

UNITED NATIONS
GENERAL
ASSEMBLY



Distr.
GENERAL

A/AC.135/28
10 July 1968

ORIGINAL: ENGLISH

AD HOC COMMITTEE TO STUDY THE PEACEFUL
USES OF THE SEA-BED AND THE OCEAN
FLOOR BEYOND THE LIMITS OF NATIONAL
JURISDICTION

THE MILITARY USES OF THE SEA-BED AND THE OCEAN FLOOR
BEYOND THE LIMITS OF PRESENT NATIONAL JURISDICTION

(Working paper prepared by the Secretariat at the request of
the Ad Hoc Committee)

1. At the eleventh meeting of the Ad Hoc Committee on 20 June 1968, the Secretariat was asked to prepare a brief document on the possible military uses of the sea-bed and the ocean floor beyond the limits of present national jurisdiction. The document should be based on the published data and should be submitted at the Committee's third session in Brazil. This paper has been prepared in accordance with this request.

2. It should be emphasized that the present note is based on published material.^{1/} It is not clear to what extent this material can be considered authoritative; it should perhaps be regarded as indicating possibilities rather than as pinpointing realities. There is therefore the possibility that important and relevant aspects may still be unknown or not generally appreciated.

3. During the last decade there has been a substantial increase in interest in developing the uses of the ocean floor. With regard to peaceful civilian uses,

^{1/} This material includes the following publications:

John E. Long, ed., Ocean Sciences, chap. IV: "Military Oceanography";
Marx, W., The Frail Ocean, chap. 18: "The Military Ocean"; Sea Power and the
Sea Bed, U.S. Naval Institute Proceedings, April 1966; Uses of the Seas,
Report of the Thirty-third American Assembly: 2-5 May 1968; Uses of the Seas,
to be published by Prentice-Hall, Inc., Englewood Cliffs, New Jersey, in early
fall, 1968: (Pre-publication copy made available for this work through the
courtesy of Clifford C. Nelson, President of the American Assembly).

this interest is quite well documented and international discussion is playing an increasing role. On the other hand, very little information has been published on the actual or potential military uses of the area. Hence the subject has received little international attention and different conceptions of national interest are poorly known. From published information, it can be assumed, however, that the military aspects have played a role in creating the growing concern about sea-bed development possibilities. This assumption is based on the existence and continued development for use in the ocean space of nuclear-fueled, missile-carrying submarines, as well as the interest of marine Powers in submarine and anti-submarine warfare capabilities. These military factors, it would appear from the information available, motivate many research and development efforts concerning the total ocean environment, including the sea-bed and ocean floor. For oceanographic research, this has meant a substantial increase in available funds, equipment and manpower over the last years.

4. In describing the possible military uses of the sea-bed and the ocean floor, it has been considered necessary to differentiate between the relatively shallow water, such as the continental shelf and to some degree the continental slope, on the one hand, and the deep ocean bed, on the other. Some of the mountain peaks and part of the ridges rise far above the deep ocean bed and come close to the surface. Such areas are, in this paper, referred to as deep ocean peaks. It should be pointed out that most of the available indications relate to the shelf and, although this is outside the mandate of the Committee, they are included to show possible trends of military use.

5. This distinction between the shelf, the deep ocean bed and the deep ocean peaks, it has been pointed out, is useful for technical as well as strategic reasons. Technically, the deployment of military weapons and other devices in the region of the continental shelf and the deep ocean peaks, existing information indicates, is either already feasible or will be so in the near future. The deep ocean bed, on the contrary, is an area that so far seems from available published material to be the object of military research and development efforts only. Actual deployment, it has been stated, is probably some time off, although the great intensity of present military interest might possibly affect this picture in the not too distant future.

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6. It is considered more likely that the continental shelf rather than the deep ocean floor would be used first, whether for defensive purposes of the home country or for offensive purposes against a presumed adversary. Not only is the shelf geographically closer, in each case, but the installation, maintenance and surveillance of facilities present much less of a problem on the shelf. This, it has been pointed out, may have important consequences for the possibilities of detection of such facilities and the institution of counter-measures. Also, it has been noted that there are reasons to expect a military interest in the utilization of the deep ocean peaks. Such areas may be fairly shallow, and, therefore, problems of installation, maintenance and surveillance may be possible to solve. From the geographical point of view, at least some of the deep ocean peaks, it has been stated, are so situated as to be of possible strategic importance.

7. Another important distinction which has been drawn with regard to the possible military uses concerns the question of nuclear versus conventional deployment. The nuclear alternative is here taken to comprise the stationing of nuclear weapons on or under the ocean subsoil or anchored to it in some more or less permanent manner. The conventional deployment includes, in a similar manner, conventional weapons as well as military installations of other kinds (sonar, navigational aids, submarine bases, storage facilities, etc.). In the following paragraphs a number of possible examples will be given of nuclear as well as conventional possibilities. Clearly, ~~this will not be a comprehensive and quantitative listing of all possible options.~~ The intention is to provide a qualitative description of the more important development possibilities which have been mentioned in the available literature.

8. It has been pointed out that the subsurface ocean and the ocean floor offer one specific advantage in comparison with land-based installations - that of improved concealment. The ocean is, for most practical purposes, opaque. Satellite surveillance has become a reasonably effective means for recurrent observation of major land-based activities. It is comparatively less effective, however, for following or checking ocean subsurface developments. Other techniques, notably acoustic wave detection, it is stated, offer better possibilities although they are by no means ideal. At present, existing literature indicates, there would seem to be an intensive research and development effort, especially by the major Powers, to improve both submarine detection techniques and concealment counter-measures

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against such possibilities. At present, it has also been stated, there seems to exist a general appreciation that the concealment counter-measures are often more effective than the detection possibilities and that this situation may prevail for some time to come. This conclusion may have special relevance for well-protected military installations on or under the ocean floor.

9. The underwater environment has long been used for concealment of military activities, well-known examples being the deployment of conventional mines and submarines. It has been pointed out that the more recent development of nuclear-fueled submarines has still further enhanced the importance of concealed operation in the oceans. It has become technically possible to fire ballistic missiles carrying nuclear warheads from a submerged submarine. Reference has also been made to the possibility of firing the same or similar kinds of missiles from positions on the continental shelf, as well as to potential further development, e.g. of missiles enclosed in pressure capsules which may open possibilities of using the deep ocean floor (or parts of it) for the stationing of nuclear weapon missiles.

10. One obvious difficulty which has been noted in the stationing of nuclear weapon missiles on the ocean floor is to ensure adequate command and control over such missiles. Several important problems have been instanced. First, no State would like to leave missiles containing nuclear warheads unattended. The possibility of a missile, placed on the continental shelf, or on a deep ocean peak being found and removed by the military forces of another State is not, it had been pointed out, insignificant, especially if a large number were to be deployed. In the future, this same consideration, it is thought, may also come to apply with regard to the deep ocean floor. Secondly, command and control implies maintenance both to ensure that the missiles are fully operational most of the time and to safeguard against technical malfunction of a serious nature. These concerns, it is felt, may motivate manned bases on the sea-bed, and it had been noted that programmes are well under way investigating the possibilities of prolonged stay, at continental shelf depths, of aquanauts.

11. Various possible motives for sea-bed missile bases have been adduced in the available literature. Strategically, nuclear-weapon Powers might, it is thought, find it desirable to replace land-based missile silos with sea-bed bases or silos. Such a shift might decrease the consequences to a nation and its population of a

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nuclear strike against its missile force. Also from the strategic point of view, a shift to missiles based on the continental shelf adjacent to a presumed adversary might make it possible to deploy shorter range missiles, perhaps a shift from ICBMs to IRBMs. This, it has been stated, might be regarded as advantageous from either a technical or economic point of view, or both. The same argument has been used with regard to anti-ballistic missiles. ABMs, deployed on the continental shelf or on a deep ocean peak adjacent to another State, might, it has been pointed out, be capable of intercepting missiles in an earlier part of their trajectory, perhaps before multiple warheads have been separated on their individual routes towards individual targets. Finally, the possibility has also been envisaged that research and development efforts may produce sea-bed missiles that are less expensive to produce and/or maintain than the submarine-based missiles. These are possible considerations which it is thought might motivate an intense military concern with the possible uses of the sea-bed and the ocean floor.

12. Apart from missiles, another possible military use of the ocean floor indicated in the existing literature is concerned with nuclear mines, for offensive or defensive purposes. Defensive mines would, it is thought, probably be stationed adjacent to the coast of the State owning them; offensive mines may be put in the coastal waters of other States. To avoid easy detection, such mines, it is thought, may be kept in readiness close to the bottom, rising to the optimum depth when activated. Again, the obvious problems of maintenance and of command and control have been pointed out.

13. The possible military uses that have been indicated so far are concerned with installations that are affixed to or in the ocean floor and remain more or less stationary on, under or above it. It has, however, been pointed out that research and development is also under way with regard to applications or vehicles that may move around on the sea-bed. Such applications, it is stated, may be designed both for the purpose of nuclear weapon employment and to carry out search and detection operations. Although existing published information does not indicate the stage to which such efforts may have advanced, it is perhaps reasonable to assume that the difficulties involved are greater than those related to stationary applications.

14. A number of conventional military uses of interest in connexion with the ocean floor have also been referred to in the existing literature. (The term conventional

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is here used to mean that nuclear weapon deployment is not directly involved.) The first example is that of sonar systems anchored to the sea-bed. Such systems are designed to use acoustic wave techniques for the detection and recording of moving vessels, whether they be on or under the surface of the ocean. Counter-measures (jamming, false echos, sound-absorbing coating of vessels, etc.) have also been mentioned.

15. Other possible conventional military applications which have been referred to are: different navigational aids, anchored to the bottom; communication facilities; and logistic support installations. The old idea of under-water cities is no longer considered as a mere science fiction idea, although it is recognized that considerable development will be needed for its implementation. A logistic possibility, which is sometimes discussed in the literature, is that of sea-bed bases for nuclear submarines. Such bases could extend the length of time that a submarine may spend under water and thus improve the possibilities of concealed operation.

16. It should be noted that the possible military uses, which have been outlined in the preceding paragraphs, need not all be realistic or militarily attractive. On the basis of available documentation it is, however, impossible to go beyond an outline of possibilities.
