perhaps wholly extraneous to the investigation, might also account for discouragement of a clearance request. For example, in the case of port calls, it is U.S. policy not to make requests to South Africa due to the policy and practice of that State in regard to discriminatory treatment of non-white crew members of visiting vessels. But sometimes the political overtones do relate more or less directly to a question concerning the investigation. One of the more common situations involves U.S. policy towards clearance requests for research in an area claimed by the coastal state but not recognized by the United States. In the case of states claiming a 200-mile territorial sea, a claim rejected by the United States in common with about 95% of the world, it would be wholly inappropriate to seek a clearance for research since the area is widely considered part of the high seas. The pamphlet "U.S. Oceanic Research in Foreign Waters" qualifies for the understatement of the decade award in offering the following advice to operators contemplating research in such waters:

> ". . .the Department of State can advise operators of research vessels of claims to offshore jurisdiction and explain the difficulties vessels may encounter because of such claims."[8]

Since the explanation presumably points out the possibility of being fired upon by armed ships and aircraft of the coastal state, followed by arrest and delay of the vessel, by confiscation of data and perhaps equipment, and, finally, by heavy fines, it is not inconceivable that the roster of "difficulties" would have the effect of discouraging the conduct of research without a clearance. The dilemma is perhaps seen more clearly by the operator when he understands that it is not known to be U.S. practice to offer active assistance at sea to a vessel in these circumstances (although diplomatic assistance is given) and, as Dr. Schaefer so elegantly put it, that scientists "ignore such extended claims at their own peril." Since virtually the entire South American continent is enveloped by 200 mile claims (though not all to territorial sea), the possible frequency of this situation is evident.

Extraneous political considerations can affect clearance requests no matter what particular region is concerned, i.e., whether a port, the territorial sea, or the continental shelf. Plainly the absence of a requirement for a clearance would remove or substantially alleviate the influence of such factors in preventing research.[9]

Another set of circumstances, resembling the foregoing, arises when the research vessel operator inquires of the State Department (or other agency handling clearances) and on discovering the obstacles (including the numerous conditions some states impose) decides not to request a clearance. This instance differs from the previous one in that the Department does not seek to discourage the operator, merely to inform him. Nonetheless the operator

determines that the project does not merit the expenditure of time, effort, and money entailed by proceeding with the clearance procedure and its aftermath. By the nature of the circumstances it is next to impossible to establish the frequency of this occurrence. Generally the only indicia are the inquiry and a failure to act. Since the latter could result from a great variety of causes this combination alone is not particularly revealing. State Department officials believe, nonetheless, that some operators do decide to forego a particular project after being informed of the requirements of a clearance.

The difficulties, red tape, and delays occasioned by clearance requirements have by now become so clear to some scientists and institutions that they decide on their own not to undertake some projects. Again no one can know, short of formal inquiry to scientists and institutions, how often projects are deterred by this consideration but it is certain that such decisions have been made.[10] It is highly probable that if the legal continental shelf is extended as far as the edge of the continental rise, especially if this occurs by way of unilateral action, the deterrence effect will probably become rather common. The reason is simply that as sometimes onerous coastal conditions are extended to increasingly larger areas, scientists will be even less inclined to undertake projects subject to such conditions. Projects involving drilling into the seabed will particularly be affected.

A final instance of deterrence, which cannot be satisfactorily documented, involves inquiry directly from scientist to the coastal state. Again facts such as these do not normally come to light easily but the situation is known to have occurred that the response from coastal officials was sufficiently discouraging that no clearance request was subsequently made.

(3) Influences upon Nature, Scope and Methods of Marine Research

It is more pernicious than it is shocking to realize that plans for research cruises and projects are sometimes importantly if not wholly determined by legal requirements rather than by scientific criteria and judgment. Speaking of the effects of coastal states' regulations, Ambassador Donald L. McKernan, writing in April, 1970, states that "Many cruises are altered after substantial planning has taken place and, in several instances within the past two years, early consultations have led to substantial changes in plans which undoubtedly reduce the effectiveness of research cruises."[11] It is perhaps equally significant to note that even the initial planning may on occasion take into account that legal/political factors over-ride valid scientific judgment. Thus, for example, the investigators may realize that it is not possible to permit the vessel to take advantage of investigative opportunities revealed or discovered by virtue of research previously carried out during the same cruise, if this opportunity requires entry by the vessel into an area claimed by the coastal state but unrecognized by the flag state. As indicated, in such a situation the vessel will not have a coastal clearance and proceeds at its own risk. Accordingly even in the initial planning the cruise track may be laid out rigidly and without allowance for opportunistic investigations indicated by contemporary research.

Methods of investigation are also influenced by clearance requirement. As suggested above, bottom sampling on the continental shelf probably requires a clearance no matter how distant the samples may be from providing

commercially useful data. In order to avoid the difficulty of securing a clearance and particularly of complying with the conditions attached to it, planners may and do decide to forego research involving bottom contact and limit themselves to other methods of inquiry.

The need for a clearance even in disputed areas may force an investigator to do research merely to secure one. This happens because the State Department will not request a clearance for a disputed area, such as a territorial sea claim greater than three miles. This may be illustrated by the procedures employed by some scientists in securing a clearance when they wish to work in the outer reaches of a claimed 200 mile territorial sea. To avoid difficulties in the disputed area, a clearance is requested for research within three miles of the coast, this being territorial sea by any criteria. In using this device the scientist must do the proposed research, even though this may entail the unnecessary expenditure of many hours of the ship's operational time to move near the coast to do scientific work for non-scientific purposes. In addition to doing unwanted research which may or may not be useful, the money cost of such extensive diversion of ship time runs into several thousand dollars per day. This costly procedure has the beneficial effect of not giving recognition to a disputed claim.

Finally it follows from what has already been said about deterrence that choice of entire investigative opportunities is now occasionally determined by the need to get a clearance. Plans for surveys of shelf areas adjacent to numerous states have been dropped simply because of anticipated clearance difficulties. In sum, the choice of research projects is already decisively affected, perhaps in substantial degree, simply by the recently created or emphasized need for clearances in certain coastal regions.

(4) Denials of Clearances

Outright rejection of a clearance for a proposed project is certainly the most drastic obstruction coastal states may erect to marine science research, but as has been indicated this is probably not the most significant measure of the impediments to such research. Unfortunately there are no reliable data on the frequency of rejection on a world-wide basis and the data for the U.S. have not yet been fully analyzed. We do have the testimony of Ambassador Donald L. McKernan (as of November, 1968, and more recently in a letter he has made public) that since 1967 the problem for U.S. scientists has noticeably worsened In November 1968 at a State Department briefing Ambassador McKernan stated that after January, 1967, there was a very significant increase in the number of requests rejected. During the period January 1967 to November 1968, there were 12 known cases of refusal of clearances of U.S. public and private vessels. (There undoubtedly were more as private vessels sometimes deal directly with the foreign government.) This contrasts sharply with the experience of earlier years when grant of a clearance was virtually automatic and the conditions for the grant were seldom demanding.

In the period since 1968 the number of outright rejections has declined somewhat, with but six outright refusals in the period January 1969 to mid-April 1970. Of course, as already suggested, this diminution does not mean that in overall perspective marine research is any less impeded - the other factcrs already discussed suggest that the problem is more, not less, severe Moreover the decrease in the number of rejections must be understood in the

context of vastly increased effort by the State Department to assist in formulating acceptable clearance requests and in cutting losses by advising when it is futile to make a request.

The above figures on rejections are also, it may be emphasized, conservative interpretations of the records. For example these figures do not include instances in which a favorable reply to a request is received too late to be of any use. Such replies are rejections for all practical purposes since often the vessel has been diverted to an alternative operation. Similarly the imposition of virtually impossible conditions is not here labelled a rejection though it might well be considered such. If these and similar instances were considered refusals the number would be considerably larger.

(5) Indications of Private and Public International Concern

There is ample evidence from a number of sources that the difficulties for marine science research are shared by scientists and states around the world. The principal international private organization of marine scientists is the Scientific Committee on Oceanic Research (SCOR) of the International Council of Scientific Unions and in June, 1968, the Executive Committee of SCOR decided to make the following statement to demonstrate the world-wide concern of scientists over impediments to certain research:

> "Evidence is accumulating that the Convention on the Continental Shelf, not ratified by many maritime nations, is on occasion being applied so as to hinder scientific investigation of the circulation of ocean waters, the biology of the sea floor, the origin and movements of continents, and other problems of considerable scientific importance. Accordingly, SCOR decided to ask its Members, National Committees and their parent organizations, to urge their governments to adopt liberal interpretations of the articles of this Convention in order to facilitate the carrying out of oceanographic research."[12]

Even before the 1958 Geneva Conference adopted the Shelf Convention, indeed before the International Law Commission finally formulated its draft rules on this subject in 1956, ICSU had warned of the dangers to marine science implicit in this Convention.[13] The SCOR statement thus records the fulfillment of these early expressions of apprehension.

Somewhat more recently the joint working party on the Scientific Aspects of International Ocean Research, composed of scientists nominated by SCOR, ACMRR, and the Advisory Group on Ocean Research of WMO, appeared to go out of its way to take note of the difficulties for marine science caused by coastal state regulation. In its report entitled "Global Ocean Research", the so-called Ponza Report, the group addressed certain questions posed by the Bureau of the IOC, among which was: "In what geographical areas of the world's oceans will increased research efforts make the best contributions in solving these problems (i.e., the most important research problems that should receive particular attention in the near future)"? In answering this query the Ponza Group recognized, albeit obliquely, that coastal states sometimes are not hospitable to research and that the effect is to hamper scientific understanding of natural phenomena:

> "While ocean research activities can be carried out on the high seas by suitably manned and equipped ships of any nation, in coastal waters there may be imposed some restrictions on research. Yet the distribution of the natural phenomena usually bears no relation to the limits established by man. Full understanding of these phenomena cannot be obtained if their investigation is unduly impeded."[14]

The record of misgivings over coastal impediments to research is, naturally, written much larger in the proceedings of public international bodies. Fittingly, the Intergovernmental Oceanographic Commission, which was establsihed for the express purpose of promoting scientific investigation of the ocean, serves as the principal forum for this expression. In January 1967 after earlier discussion in the IOC, the USSR took the initiative and proposed that the IOC seek, inter alia, to elaborate a general convention embodying principles for safeguarding marine science research. At the 5th session of the IOC in the folloiwng October, the Commission reacted to this initiative and gave expression to its concern by creating a Working Goup on Legal Questions Related to Scientific Investigations of the Oceans. The Working Group's function was not to prepare draft treaties but essentially to prepare the way for resolution of the problems by "preparing documentation concerning the effect of the law of the sea on scientific research and proposals relating both to the contribution of scientific knowledge of the consideration of the further development of the law of the sea."[15] The Working Group has met twice at this writing and its actions, which have been controversial within the IOC, establish beyond per adventure that states regard marine science and legal restraints thereon as of major importance to them.

The most striking demonstration of international concern over this problem in the IOC came during the 6th session of the IOC in September, 1969, which witnessed the first major confrontation between the developing states, who are often opposed to freedom of research, and the states advocating such freedom. As will be discussed below in more detail this group clashed over the issue of an IOC procedure[16] (which was embodied in a proposal formulated at the first meeting of the Legal Working Group) by which states might be aided in securing, and in granting, clearances for research in areas subject to coastal jurisdiction. But for present purposes the more significant clash came about because of the proposal to revise the Statute of the IOC to provide that one of the organization's purposes was to promote freedom of scientific investigation. The controversy engendered by this proposal has dual significance since it reflects both the deep concern of the developed states over the plight of marine science and the apprehensions of the developing states that the conduct of such research prejudice[16] their interests. Both groups felt so intensely about this issue that the invariable practice of making decisions in IOC plenary sessions by means of a consensus and without a formal ballot was cast aside on this occasion in favor of a roll call vote on this revision. It adequately measures the intensity of the disagreement that, when the developed states prevailed and the revision was adopted, some of the developing states declared their intention to carry the opposition to the October-November, 1970, session of the UNESCO General Conference which has the ultimate authority to dispose of proposed amendments to the statutes of its subsidiary bodies, including the IOC.

(6) The Creation of a Regime for the Deep Sea-Bed

As is well known the question of a legal regime for exploitation of the seabed beyond the limit of national jurisdiction has been before various bodies of the United Nations since 1967 and led to the creation of the Committee on the Peaceful Uses of the Sea-bed and the Ocean Floor beyond the Limits of National Jurisdiction. For present purposes the importance of the Seabed Committee discussions lies in their indication of inhospitable state attitudes toward research. (In the next section we examine the substantive problems involved in subjecting research in this area to a control system.) Although directed at high seas areas beyond national control the concerns expressed by various states in Seabed Committee discussions over supposed undesirable consequences of scientific research are almost certainly applicable to, and probably derive from, research executed in areas subject to national jurisdiction. The 1969 report of the Legal Subcommittee of the Seabed Committee demonstrates that this attitude was made explicit by some states:

> "64. The view was set forth that, since the marine environment constituted a whole, some rights of coastal states should be recognized with regard to research carried out in areas of the seabed which are adjacent to their national jurisdiction, so that research in the seabed is not used as a pretext for research on the continental shelf without the consent of the coastal state, as required by Article 5, paragraph 8, of the Geneva Convention."[17]

If this attitude is translated into law, the present controls over research on the continental shelf may be extended far beyond that area out into the deep seabed.

II. Remedial Measures

The principal means by which impediments to research might be attenuated or removed include governmental actions on both the national and international levels.

Measures within a nation-state, mostly as supplementary to international action rather than exclusive in nature, include unilateral measures designed to lessen restraints on research within the context of assurances to safeguard coastal interests.

International actions may be concerned solely with marine science research or only with such research as ancillary to other problems of ocean use. The former embraces arrangements varying in inclusiveness of participation and in comprehensiveness of subject-matter. At one end of the spectrum is a general international convention embodying prescriptions for all of the legal problems involved in the conduct of marine science, while at the other pole are the bilateral agreements providing for research in a specific subject-area of marine science. Between these extremes are agreements among varying numbers of participants, and either regional or world-wide, but limited to specific problems, such as the proposed treaty on Ocean Data Acquisition Systems, or specific procedures, such as the arrangement for using the good offices of the IOC to facilitate securing clearances.

The ancillary type of international action concerns the inclusion of specific provisions about scientific research in agreements dealing with other substantive matters in ways which could or do have negative implications for research. Examples of this are the 1958 Continental Shelf Convention and the impending international negotiations regarding the policies and principles applicable to mineral exploitation in the seabed and ocean floor beyond national jurisdiction.

A. Multilateral Agreement

1. General Agreement on a Convention on Scientific Research in the Ocean

The earliest proposal for a general international agreement for safeguarding the community interest in marine science inquiry in the ocean appears to have originated wihh the Soviet Union. At the meeting of the Bureau and Consultative Council of the Intergovernmental Oceanographic Commission in 1967 the Soviets proposed a two-pronged approach to what it believed were imminent legal problems of ocean use: the development of a treaty for ocean mineral exploitation and of an agreement on legal principles for scientific research. Although members of the IOC did not respond favorably to these proposals (except as this Soviet initiative led to the IOC Working Group on Legal Questions), it was echoed in somewhat more detail within the U.S. by the National Commission on Marine Science, Engineering and Resources. In "Our Nation and the Sea" the Commission recommended in January 1969 that the U.S. take the initiative in pursuit of a general international agreement embodying the following:

> "(1) Scientific research in the territorial waters or on and concerning the continental shelf of a coastal nation may be conducted without its prior consent, provided that it is notified of the objectives and methods of the research and the period or periods of time during which it will be conducted, in sufficient time to enable the coastal nation to decide whether it wishes to participate or be represented in all or part of the research; and provided that the investigators agree to publish the results of the research.
>
> (2) Fisheries research (including the limited taking of fish specimens) may be conducted in the exclusive fisheries zone of any coastal nation under the same conditions.
>
> (3) Research submersibles may be used in the conduct of authorized scientific research in territorial waters, even if they do not navigate on the surface as the Convention on the Territorial Sea and Contiguous Zone now requires them to do, provided that the coastal nation is also notified of the time, place, and manner of their use sufficiently in advance to assure safety of navigation.
>
> (4) Research buoys may be placed in any coastal nation's territorial waters. Buoys so placed, as well as those placed in the superjacent waters of the continental shelves or in

the high seas beyond the continental shelves, shall be protected against unwarranted interference from any source. The coastal nation, however, may specify reasonable requirements for location, lighting, marking, and communications with respect to buoys placed in its territorial waters."[18]

At this writing is is extremely doubtful whether states generally, or perhaps even the U.S. and the USSR, are inclined to seek a treaty of this type. There is very little evidence that the general community of states places any particular weight on resolving this set of problems in this fashion. There is, on the other hand, very persuasive evidence that most states do wish to convene a conference to deal with numerous other problems attending development of the ocean and its resources. At this writing the results of the Secretary-General's survey of states on this issue, a survey called for by General Assembly Resolution 2574 passed in December, 1969, at the 24th Assembly, are not available, but it would come as a small surprise if a majority of states do not call for the rather early convening of such a conference.

In these circumstances some cautionary comments on the proposed general treaty on scientific research in the oceans seem worthwhile. Although such an agreement would seem highly desirable if it did in fact safeguard research in a satisfactory manner, the prospects for realization of this goal are not bright if a proposed agreement were on the agenda of a general international conference to revise the law of the sea. For example, it is quite doubtful at least at the present state of affairs, that the principles proposed by the Marine Science Commission for such an agreement will find easy acceptance by states generally and particularly by developing states. It is more likely that a blocking third of states would be rather easily constituted whereby provisions allowing genuine freedom of research would be effectively opposed at such a conference. Indeed the most likely result is that two-thirds of the states at such a conference would succeed in agreeing on new and severe restrictions on research.

The rather obvious course is to refrain from any effort to negotiate an agreement of this sort in the same meeting that attempts to resolve other ocean problems. To do so would probably be near disastrous for marine science. The better course of action is to continue to pursue such an agreement in the more limited forum of the IOC where the prospects are better for meaningful protection at least among the member states. Even here, of course, there will be strong opposition by some states to effective measures to facilitate research but, generally speaking, all members of the IOC realize the value of research to all states, developed and developing, and the possibilities of meaningful compromise are better in this context. And where such compromise proves impossible the chances are also better that the necessary votes will be there for over-riding the opposition, for whatever value this might have.

2. General Agreement on a Procedure to Facilitate Scientific Research in the Ocean

A more specialized and limited international action for facilitating research consists of the creation of a mechanism for simplifying the task of getting consent for research in areas over which a coastal state exercises jurisdiction. It was to this task that the first meeting of the IOC Legal

Working Group devoted special attention, culminating in a proposed resolution setting out a procedure by which the IOC might supplement individual state efforts to secure clearances for research. This resolution came before the 6th session of the IOC and after lengthy and detailed consideration the Commission modified the proposed procedures but still agreed that its Secretariat could be called upon to assist states in obtaining clearances. Some scientists in the United States are reported to have expressed alarm over what they regard as an additional level of bureaucracy being introduced into the clearance process, for what they believe to be insufficient reasons. The following comments on the IOC Resolution might, hopefully, provide some clarification, indicating that the IOC Resolution authorizes but minor involvement by the IOC Secretariat and suggesting also some interpretations of the Resolution. Resolution VI-13 is attached as Appendix A.

a. Compulsory Nature of IOC Procedure

The reported apprehension about the IOC involvement in securing clearances apparently rests on the belief that because of Resolution VI-13 a requesting state must always enlist the aid of the IOC, thus making the IOC procedure compulsory. Both the Resolution itself and the nature of the IOC establish that the Resolution has no such effect. First, and most basic, the IOC has no authority to adopt regulations binding on member states; indeed, it is believed by some states that the IOC does not even have the authority to draw up a draft treaty dealing with this or any other topic for later action by states. Whether or not this latter view has merit, the plain fact is thet Resolution is not a "treaty" or "international agreement" imposing a binding obligation on states to comply with its terms.

Second, one of the preambular paragraphs of Resolution VI-13 was adopted for the express purpose of affirming the primacy of the usual bilateral methods:

> "Taking into account that specific cases of obtaining consent for conducting scientific research in areas falling under the national jurisdiction of coastal states are usually resolved between the interested states,..."

Participants in the discussion understood this paragraph to mean that the IOC procedure "was not intended to supersede the usual bilateral arrangements on such matters..."[19]

The only potential compulsive effect of Resolution VI-13 would come if some coastal states insisted that this procedure must be employed by requesting states instead of a direct route. It is of course not inconceivable that some states might insist on this, but to complain of this possiblity seems fruitless, if not witless, since the coastal state could always have insisted on outside assistance whether or not Resolution VI-13 had made an IOC procedure available. Even now any coastal state, IOC member or not, could require that clearance requests be appraised by some designated third party as a condition to favorable consideration by the coastal state. In light of this possibility, also by no means inconceivable, requesting states might well prefer compulsory use of the IOC procedure which has the advantage of establishing conditions found acceptable to coastal states and states heavily engaged in scientific investigation at sea. It should be said, of course, that presently there are no indications that any coastal state desires to make the IOC procedure compulsory.

At the same time it is reasonable to expect that some states, particularly developing, will take advantage of this procedure to obtain IOC assistance. As noted by the IOC Working Group on Legal Questions Related to Scientific Investigations of the Ocean, the guidelines it recommended for use in implementation of Resolution VI-13 would have a "tendency...to enhance the role of the Commission in facilitating the conduct of scientific investigations by its Members, and the participation of coastal states in such investigations."[20]

b. Notice Requirement

The key provisions spelling out the notification procedures to be employed call for:

> "(a) As soon as a tentative decision to carry out a research programme is made, the coastal State shall be informed in a preliminary manner to ensure that it may, if it so desires, be associated, from the preliminary steps, with the planning of the programme and arrange for early contact between interested scientists;
>
> (b) A formal description of the nature and location of the research programme shall be submitted to the coastal State and to the Commission as soon as possible in order to enable the coastal State to respond formally as far in advance as possible and in order to enable the coastal State to participate effectively in the research programme;"

The Legal Working Group's resolution proposed, in contrast, but one notice to the coastal state and that was solely for the purpose of setting in motion the coastal states' machinery for processing clearance requests. IOC Resolution VI-13 now calls for a two-step notification, one very early and preliminary and designed to facilitate coastal planning for participation in the research problems, and a second designed both to elicit a response consenting to the proposal and to permit effective participation by coastal scientists. In sum the emphasis has shifted from involving the coastal state primarily for securing the necessary consent with secondary importance attached to scientific cooperation, to facilitating a genuine participation and involvement by coastal scientists in all or some of the proposed program of research. If the states concerned, both requesting and requested, do act in light of this apparent change, the consequences could be salubrious for science and for political relations generally. Genuine participation by coastal scientists would add to the store of their knowledge of adjacent regions, which could have beneficial effects upon resource development at least over the long run, and might help to alleviate some of the suspicion and distrust which have tainted political considerations of ocean problems.

The evidence for this shift consists of the requirement for informing the coastal state as soon as a tentative decision is made to carry out a research program and the omission, in this instance and in the later detailed notice requirement, of any specific timetable for advance notice. It seems reasonable to imply, however, that the preliminary information should be forwarded at least six months prior to the cruise, and preferably earlier, and that the formal description should be forwarded at least sixty days in advance. Compliance with a schedule of this order, if not exact details, should

facilitate clearances by giving coastal authorities ample time both to permit planning for participation if desired and to allow officials to check as needed into the nature of the proposed program.

That this timetable requiring early notice will introduce difficulties for some vessel operators is not inconceivable. Two comments are pertinent in this regard. First, it may well be that cruise planners can, by devoting particular attention to the matter, significantly accelerate the time at which a tentative decision on a research program can be communicated to affected coastal states with some assurance that the program will be executed. It is also conceivable that some complaints by scientists about early notice requirements are not wholly justifiable and that the additional attention to this matter is not at all an unreasonable request. Second, even if some inconvenience or added burden of administration results from these notice provisions in the IOC resolution, this is a very small price to pay for securing a clearance. It is not al all improbable that no consent would be forthcoming at all unless some such notice provisions were observed.

c. The role of the IOC

Upon receiving a formal description from the requesting state of the nature and location of the research program "the Secretary of the Commission shall transmit the formal description so received to the coastal State within twenty days of receipt together with the Commission's request for favourable consideration and, if possible, with a factual description of the international scientific interest in the subject prepared by the requesting state, supplemented, if he considers this desirable, by the Secretary;..."

The primary object of the above terminology appears to be to establish a means for certifying the bona fides of a particular investigation, without simultaneously imposing a great, and probably, impossible burden in the IOC Secretariat by requiring it to engage in an evaluation of each research request sent to it. In this sense the IOC Resolution satisfies, and even improves upon, the recommendation of the U.S. National Committee to SCOR that "...the most useful role for the Intergovernmental Oceanographic Commission in facilitating clearances for research vessels undertaking fundamental scientific research would be passive in nature."[21] The U.S. National Committee spelled out what it meant by passive in suggesting that "the IOC upon receipt of requests from members states for research clearances, would immediately transmit them to the concerned coastal state, certifying (when such is found to be the case) that statements are included in compliance with" enumerated conditions concerning handling of data and samples, publication of results, and participation in the research by the coastal state. The IOC Resolution seems to be more satisfactory than the U.S. recommendation since it calls for an automatic favourable recommendation but justifies that by requiring the requesting state to submit a statement of the international scientific interest in the research program described. This statement, supplemented by the IOC Secretary if he thinks it necessary, is then quickly transmitted to the coastal state, thus providing an additional element of support for the bona fide scientific nature of the proposed program.

One of the guidelines recommended by the Legal Working Group at its 2nd Meeting dealt with the role of the Secretariat:

> "It would be desirable for the Secretary, if requested by the coastal State, to supplement the factual description prepared by the State planning the scientific programme. In preparing such a supplement the Secretary should draw on the resources and skills available to the Secretariat, including the assistance of the Commission's scientific advisory bodies and when necessary, if time and funds permit the assistance of experts in the subject of the research in question."[22]

The Report of the Meeting further reflects the Working Group's awareness of the risk that these procedures could be unduly time-consuming. Thus it is stated:

> The Working Group felt that while the effective application of Resolution VI-13 would place increased responsibilities on the Secretariat, this must not result in delays in obtaining the Commission's assistance, where sought. The Secretary stated that everything possible would be done to avoid delays.[23]

Quite plainly the IOC Resolution calls for minimal but meaningful involvement by a central international agency and is thus but a small step away from the normal route of direct state-to-state interaction. When and if the guidelines become effective, this involvement may become more intense. As international institutions evolve, growing in experience, capability, and depth of resources and skill, it will be worth a new appraisal to determine whether a more positive role might better facilitate marine science research.

d. Data Handling

Another significant feature of Resolution VI-13 is that dealing with the method of handling data and samples as between the investigators and the coastal state:

> The coastal State will have available to it as soon as possible all data from such research, including data and samples not feasible to duplicate; special arrangements shall be made regarding the custody of data and samples not feasible to duplicate;...

Initially of course it is the researcher who obtains the data and samples and who uses them for the purposes of the inquiry being undertaken. But in recognition of the coastal interest in the materials acquired during the investigation, including the data about the environment and samples from it, the investigator must make these available to the coastal states. In instances of data or samples which can be replicated the matter is merely one of the timing of furnishing copies. For items not feasible to duplicate the Resolution anticipates that they normally will remain in the hands of the investigator but still be made available to the coastal state. That this arrangement would be expected seems to flow rather naturally from the fact that data and samples are normally in the possession of the investigator who acquires and examines them and from the provision declaring that "special arrangements shall be made regarding the custody of data and samples not feasible to duplicate..." In the absence of special arrangements the investigator would retain possession and would in any event retain ownership even if custody is permitted to the coastal state in accordance with special arrangement. The important matter is not these technical details but support of scientific research whoever is carrying it out.

It merits special note that no specific time period is mentioned in this provision, merely that data be made available "as soon as possible". As with all other aspects of Resolution VI-13, scientists would be well advised to assure as far as they can that data are quickly made available. Legalistic insistence on the lack of a precise timetable should not be used to seek to justify tardiness in this phase of cooperation with the coastal state. Contined laxity in this regard is virtually certain to result in continued or new restraints on research. Developing coastal states are already exceedingly sensitive to the way they are treated by governments and research institutions of the states doing research off their coasts. Many of them are aware that IOC Resolution VI-13 emerged as a consequence of efforts by developed states to ease restrictions on marine research. Those developing states responded to this initiative by acquiescing in the procedure of IOC VI-13, apparently hopeful of gaining from the research so facilitated. If these procedures are not substantially complied with, the resulting disappointment could well take the form of further interference with research.

3. Regional Arrangements

Less inclusive arrangements than those just discussed could also be useful, including remedial measures for application on a regional basis or among a limited number of states. The only attempt thus far in this direction is that by the International Council for the Exploration of the Sea and it has not been a resounding success, though efforts continue to take some cooperative action designed to facilitate certain research. Initial discussion within ICES of potential difficulties for some continental shelf research occurred in 1964, immediately after the Shelf Convention came into force. As a result of this discussion "The Council decided to seek the cooperation of its member governments in ensuring that the work of research vessels of member countries should not be impeded, and it offered, if that should be the wish of the members, to assist by compiling a register of vessels regularly engaged in scientific investigations on behalf of member countries."[24] After the responses of all members were reviewed"...it became clear that, while they were not prepared to waive their rights under the provisions of Article 5, paragraph 8, of the Convention, they all would wish to see that conventional and traditional research should not be impeded."[25] Accordingly the Council at its 1967 Statutory Meeting adopted the following proposal:

> 1. The International Council for the Exploration of the Sea will provide a list of research vessels of the member countries, regularly engaged in scientific investigations. The list will contain such data for each vessel that are needed for identification.
>
> 2. Annual cruise programmes will be exchanged between member countries, with the understanding that any member country is free to require a change to be made in the proposed programme of work on its Continental Shelf, it it so wishes.
>
> The cruise programmes will indicate as far as possible, where they will impinge on the Continental Shelf, and mention specifically any proposed research on the sea floor.
>
> 3. On the basis of the List of Research Vessels and the Cruise Programmes, the member countries are prepared to give, through a national office, or agency which they will authorize to act on

> their behalf, general permissions in cases of routine scientific sampling and other probing of the seabed and subsoil and of the bottom fauna by means of grabs and dredges and similar devices.
>
> 4. In the case of seismic tests and research involving the use of seismic charge, specific application to undertake such research will continue to be required to each case, and such research will always be dependent upon prior permission.
>
> 5. This Agreement is without prejudice to the provisions of the Article 5(8) of the Geneva Convention on the Continental Shelf, 1958, and it is on the understanding that recourse may be had to a stricter interpretation at any time.
>
> 6. Copies of Cruise Programmes and the general permissions will be deposited in the office of the General Secretary of the International Council for the Exploration of the Sea.

Unfortunately even this extremely cautious, albeit potentially helpful, approach was not acceptable to all members. Before the 1969 Statutory Meeting the Soviet Union notified the Council that it could not accept the Council's proposal, quoting the Decree of the Supreme Soviet dated 6th February 1968 from which the conclusion was apparently drawn that "...to seek the permission for conducting research on the USSR Continental Shelf it is required application to the Soviet competent authorities through appropriate channels for each case."[26] At the 1969 Statutory Meeting itself the 1967 proposal did not secure approval but plainly there is a rising concern among ICES members about this problem.

> Some delegates said that they felt the situation with respect to conventional research activities on the continental shelf was gradually getting worse. This means that the efficiency of such joint efforts which have become traditional in the Council's area, will be impeded. They said that this introduced a note of urgency in the matter and that those of the member countries which would wish to collaborate along the lines indicated earlier by the Council, should find a way to do so.[27]

In the end it was agreed that the Council's services would be offered "... to those members who would be in a position to adopt a standard procedure..."[28] Thus though ICES apparently is unable to undertake joint action among all its members, it is possible that some of them will join to adopt measures to remedy impediments to their research.

B. Bilateral Agreements

Although the conclusion of bilateral agreements is the least inclusive international remedial action, this course may be particularly useful at the present stage. Relations between states vary of course from one bilateral relationship to another, hence there are special advantages to agreements that can be fashioned to take these nuances into account. Furthermore, since there is some urgency to removal (or prevention) of undue restraints, the conclusion

of bilateral agreements may be most desirable initially because of the length of time necessarily involved in achieving more inclusive understandings. A further advantage of bilateral agreements is that of acquiring the knowledge and experience that assist in dispelling the suspicion and distrust which sometimes hamper broader agreements.

One particular element of the proposed bilaterals on marine science research that might be particularly worthwhile is agreement on a definition of marine science research. One such formulation conceives marine science research as comprehending

> scientific programs of observation, collection and measurement intended to permit a description of the oceans, their physical interfaces and their contents, or to improve understanding of processes operating in the marine environment.

Additional elements of the bilateral agreement might include provisions for, inter alia, making data and samples available or accessible, timing of notification for various purposes, port calls, participation or representation in the research program and its planning, and publication of the results of the investigation. Hopefully, a pattern of agreement on both a substantive definition and these procedural aspects might contribute to achieving a broader international consensus on an appropriate conception of marine science research.

The United States has already employed this bilateral method for facilitating one specific type of marine research, namely fisheries. In a series of agreements with Poland, the USSR, Mexico and Japan, provision is made for cooperation in expanding marine science research on both a national and a joint basis with respect to fisheries of common concern or in particular regions. In implementation of these general provisions some foreign research vessels operate in areas subject to U.S. jurisdiction from which they would otherwise be forbidden entry for this purpose. Some of these agreements also contain provisions for facilitating entry of foreign public vessels into U.S. ports, within the limits of applicable laws and regulations.

C. Unilateral Action by the United States

Not all remedial measures depend upon negotiations to persuade other states to cooperate. The United States can unilaterally take certain action, and should take it, which could assist in freeing scientific research in the ocean. The Committee on Oceanography of the National Academy of Science recently formulated a recommendation for such unilateral action, as recorded in the following position paper dated April 28, 1970:

> The Committee on Oceanography and its international Marine Science Affairs Panel have been concerned with the problem of maintaining freedom of scientific research and exploration of the sea and the seabed. The Committee and the Panel have actively cooperated with the federal agencies in pursuing certain limited international actions which might facilitate such research and exploration. The Committee and the Panel believe that other governmental measures must be initiated for this purpose and propose that the United States government announce that henceforth it will freely permit scientific research in areas subject to U.S. jurisdiction and that

no permit will be required except for investigations in internal waters. In order to be satisfied, however, that research vessels in these areas do properly conduct bona fide scientific activities and that the results of their work are available to the U.S., the following assurances should be observed so that the United States shall:

(1) Be given reasonable advance notice, a period of 60 days probably being adequate.

(2) Have the opportunity to participate in the research and exploration and have access to all equipment, compartments and instruments aboard the vessel.

(3) Have the right to receive copies of all data on request, and the right of access, for study, to all samples not feasible to duplicate.

(4) Be assured that significant research and exploratory results will be published in the open scientific literature.

(5) Be assured that the scientific exploratory activities will present no hazard to the resources or uses of the sea or seabed (e.g., seismic explorations that could damage fish stocks, or exploratory drilling that could result in petroleum pollution).

The Committee and the Panel believe that bold unilateral action substantially similar, but not necessarily identical, to this recommendation could well be effective in demonstrating the advantages to all states of encouraging free and open scientific research and exploration. We hope that appropriate officials in our government will consider this recommendation and explore the possibilities of such an initiative by the U.S. government.[29]

Unilateral action of this type, perhaps with alterations in the detailed conditions or assurances, might provide a dramatic demonstration by the United States of its recognition of the importance of free ocean research. It is particularly fitting that the United States take this initiative since its position of world leadership in the actual conduct of ocean science should be paralleled by an equivalent leadership in general support of freedom of scientific inquiry and, specifically, in removing or attenuating restraints on such research. In any event, urging developing nations to take this action seems not likely to be successful in view of their deep suspicions of the motives of the more developed states. A demonstration by the United States, wholly without regard to any advance commitment of reciprocal action, would appear to be the best approach.

A number of desirable consequences might reasonably be expected to follow from action of this type. Such a bold unilateral initiative can be extremely effective in demonstrating the advantages, both to the U.S. and any other states so acting and to states generally, of encouraging free and open scientific research and exploration. If one or two states take this means of

welcoming scientific research and exploration in areas under their jurisdiction, it might soon become more widely apparent that this is a very economical means of acquiring information of especial value to the coastal state. Whether or not any other state takes similar action, the removal of restraints would be beneficial to the U.S., and to other states, if other states take advantage of this action to expand their research into the areas concerned.

A further initial impact, hopefully lasting, could be to dissipate some of the suspicions recently attached to American scientific expeditions operating in areas subject (or allegedly so) to the jurisdiction of other states. If the United States demonstrates its willingness to enable foreign scientists to operate in similar areas of the U.S., subject only to minimum and near universally accepted safeguards, this might well create a greater trust in our own activities abroad.

Although not conditioned on reciprocal action by others, it is of course conceivable, and certainly to be welcomed, that American unilateral action might induce similar action by other states, opening up regions now either completely closed or burdened by vexing conditions and uncertainties. Unilateral action by the U.S. might provide a substantial argument to foreign scientists who may wish to persuade their governments to reduce national obstructions to foreign research. Most marine scientists, if not their governments, are entirely aware of the high value to be placed on freedom of inquiry and are also cognizant of the substantial benefits to be gained from foreign scientists working in adjacent waters. The opportunity to participate in the planning and implementation of such work provides real benefit to local scientists, and whether or not participation is feasible the information and data thus made available can be a measurable contribution to the scientific work of coastal scientists.

It is also not inconceivable that unilateral action could encourage the conclusion of bilateral agreements between the U.S. and other states. Some states may feel unable to take unilateral action of their own but still be inclined to make formal arrangements to the same end. Given the display of U.S. good will toward foreign scientists, some states might well believe that by agreement with the United States a coastal state would assure itself of procedures and principles that satisfactorily meet its interests and requirements and, at the same time, reduce obstructions to scientific efforts in its waters.

A further consideration, more long-run than others, is that unilateral action of the kind described here could bolster the general position the U.S. should assume in the future, as it usually has in the past, of genuine commitment to and vigorous support of the concept of freedom of the seas. It continues to be in the interest of the U.S., and of the entire world including developing states, to maintain the ocean as open to utmost freedom of use, with restraints imposed only when even reasonable exercise of freedom is less productive of values than imposition of a form of exclusive control by a nation-state or international agency. Leading American international legal scholars concur in urging that the U.S. government reaffirm its support of freedom of the seas and are specific in advocating the widest possible freedom for marine science research. Unilateral action by the U.S. to promote freedom of scientific investigation would lend credibility and substance to the voice and influence of the U.S. in confronting the coming challenges to a meaningful freedom of the seas.

Another, not inconsiderable, advantage of unilateral action is in the flexibility this move permits in adjusting on-going policy to unfolding experience. If for some reason another nation somehow abuses the freedom accorded by the policy of liberalizing access it would be relatively simple for the U.S. either to change or completely to retract its unilateral action. In particular, if the various assurances should prove inadequate to protect reasonable exclusive interests, it would be wholly a domestic, not an international, decision to supplement them by other or different safeguards. In this sense unilateral action is more advantageous to the U.S. than international agreement.

In assessing the merit of such a proposed unilateral move by the U.S. it is, obviously, necessary to weigh potential disadvantages. The major category of possible liabilities of this action may be subsumed under the notion that the response of other states will be unsatisfactory and actually inhibit the removal of restraints on U.S. research in foreign waters. Thus it might be suggested in opposition to this unilateral action that it would forfeit a bargaining position of value to the U.S. in seeking bilateral agreements to remove impediments to research. This contention would be that another state has nothing to gain in agreeing with the U.S. to permit U.S. research in its waters if the U.S. has already conceded free entry to foreign scientists to areas under U.S. jurisdiction. This objection appears far more formidable than it actually is; consideration of the actual negotiating situation demonstrates that the U.S. bargaining position would be unaffected by unilateral action. So far as the U.S. is concerned the reason for negotiating with other states is not, for practical purposes, that of enabling foreign scientists to do research within regions subject to U.S. jurisdiction, since most states to not have that capability, but rather to secure access for U.S. scientists to foreign waters. In such a context the U.S. forfeits nothing by unilaterally permitting foreign scientists to operate free of a permit. On the other hand, for those states having the capability of doing research adjacent to the U.S., negotiations would in all probability be between states with the same interest, i.e., in freeing research from coastal impediments. In this context the problem would be that of resolving some relatively specific details and not that of securing agreement on the basic policy of freedom of scientific inquiry. Hence our unilateral move to promote such freedom does not hamper negotiations or prejudice a bargaining position since there would probably be no fundamental difference of opinion or attitude on this matter and hence no real bargaining situation.

Another unsatisfactory response some might anticipate is that this move would constrain foreign scientists who would prefer bilateral agreements as devices to pressure their own governments to adopt more liberal policies with regard to foreign scientists. It is difficult to answer this concretely in the absence of information about the preferences of foreign scientists. On the other hand, it is not unlikely that they resemble U.S. scientists who are known to recommend that their government take unilateral action to promote freedom of research for all scientists. United States marine scientists who have been heard on this matter thus far apparently believe that it is desirable to move on all fronts to enhance this freedom and, particularly, believe that unilateral action will not remove pressure on the United States government to negotiate bilateral agreements to resolve the problem.

Another suggested undesirable response that some might anticipate is that unilateral action will generate suspicion of U.S. motives. This would be, of course, directly contrary to the intended effect of U.S. unilateral action.

While it is true that not very many states are capable of doing research off U.S. shores, nonetheless there are some that are so capable and do such research, though now usually beyond U.S. jurisdiction. Accordingly there is no basis for assuming that the U.S. is actually trying to get something for nothing. In the end the existence of suspicion about motives probably doesn't get one very far. Some states are already highly suspicious of U.S. motives in conducting research and in using various avenues for removing restraints on research. Some states may also react with suspicion to a unilateral move. Others, however, may see in this an expression of commitment to the value of freedom of research and perceive that the U.S. now generally recognizes the particular usefulness of this freedom.

On balance these objections do not appear sufficiently weighty to justify rejection of liberalizing U.S. policy along the lines proposed by NASCO.

D. A New Law of the Sea (LOS) Conference: Negotiations About Marine Science

There are probably very few people left who do not now believe that a new conference will be convened relatively soon to consider some new legal problems of ocean use and, probably, to re-negotiate some problems previously resolved. So far as marine science is concerned, we have already noted the expectation that it would be hazardous for continued meaningful freedom of exploration to attempt to negotiate a general treaty on this subject at such a conference. Even if such an agreement could be concluded in a form acceptable to the developed states, the likely prospect is that the parties to it will be predominantly those states with a capability for undertaking such research, leaving the waters surrounding entire continents without treaty protection for scientific activity. It is distinctly possible too that developing states could conclude an agreement imposing severe restrictions on marine research.

It is virtually certain that the agenda of a new LOS Conference will contain items that raise some specific questions about interference with marine science. Accordingly there is really no way to avoid confronting the need of devising prescriptions which minimize (or even remove) obstruction or interference with scientific research at sea. The following comments consider (1) Revision of the Continental Shelf Convention; (2) Revision of the High Seas Convention, and (3) Creation of a Sea-Bed Regime. In each instance we are concerned with impacts upon marine science.

1. Revision or Replacement of the Continental Shelf Convention

There are two features of the Shelf Treaty that have special significance for science: (a) the expanding boundary definition with the prospect that, through time, coastal controls over resources will continue to move outward and (b) the confusing provisions concerning sovereign rights over exploration and exploitation of the natural resources of the shelf, the prohibition of "any interference with fundamental oceanographic and other scientific research carried out with the intention of open publication", and the requirement for consent to research concerning the shelf and undertaken here.

There can be little serious question that marine science research would gain if states agreed to place a narrow limit on the continental shelf and did not concurrently extend coastal authority in some other manner over ocean floor resources beyond such a limit. Unfortunately nearly every important

proposal on this matter within the United States either projects a "wide" shelf (such as to the edge of the continental margin) or recommends a narrow shelf coupled with extension of some coastal control beyond the shelf for purposes of exploration and exploitation of natural resources.

Certainly the most important pronouncement within the U.S. regarding the shelf is that by President Nixon on May 23, 1970, which proposed a new agreement supplementing but not replacing the 1958 agreement which would provide for a very narrow shelf but which would permit the coastal state to exercise certain unspecified authority as trustee for the international community in a further area out to the edge of the continental margin.[30] The Presidential statement itself did not expressly address the scope of coastal control over marine science in the trusteeship zone (hereinafter designated as TZ) and at a news conference the Legal Adviser to the State Department was reportedly unable to clarify this matter, stating that while the Department was of course zealously concerned to protect freedom of scientific inquiry this matter was one of many details not provided for in the Presidential statement. Subsequently, however, this omission was sought to be remedied or so it seems. In testimony on May 27, 1970, before the Special Subcommittee on the Continental Shelf of the Senate Interior Committee, Under Secretary of State Eliot L. Richardson apparently implied that in the TZ the coastal state would not, in the U.S. view, have the same controls over scientific research as over the shelf. In explaining the rationale for the 200-meter shelf limit proposed by the President, Mr. Richardson characterized the proposal as one for "narrow limits of national sovereign rights". He added that "For the United States to propose a concept of broad extension of national jurisdiction would have indirect, but serious, national security implications, and would impede the freedom of scientific research and other uses of the high seas." (emphasis added) Accordingly it seems fair to conclude that the U.S. will propose that scientific research in the TZ should not require coastal consent as it does on the continenal shelf.[31]

A 200-meter limit on the shelf proper is, of course, as narrow as could be proposed with any prospect of acceptance and in this sense marine science would benefit. However it is very difficult to understand how the U.S. proposes to persuade other nations to permit research in the TZ without the necessity for a permit. At least on the face of it, the same considerations which are adduced to support a consent requirement for shelf research appear available to argue for a similar requirement in the TZ. It is difficult to see why merely crossing the magic line at 200 meter depth suddenly will dispel coastal concern (however unwarranted) over research activities in an area subject to coastal control over exploration and exploitation. To the contrary, since coastal revenues would still be affected by activity in the TZ, and international revenues to boot, it would be distinctly suprising if coastal and noncoastal states alike did not insist on extending the consent requirement to this additional area. This conclusion is only reinforced by considering that the coastal state may be especially interested in assuring itself that research activities present no hazard to the environment or living resources therein. In sum the likely outcome of the U.S. proposals for a 200-meter limit plus a trusteeship zone extending to the continental margin is that coastal controls over research will be extended at least to the latter limit and could conceivably go beyond.

If, however, the U.S. is to oppose a mandatory permit for certain research in the TZ, it should also be the over-riding policy of the U.S. entirely to eliminate or substantially to minimize this requirement as regards

shelf research. On the same reasoning as above, if a permit ought not be required at 201 meters depth there is no justification for it at 200 meters. Deletion of Article 5(8) of the Shelf Convention would obviously contribute to this end but would not be sufficient. In providing that each coastal state has exclusive rights of exploration of its shelf, it is reasonably plain that even without Article 5(8) some (perhaps many) coastal states would forbid even bona fide scientific research on their shelves on the ground that it was inconsistent with that state's exclusive right to explore which, it would be claimed, is indistinguishable from scientific research. Accordingly the only certain way of freeing scientific research is to abolish the coastal state's exclusive right of exploration. Unfortunately it does not seem at all likely that coastal states are prepared to relinquish their newly acquired sovereign rights of exploring and exploiting the natural resources of the shelf. The question thus is how to acknowledge this right but to minimize its impact on bona fide scientific research.

One desirable alternative would be to secure the deletion of Article 5(8), with its express requirement of consent, and to substitute therefor a requirement for notice of certain intended research. The coastal state would continue to be authorized to refuse to allow the research, but affirmative objection would be required. In the absence of objection within a stated period after timely notice, the particular research would be considered authorized. It may be helpful in this connection to insert a provision in the revised Convention recognizing the importance and value of freely conducted scientific research regarding the shelf.

Another alternative is to maintain the present formulation of Article 5(8), but to continue to improve on the procedures by which clearances for research are obtained. As experience develops with the use of the recently adopted IOC procedure, ways for strengthening this avenue should be explored with a view to improving it. Observations on this matter were made above.

2. Revision of the High Seas Convention

A principal improvement in the High Seas Convention is to remedy the failure to mention "freedom of scientific research" as one of the freedoms expressly embraced by "freedom of the seas" as defined in Article 2 of this treaty. There can be no serious question, despite the contentions by a few of the developing states, that the conduct of research has been regarded in the past as an exercise of one of the protected freedoms. Nor can it be reasonably doubted that it is in the genuine common interest of all states, developed or developing or whatever, to promote the utmost freedom of access to the ocean for this purpose. Accordingly it may be beneficial to emphasize the high value of this particular freedom by express provision for it in a new treaty on the High Seas.

3. Regulation of Scientific Research on the Sea-Bed Beyond National Jurisdiction or Control

The two primary considerations which account for the contemporary concern over research over the deep seabed are, first, the expectation that such research will provide economic benefit only to developed states and inflict economic loss upon developing and, second, the apprehension that research will cause damage to the ocean environment, including the resources therein. The former arose earlier and is primarily responsible for the agitation sur-

rounding the topic of ocean resources, but concern for the environment adds a new dimension of importance for certain restricted types of research operation.

The principal problem in this instance is not to devise remedial measures for unfettering research, since research is now free in this vast region, but to safeguard deep-sea research while at the same time promoting and protecting other uses of the area. The objective should be to provide for maximum freedom of investigation consistent with reasonable protection of other uses and the environment.

Highest priority attaches to freedom of research, hence restrictions on such freedom should require demonstration of their necessity for protecting other uses. No restrictions should be imposed on research unless a strong case is established for its necessity.

At the present time no one, whether representing a state, international organization, or private entity, has made a case for any restrictions on scientific research in order to safeguard mining operations in the area beyond national jurisdiction. The only restriction which thus far seems reasonably well supported by social need pertains to the conduct of research activities which might pose some threat of harm to the ocean environment or resources, and it requires emphasis that only very few such activities have any implication of harm. Scientists are, of course, as concerned as anyone else to avoid environmental damage, and there can be no serious doubt that reasonable regulations to this end would be welcomed in the scientific community.

Despite the lack of justifiable concern over the incompatibility of scientific research with commercial operations, there are suggestions that research should no longer be unrestricted and should, instead, be subject to a number of conditions. The 1969 report of the Seabed Committee suggests the scope of some of these restrictions which are spelled out in more detail in the annexed Report of the Informal Drafting Group. The latter's Report states:

"Item 5. Freedom of Scientific Research and Exploration.

26. After consideration of the several formulations, it was decided to separate the main elements which are:

(i) Freedom of scientific research (for peaceful purposes) without discrimination and avoidance of interference with such research;

(ii) Communication beforehand of programmes of scientific research. Different methods were mentioned in the proposals: (a) publication; (b) accessibility; and (c) dissemination;

(iii) Communication of results of scientific research. The different methods mentioned under (ii) were also suggested for (iii);

(iv) Promotion of international co-operation. Two suggestions were made: (a) participation of nationals of different States in common research programmes; and (b) strengthening of the research capabilities of the developing countries;

(v) Encouragement by States of their nationals to follow the practices concerning communication of information regarding programmes and results;

(vi) No rights of sovereignty or exploitation are implied in the carrying out of scientific research.

27. The examination of the proposals indicated the existence of three different approaches as to the relationship between element (i) and other elements. The first approach would state independently the freedom of scientific research and such other elements as may be agreed upon. The second approach predicated that these other elements should be stated as necessary consequences of the freedom of scientific research conditional upon publication beforehand of research programmes and upon the accessibility of the results of these programmes with the least possible delay."[32]

The following comments consider the impact of these elements in terms of their possible effects on scientific research if they were imposed as obligations which must be discharged by states or research institutions.

(i) "Freedom of scientific research (for peaceful purposes) without discriminition and avoidance of interference with such research."

As formulated by the Informal Drafting Group this "element" does not appear as an obligation which might impose restrictions on research. Appearances are, however, often deceptive and the appearances here should inspire caution in unwary observers. What appears to be an unexceptionable statement of unquestioned principle may bite you. Accordingly, it should occasion no overwhelming surprise that in the Legal Committee Report some delegations were able to endorse freedom of research and also to point out that freedom does not mean license and, hence, that imposition of a number of restrictions on research is not really incompatible with freedom of research. Indeed, according to the Legal Committee Report, these delegations observed that "no freedom was absolute" and that, one may imply, to impose pre-conditions on research was merely to assure that the exercise was not "abused" and was "exercised with reasonable regard to the interests of other states." In other words the unquestioned existence of freedom of research establishes that certain conditions on such research must also be accepted since they are inherent in the principle of freedom of research.

It must readily be conceded that freedom has never meant the complete absence of conditions on engaging in an activity. However in the law of the sea the conditions on freedom of use are those required to make such use reasonable. Whether any particular condition has this effect depends on assessing its impact on the activity in question in relation to the social goal it purports to achieve, the degree to which it might achieve such a goal, and the cost involved. It seems reasonably obvious that a priori reasoning such as described in the previous paragraph is no substitute for such an appraisal. Similarly, insistence that other exercises of freedom of the sea are subject to certain conditions prescribed by treaty does not demonstrate that freedom of research must be subject to still other different conditions. There is no escape, if minimum rationality in inquiry is to be preserved, from a deliberate weighing of the need and value of restrictions on scientific investigation.

(ii) "Communication beforehand of programmes of scientific research."

Apparently the object of this element is to create a system whereby states, on behalf of state and private agencies, would give notice of some kind that a particular program of investigation would be undertaken. In the view of some, according to the Legal Committee Report, notification would be an obligation which must be discharged as a condition to the freedom to engage in research. The Report does not indicate any means for enforcing this condition, such as by limiting investigations not preceded by notice of the required kind, although presumably some such sanction was in mind.

It is clear from the excerpt of the Legal Committee Report already quoted that some of the delegations opposed this suggested condition as a considerable obstacle both to the conduct of research and to international cooperation in this effort. The effect of this type of condition has also been assessed by the International Marine Science Affairs Panel (IMSAP) of the Committee on Oceanography of the U.S. National Academy of Sciences. The Panel concluded:

> The condition of advance notice constitutes a significant reduction in the flexibility of research planning. If coupled with the necessity for specific consent to be granted upon receipt of the advance notice, this restriction could serve to eliminate some useful research programs. If a detailed requirement for advance notice is strictly enforced, it will be impossible to conduct many types of investigation envisioned for the International Decade of Ocean Exploration and other international cooperative investigations.

In short the costs of imposing an advance notice requirement for scientific investigation would be to hamper planning of future programs and could prevent certain research completely either if enforced strictly or if coupled with a consent requirement. The gains from such notice, on the other hand, seem highly problematical unless some additional steps by the agency or group notified are anticipated, such as participation in the program. Even if participation were made theoretically possible by this requirement the effects of such an obligation would constitute a high cost in relation to the frequency of actual participation since the latter would probably be minimal. There is, in sum, reason for grave doubt that the problematical gain from being notified of deep-sea research comes anywhere near justifying the detrimental effects of a notification system.[33]

(iii) "Communication of results of scientific research, as by publication, dissemination, or accessibility."

Not many, if any, scientists would be prepared to argue against open publication of the results of a research cruise, but a great many would urge rejection of a proposal that publication of results be made a compulsory obligation. As desirable as publication of results usually is, there are instances in which the outcome of an investigation does not warrant the effort and expense required to publish. Anyone who has done research of any kind is aware that not infrequently the fruits of the labor involved are so skimpy or insubstantial that their exposure would do more harm than good, including of course harm to the investigator.

There is the additional question of what is embraced by the term "re-

sults". It is not at all inconceivable to include in this the raw data and samples that are acquired by the research operator. In this situation implementing a compulsory disclosure requirement becomes both costly and complicated. Modern research ships collect data and samples very rapidly and processing them requires considerable time and money. The result is that there are likely to be delays in disseminating the data and the cost of doing so can become a burdensome expense. In its assessment on this point, IMSAP points out, additionally, that "the inevitable delays in meeting these conditions may be interpreted as indicating bad faith on the part of the operating institutions."

Samples are a special problem since, obviously, they cannot always be duplicated for sharing with others. The solution is to make them accessible to those interested but this, too, may pose considerable difficulties in implementation.

The sum of the foregoing is that the detrimental impact of a publication requirement is not insubstantial and suggests that distribution of results of cruises might better be left to the discretion of the individual operator. At the same time the latter should be strongly encouraged to publish his results and data as fully and as soon as practicable.

(iv) "Promotion of international cooperation. Two suggestions were made: (a) Participation of nationals of different states in common research programmes; and (b) strengthening of the research capabilities of the developing countries."

No one openly opposes international cooperation in marine science and so the members of the Legal Committee understandably found this element "unquestionable". Presumably such unquestioning acceptance implies that the reference to participation in research does not imply any obligation upon the researcher to seek out and accept participants from other states. However the earlier element calling for notification of planned research suggests the possibility that permitting participation might be regarded by some as the obligation of the researcher. Required participation has, however, several substantial drawbacks. IMSAP called attention to the following:

> The opportunity to participate in research may cause a reduction in the number of scientists from the supporting institutions because most research vessels are relatively small and overcrowded. This relates to the problem of advance notice in that LDC's, while wishing to participate, have very limited numbers of qualified scientists and observers, and accordingly request the greatest possible lead notice in order to arrange their participation. The logistic requirements involved in embarking and disembarking observers or visiting scientists may reduce significantly the ship time available for conducting research.

The latter point particularly deserves some emphasis. Diversion from the ship's cruise track to take on participants can sometimes be substantial, calling for loss of a day or more of extremely expensive operating time. An obligation to permit participation in deep seabed cruises may be an onerous burden also because of the delays and administrative complexities that would very likely ensue in implementing the scheme. In addition to delays in

picking up participants, it is not unlikely that the process of arranging for such participation would occupy an extended period.

Other suggestions, not embraced in the Seabed Committee Report, include the proposal that a scientific research activity should be registered with an international agency and a nonexclusive permit obtained. The precise details of such registration might of course vary over a considerable range. Some suggest that the procedure would be the same as for commercial operations including the payment of a fee. The thought underlying this suggestion is that so far as hazard to the environment is concerned scientific research into the deep seabed does not differ from commercial operations. Similarly it is suggested that if a commercial operator should be required to disclose the information he gathers, after a delay to protect him, the same obligation should apply to a scientific researcher, a fortiori.

The difficulty with these proposals is that they threaten to add administrative inconvenience and delay to all kinds of scientific research involving the seabed even though only a minor segment of such research poses any threat of damage to the environment and almost none of it has any significant potential for conflict with other uses. At present, for example, only one state, the United States, has any capability for drilling into the deep seabed and this activity is only one (but highly important) form of conducting deep seabed research. In view of the current agitation over environmental harm, U.S. scientists can be expected to take every precaution to avoid activities that might harm the environment. It is probable that scientists of other states will share and act upon this concern in similar fashion. A general requirement for registration and securing a permit would contribute very little, if anything, to protecting against damage but would complicate the task of investigation.

Suggestions for requiring registration plus a nonexclusive permit sometimes do not provide that the registering authority will have discretion to refuse to issue a permit except as the applicant may fail to meet standards of operation related to environmental protection. In such a conception the authority could not refuse a permit because of the area involved or the methods to be employed or the type of program selected, but it might refuse a permit if the research vessel were not properly equipped for safeguarding the environment from the effects of its planned research operations. Other suggestions, however, seem to anticipate that the registering authority should be able to review the proposed scientific program and deny the permit if, for example, the authority deemed the program "suspect" as a possibly disguised commercial operation.

It hardly needs to be stated that a system of the latter kind is far too restrictive of research to be desirable in the community interest. Even the Economic and Technical Subcommittee of the Seabeds Committee appeared to recognize that the initial phase on mineral resource development, which is termed "acquisition of basic knowledge", should be governed by the principle of freedom of research. To subject research activities to a discretionary international authority would in practical effect hand over marine research to the control of an international agency. Even if the discretion so conferred were carefully circumscribed by conditions for its exercise the possibilities of interference appear far too great to commend this argument.

CONCLUSION

The preceding discussion is incomplete without at least brief reference to the Draft Convention on the International Seabed Area tabled by the United States at the U.N. Seabed Committee meeting in August, 1970, as a "working paper for discussion purposes." With one exception the provisions in this treaty seem satisfactory insofar as they are specifically concerned with marine science research at sea. The "basic principles" seem to be directed at assuring that all activity beyond the 200-meter isobath, which is generally the inner limit of the International Seabed Area (ISBA), is free and open with the exception of exploration-exploitation activities for natural resources of the Area and, so far as science is concerned, except for deep drilling which is subject to special regulations. Ocean inquiry would thus be left as unrestricted as any other activity in the ISBA.

Among the "general rules" in the draft, Article 24 is specifically directed at scientific research:

> 1. Each Contracting Party agrees to encourage, and to obviate interference with, scientific research.
>
> 2. The Contracting Parties shall promote international cooperation in scientific research concerning the International Seabed Area:
>
> > a. By participating in international programs and by encouraging cooperation in scientific research by personnel of different countries;
> >
> > b. Through effective publication of research programs and the results of research through international channels;
> >
> > c. By cooperation in measures to strengthen the research capabilities of developing countries, including the participation of their nationals in research programs.

This provision, if accepted, would appear to provide for freedom of scientific investigation at sea. It is perhaps nitpicking, therefore, to note that it does not affirm that freedom in so many words. At the same time research is also not subjected to any conditions, precedent or subsequent.

A good deal could be, and elsewhere no doubt will be, said in detailed commentary on this treaty from the viewpoint of scientific research. By way of conclusion here it is worthwhile, first, to question whether the freedom for research that would be permitted by this draft can be expected to survive the negotiations that will be required to reach eventual agreement. The draft itself does not of course supply any reason to believe that coastal states around the world will refrain from demanding certain controls over research in the trusteeship zone proposed herein.

But beyond the uncertainties attendant to the inevitable bargaining over the innumerable details of the regime proposed in this draft, there is uneasiness about a related matter. Sooner or later states generally may begin to realize that the U.S. is proposing for the region beyond 200 meters

what is, in essence, a complete vacuum of political authority except as may be exercised pursuant to this treaty or pursuant to subsequent treaties. The idea apparently is to eliminate any evolution of law by customary methods, and also to refrain from establishing any organized international means for timely creation of any needed regulation. Inasmuch as the direct regulatory authority permitted by this treaty, whether to the trustee state or to the International Seabed Resource Authority, is limited completely to activities of exploration-exploitation of certain extractive resources, it appears that all other activities are removed from the regulatory authority of any political body except as may subsequently be agreed upon or as individual states may control their own nationals. This means, for example, that in the trusteeship zone, the coastal state will be unable to regulate activities by nonnationals which involve installation of structures on the seabed, so long as they do not unreasonably interfere with exploration and exploitation. It hardly is open to serious doubt that such structures can be built within this limitation, hence under the present draft the structure, its inhabitants and the activities thereon could be beyond any political authority whatsoever.

It is at least possible that nations and perhaps some of the component states of the U.S., will not be enthusiastic about a proposal which so firmly ties their hands from dealing with activities in nearby waters which could have harmful impact in the coastal zone. If states do begin to question the desirability of the regulatory vacuum which would appear to exist if this draft treaty were made effective, it is not inconceivable that they will insist on more extensive coastal authority in the proposed trusteeship area. Once this process begins it would not be an overwhelming surprise if controls over seabed research were included in demands for more comprehensive coastal authority.

These few concluding remarks are limited to the draft treaty and marine science. They suggest, however, some of the incongruity of a treaty proposal that creates an extremely elaborate institutional structure to deal only with a single use of an area parts of which may well be subjected in the near future to relatively intense multiple uses. In these days of common recognition of the utility of multiple-use regulation, the draft treaty seems an anomaly indeed. Fortunately the U.S. intended the draft as a basis for discussion and such gaps as exist can be remedied. In the process this draft will very likely have to be modified if it is hoped to provide an adequate body of law for activities in the regions adjacent to land.

FOOTNOTES

1. Sullivan, Freedom of Scientific Inquiry, in Alexander, ed., National Policy Recommendations, Proceedings of the Fourth Annual Conference of the Law of the Sea Institute 364 (1970).

2. Brown, Freedom of Scientific Research and the Legal Regime of Hydrospace, 9 Indian J. Int'l. L. 327 (1969); Schaefer, The Changing Law of the Sea -- Effects on Freedom of Scientific Investigation, in Alexander, ed., The Future of the Sea's Resources, Proceedings of the Second Annual Conference of the Law of the Sea Institute 113 (1968); Burke, International Legal Problems of Scientific Research in the Oceans (1967); id., Law and the New Technologies, in Alexander, ed., The Law of the Sea, First Annual Conference of the Law of the Sea Institute 204 (1967).

   Of course, the most authoritative "observers" were the members of the Marine Science Commission which was composed mostly of private citizens. The Commission concluded that a new international framework for marine science inquiry is required and in addition to recommendations for such a framework also proposed interim steps for facilitating research. Report of the Commission on Marine Science, Engineering and Resources, Our Nation and the Sea, 201-05 (1969).

3. See infra p. 58 and accompanying footnote for recommendations of the National Academy of Sciences and its Committee on Oceanography.

4. The legal framework of international regulation is not discussed herein as it is elaborated in several other places. See sources in notes 1 and 2.

5. The records on clearances in the State Department are voluminous and in a few days could be only partially examined by the writer. In addition to the data in the files the following section is based on conversations over a period of several days with personnel in the Office of the Special Assistant to the Secretary of State for Fisheries and Wildlife, especially Mr. William L. Sullivan, Jr., and LCDR Karl William Keininger. Any errors of assertion or interpretation are, of course, the writer's.

6. Letter from Ambassador Donald L. McKernan to Dr. John A. Knauss, date April 10, 1970, referring specifically to Brazil and Ecuador.

7. This situation emphasizes the need for responsible behaviour on the part of investigators and institutions.

8. ICO, U.S. Oceanic Research in Foreign Waters 6 (1966).

9. The influence of political considerations deserves emphasis. State officials may not have any substantive, or genuine, objection to an investigation but because of politics (local as well as international, and the former may frequently be far more important) they feel unable to respond affirmatively to a clearance request. The whole procedure of deciding upon clearances is a part of the internal politics of bureaucratic structures and it should hardly occasion surprise that these

influences play a major part in some clearance decisions which are negative. One of the advantages of a system of notification with consent assumed unless objection is made is that local officials are not required to take affirmative action, and part of the influence of internal politics can be avoided.

10. Dr. K. O. Emery reports that he abandoned "an effort to learn about the topography of part of the Mediterranean shelf because permission to enter claimed territorial waters was delayed by suspicion about possible military motives." Emery, Geological Aspects of the Sea-Floor Sovereignty, in Alexander, ed., The Law of the Sea 156 (1967).

11. Letter from Ambassador Donald L. McKernan to Dr. John Knauss, dated April 10, 1970.

12. Circular Letter to SCOR Members and National Committees, dated 24 June 1968, from Warren S. Wooster, President of SCOR.

13. ICSU in 1954 not only expressed alarm over detrimental consequences to marine science but also recommended that the General Assembly so amend the articles then before the I.L.C. "as to ensure that such fundamental research at sea may proceed without vexatious obstruction." For the text of the ICSU Resolutions of 1954 and 1955 see Report of the Special Rapporteur on the Regime of the High Seas and Regime of the Territorial Sea in 1956 Yearbook of the International Law Commission, Volume II, p. 10, U.N. Doc. No. A/CN.4/SER.A/1956/Add.1 (1956). These Resolutions and a further communication from ICSU are in U.N. Doc. A/Conf. 13/28, 13 January 1958.

14. Global Ocean Research 45 (A report prepared by the Joint Working Party on the Scientific Aspects of International Ocean Research of ACMRR, SCOR and WMO-AGOR) (1969).

15. Resolution V-6 also provides that the Working Group was to indicate "legal principles which should facilitate and guide such research." The Working Group did a small amount of work on this at its first meeting but had insufficient time to do anything at its second meeting.

16. IOC Resolution VI-13 spells out the procedure ultimately agreed upon and is attached as Appendix A.

17. 24 GAOR, Report of the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction 24 (1969).

18. Report of the Commission, supra note 2, at 203.

19. Report of the U.S. Delegation to the Sixth Session of the IOC, Paris, France, September 2-13, 1969, p. 50 (1969). The tortuous, prolonged debate on Resolution VI-13 is admirably summarized in this Report. The "summary" occupies 13 single space pages, giving some idea of the intensive examination that entered into production of Resolution VI-13.

20. IOC, Summary Report of the Second Meeting of the Working Group on Legal Questions Related to Scientific Investigations of the Ocean, para. 14, p. 4 (IOC Doc. No. SC/IOC/WG-4/2) (1970).

21. Letter dated 8 January 1969 from John C. Calhoun, Jr., Chairman, U.S. National Committee to SCOR, to Warren S. Wooster, President of SCOR.

22. Summary Report, supra note 69, Annex IV, Suggested Provisional Guidelines for the Application of IOC Resolution VI-13 with respect to Assistance Regarding Areas of National Jurisdiction. The Guidelines are to be considered by the IOC Bureau and Consultative Council "with a view to their eventual endorsement by the Commission." Summary Report p. 3.

23. Id. at p. 4.

24. IOC, Summary Report of the First Meeting of the Working Group on Legal Questions Related to Scientific Investigations of the Ocean, Annex IV, IOC Doc. No. AVS/9/89 M(8) December, 1968.

25. Ibid.

26. Letter to ICES from S. A. Studenetsky, Deputy Ministry of Fisheries of the U.S.S.R.

27. ICES Doc. No. C. M. 1969/Del:3, suppl. 3.

28. Id.

29. This paper was forwarded in May, 1970, to the Department of State along with a resolution by the Council of the Academy recommending serious study by the federal government of the possibility of a U.S. initiative to allow scientific research without a permit, but with adequate safeguards, in areas subject to its jurisdiction outside internal waters.

30. The conclusion to this paper contains some observations on the draft seabed treaty, developed subsequent to the Presidential pronouncement, which the U.S. tabled as a working document at the August 1970 session of the Seabed Committee. At one time in the evolution of this treaty it was planned to table it as a U.S. proposal, but the introductory page of the draft states that it does not represent the definitive views of the United States.

31. As indicated below, the U.S. draft seabed treaty does not provide for such consent.

32. Report of the Committee on the Peaceful Uses of the Seabed, supra note 17, at 38-29.

33. It may be asked why it is unreasonable to impose requirements for deep sea research which are now regarded as reasonable when imposed in areas subject to coastal jurisdiction. If it is proper to require advance notice as a condition to research in the latter instance why isn't the same requirement appropriate in areas beyond coastal jurisdiction? One answer to this is that once legal impediments in the form of a consent requirement came to be established as lawful, it seemed reasonable to accept the restrictions of a notice requirement as a means of gaining access for research. But in the deep sea area there are now no consent

requirements or any other impediments to bona fide research. Introduction of restrictions such as the notice requirement thus has no compensating gain in this area. This same calculus applies to any new restriction on research in the deep sea area.

In addition the creation of an international structure for administering regulation of research may well involve substantial administrative complexities for both states and scientists.

VI-13

PROMOTING FUNDAMENTAL SCIENTIFIC RESEARCH

(Previously DR.19)

The Internovernmental Oceanographic Commission,

Recognizing that in accordance with Article 1, Para. 2, of the Commission's Statutes its main function is: "...to promote scientific investigation...of the oceans, through the concerted action of its members",

Taking into account that physical, chemical, biological and geological phenomena are closely interrelated throughout the ocean and observe the laws of nature,

Bearing in mind the interests of mankind in the field of scientific research, with particular reference to the interests and needs of the developing countries,

Taking into account that specific cases of obtaining consent for conducting scientific research in areas falling under the national jurisdiction of coastal States are usually resolved between the interested States,

Taking note of the Summary Report of the IOC Working Group on Legal Questions Related to Scientific Investigations of the Ocean, established by Resolution V-6,

Being of the opinion that it is desirable that the procedures to obtain the consent of a coastal State for the carrying out of fundamental scientific research in the areas over which jurisdiction is exercised be simple and effective,

Observing that any steps which might be taken in this regard are not intended to impair the sovereign rights of States,

Considers that the Commission should assist in promoting fundamental scientific research that is carried out either in the framework of the Long-Term and Expanded Programme of Oceanic Research or within Declared National Programmes. This assistance regarding areas of national jurisdiction will be subject to the following principles:

(a) As soon as a tentative decision to carry out a research programme is made, the coastal State shall be informed in a preliminary manner to ensure that it may, if it so desires, be associated, from the preliminary steps, with the planning of the programme and arrange for early contact between interested scientists;

(b) A formal description of the nature and location of the research programme shall be submitted to the coastal State and to the Commission as soon possible in order to enable the coastal State to respond formally as far in advance as possible and in order to enable the coastal State to participate effectively in the research programme;

(c) The Secretary of the Commission shall transmit the formal description so received to the coastal State within twenty days of receipt together with the Commission's request for favourable consideration and, if possible, with a factual description of the international scientific interest in the subject prepared by the requesting State, supplemented, if he considers this desirable, by the Secretary;

(d) The coastal State, if it so desires, will participate in such research programmes as arranged between the interested States;

(e) The coastal State will have available to it as soon as possible all data from such research, including data and samples not feasible to duplicate; special arrangements shall be made regarding the custody of data and samples not feasible to duplicate;

(f) The results of such research programmes shall be published as soon as possible in an open internationally distributed scientific publication;

Invites interested Member States to act in a spirit of international co-operation, to consider favourably and to facilitate within the framework of national laws and regulations the requests for vessels conducting fundamental scientific research to make port calls;

Recommends that the Working Group continue examining the question in terms of the above-mentioned resolution, and report back on it at the VIIth session.