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GENERAL AND COMPLETE DISARMAMENT

Study on the naval arms race

Report of the Secretary-General

1. By resolution 38/188 G of 20 December 1983, the General Assembly requested the Secretary-General, with the assistance of qualified governmental experts, to carry out a comprehensive study on the naval arms race, on naval forces and naval arms systems, including maritime nuclear-weapons systems, as well as on the development, deployment and mode of operation of such naval forces and systems, all with a view to analysing their possible implications for international security, for the freedom of the high seas, for international shipping routes and for the exploitation of marine resources, thereby facilitating the identification of possible areas for disarmament and confidence-building measures. The General Assembly further requested the Secretary-General to submit the final report to the Assembly at its fortieth session.

2. Pursuant to that resolution, the Secretary-General has the honour to transmit herewith to the Assembly the study on the naval arms race.

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* A/40/150.

ANNEX

Study on the naval arms race

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FOREWORD BY THE SECRETARY-GENERAL

1. The present study was carried out by a group of qualified governmental experts appointed by the Secretary-General pursuant to General Assembly resolution 38/188 G of 20 December 1983. In that resolution the General Assembly requested a comprehensive study on the naval arms race with a view to analysing the possible implications for international security, for the freedom of the high seas, for international shipping routes and for the exploitation of marine resources, thereby facilitating the identification of possible areas for disarmament and confidence-building measures.

2. At the outset of the report, the experts recall that some 71 per cent of the earth's surface is sea and over two thirds of the world's human inhabitants live within 300 kilometres of a sea coast. The world's oceans are a major source of protein and energy. They have already played an important role in human exploration and development and can be expected to be of even greater significance to mankind in the future.

3. Since the 1920s and 1930s, when the issues of naval disarmament were last discussed multilaterally, there have been significant changes. In describing the nature of the world's navies, the report sets out the present extent of force capabilities and the asymmetries arising from differing geopolitical and other factors. The report describes the serious implications for international security represented by the increasing deployment at sea of strategic nuclear forces, by the numbers and extent of tactical nuclear weapons and by the recent introduction of long-range, sea-launched cruise missiles which will create further difficulties for the successful negotiation of nuclear disarmament measures. The report also describes the more traditional naval functions and their implications, both beneficial and otherwise, for the uses of the seas.

4. After listing a number of measures of naval disarmament and confidence-building that have have been suggested in recent years, the Group identifies two objectives for action: first, the achievement by negotiation of effective measures of nuclear disarmament at sea within the overall objective of halting and reversing the arms race in general, and second, the investigation of possible ways in which naval organization, capabilities and experience may make positive contributions to the establishment of improved and more effective ocean management policies for the peaceful uses of the world's seas in the years ahead, so that future generations may use to the best advantage the resources of the sea for the benefit of all mankind. The experts' report points to the importance this aspect will assume with the entry into force of the United Nations Convention on the Law of the Sea.

5. The Secretary-General expresses to the members of the Group of Experts his appreciation for their report, which is submitted herewith to the General Assembly for its consideration. It should be noted that the observations and conclusions in the present report are those of the members of the Group of Experts and that the Secretary-General is not in a position to pass judgement on all aspects of the work accomplished by the Group.

LETTER OF TRANSMITTAL

26 July 1985

Sir,

I have the honour to submit herewith the report of the Group of Governmental Experts to Carry Out a Comprehensive Study on the Naval Arms Race, Naval Forces and Naval Arms Systems, which was appointed by you in pursuance of paragraph 1 of General Assembly resolution 38/188 G of 20 December 1983.

The governmental experts appointed in accordance with the General Assembly resolution were the following:

Mr. Ali Alatas
Ambassador
Permanent Representative of Indonesia to the United Nations
New York

Mr. Hervé Coutau-Bégarie
Chargé de conférences à l'Ecole Pratique des Hautes Etudes (IV^{e} Section)
Paris
France

Mr. Deng San Rui
Professor of Naval Architecture
Harbin Shipbuilding Engineering Institute
Harbin
China

Mr. Minko-Mi-Endamne
Ambassador
Director-General of the Law of the Sea
Ministère des Domaines, du Cadastre, de l'Urbanisme
Chargé du droit de la mer
Gabon

Mr. Jorge Morelli-Pando
Ambassador of Peru to Austria and to International Organizations in Vienna

Mr. Jan Prawitz
Special Assistant for Disarmament
Ministry of Defence
Sweden

Mr. Jan Hendrik van Rede
Commodore (ret.)
Royal Netherlands Navy
Netherlands

His Excellency
Javier Pérez de Cuéllar
Secretary-General of the United Nations
New York

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The report was prepared between April 1984 and July 1985 during which period the Group held four sessions, the first from 9 to 13 April 1984, the second from 15 to 26 October 1984, the third from 4 to 15 March 1985 and the fourth from 17 to 26 July 1985. All sessions were held in New York, with the exception of the second session which was held at Geneva.

The members of the Group of Experts wish to express their gratitude for the assistance which they received from members of the Secretariat of the United Nations. They wish, in particular, to thank Mr. Jan Martenson, Under-Secretary-General for Disarmament Affairs, Mr. Derek Boothby, who served as Secretary of the Group, and Mr. L. Dolliver Nelson of the Law of the Sea Secretariat.

In the course of its work the Group decided to commission a number of consultants, either as individuals or on behalf of national institutions, to present papers to the Group and, where practicable, to participate in seminar discussions at the second and third sessions. The members of the Group felt that this arrangement was highly beneficial and an informative means of broadening the Group's knowledge on various aspects of the topic. In this regard, the members of the Group wish to express special appreciation to the following individuals: Mr. Barry Blechman of the Georgetown Center for Strategic and International Studies, Washington, D.C.; Sir James Cable, freelance author on international and naval affairs, Cambridge, England; Dr. Vojin Dimitrijevic on behalf of the Institute for International Politics and Economics, Belgrade, Yugoslavia; Mr. Gunnar Gunnarsson of the Icelandic Commission on Security and International Affairs, Reykjavik, Iceland; Dr. Hiran W. Jayewardene of the National Aquatic Resources Agency, Colombo, Sri Lanka; and Admiral Fernando A. Milia of the Consejo Argentino para las Relaciones Internationales, Buenos Aires. Similar invitations were also extended informally to other national institutions but met with no response.

It is with satisfaction that I am able to inform you, on behalf of all members of the Group, that the report as a whole has been adopted by consensus.

Please accept, Sir, the assurances of my highest consideration.

(Signed) A. ALATAS
Chairman of the Group of
Governmental Experts
to Carry Out a Comprehensive Study
on the Naval Arms Race, Naval Forces
and Naval Arms Systems

CHAPTER I

GENERAL BACKGROUND AND SETTING

1. By resolution 38/188 G of 20 December 1983 the General Assembly requested the Secretary-General, with the assistance of qualified governmental experts, to carry out a comprehensive study on the naval arms race, on naval forces and naval arms systems, including maritime nuclear-weapons systems, as well as on the development, deployment and mode of operation of such naval forces and systems. The same operative paragraph made clear that the study should be carried out with a view to analysing the possible implications of these factors for international security, for the freedom of the high seas, for international shipping routes and for the exploitation of marine resources, thereby facilitating the identification of possible areas for disarmament and confidence-building measures.

2. The present report has been prepared pursuant to that resolution and contains eight chapters. Chapter I is a broad introduction to the subject as a whole; chapter II describes the principal reasons for the development of naval capabilities; chapter III addresses in general terms existing naval forces and naval arms systems; chapter IV considers the applications and uses of naval capabilities; chapter V describes the maritime legal context, in particular the effects of the United Nations Convention on the Law of the Sea (referred to hereinafter as the Convention on the Law of the Sea); chapter VI analyses the implications of these factors for international security and the peaceful uses of the sea; chapter VII attempts to identify possible measures for disarmament and confidence-building; chapter VIII contains the Group of Experts' summary and conclusions.

A. Purposes and objectives of the study

3. Some 71 per cent of the earth's surface is sea, and over two thirds of the world's human inhabitants live within 300 kilometres (km) of a sea coast, yet for the very large majority, the significance of the sea, its resources, its present and potential benefits and the impact of developments at sea apparently deserve only passing consideration.

4. To date, little attention has been paid in multilateral disarmament negotiations to the continuing development of naval forces and naval arms systems and the added dimension and implications this has given to the problems of international security. However, the modernization and expansion of navies and the increased sophistication of naval-based arms systems in general have created new and enlarged operational capabilities, especially among nuclear-weapon States and other militarily significant States, and have given rise to concern among many nations. They are concerned about the possible effects on the prospects for global disarmament and on the freedom of the high seas, the principle of non-interference with international sea communications for trade and shipping and with the economic exploitation of marine resources.

5. One reason for the lack of attention to the naval arms race in multilateral disarmament negotiations has been the difficulty in discussing such matters as long as negotiations on the law of the sea had not been concluded and the legal situation was unclear. The Convention on the Law of the Sea, which was signed at Montego Bay, Jamaica, on 10 December 1982, embodied existing and new principles in the legal régime governing the use of ocean space. 1/ It is now in the process of ratification by States. Once the Convention is in force, discussions pertaining to the issues of the naval arms race, measures for naval disarmament and related questions might thus be carried out on a firmer basis. This matter is addressed in more detail in chapter V.

6. In resolution 38/188 G, the General Assembly has underlined the paramount importance, for the security and well-being of all nations, for international trade and shipping and for the economic exploitation of marine resources, of preserving the freedom of the high seas and of keeping open international sea communications for trade and shipping in a manner consistent with the Charter of the United Nations and with the principles of international law. These considerations, together with recent developments in the law of the sea, are reflected in the purposes of the study, which are as follows:

(a) To draw attention to an aspect of the competitive accumulation of arms which carries major implications for international security;

(b) To describe the various factors and interactive effects of certain major developments in the maritime environment;

(c) To analyse the implications for international security, for the freedom of the high seas, for international shipping routes and for the exploitation of marine resources.

7. The objectives of the study are twofold:

(a) To promote a wider international understanding of the issues involved;

(b) To facilitate the identification of possible areas for negotiation of confidence-building and disarmament measures on the world's seas as a constituent part of the disarmament process as a whole.

B. Relevant principles of the Final Document and the United Nations Convention on the Law of the Sea

8. The Final Document adopted by consensus by the General Assembly at its tenth special session, the first special session devoted to disarmament, in 1978 was of major significance in that it set out an international disarmament strategy. 2/

9. In declaring that the ultimate objective of the efforts of States in the disarmament process is general and complete disarmament under effective international control, the Final Document states that progress requires the

conclusion and implementation of agreements on the cessation of the arms race and on genuine measures of disarmament, taking into account the need of States to protect their security. Among such measures, effective measures of nuclear disarmament and the prevention of nuclear war have the highest priority.

10. The Final Document further states that, together with negotiations on nuclear disarmament measures, negotiations should be carried out on the balanced reduction of armed forces and conventional armaments, based on the principle of undiminished security of the parties with a view to promoting or enhancing stability at a lower military level, taking into account the need of all States to protect their security. These negotiations should be conducted with particular emphasis on armed forces and conventional weapons of nuclear-weapon States and other militarily significant countries.

11. In order to promote the peaceful use of, and to avoid an arms race on, the sea-bed and the ocean floor and the subsoil thereof, the Final Document requested the Committee on Disarmament - now the Conference on Disarmament - to proceed promptly with the consideration of further measures in the field of disarmament for the prevention of an arms race in that environment. In this regard, the Conference on Disarmament was requested to take action in consultation with the States parties to the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (see General Assembly resolution 2660 (XXV), annex).

12. Among the other principles set out in the Final Document, many of which can be seen to have a bearing on limiting and reversing the naval arms race, the General Assembly called for the resolute pursuit of agreements or other measures on a bilateral, regional and multilateral basis with the aim of strengthening peace and security at a lower level of forces. The Final Document suggested that such measures might include bilateral, regional and multilateral consultations and conferences, as appropriate, and consultations among major arms suppliers and recipient countries on the limitation of all types of international transfer of conventional weapons, based in particular on the principle of undiminished security of the parties with a view to promoting or enhancing stability at a lower military level, taking into account the need of all States to protect their security as well as the inalienable right to self-determination and independence of peoples under colonial or foreign domination and the obligations of States to respect that right.

13. As noted above, the Final Document is a disarmament strategy covering all aspects of the arms race. As the naval arms race in itself embraces many of the features of the world's competitive accumulation of arms, the principles cited in the paragraphs above are not the only facets of the Final Document applicable to the naval scene. In fact, it may be said that much of the Final Document can be seen as having direct application to measures to halt and reverse the naval arms race.

14. The Convention on the Law of the Sea does not provide for disarmament measures. It does explicitly uphold the peaceful utilization of the various areas of the sea as a fundamental norm. Under the Convention, peaceful uses of the seas is a recurrent theme: as a general rule (art. 301), on the high seas (art. 88), in the exclusive economic zone (art. 58), on the international sea-bed area (art. 141) and in the conduct of marine scientific research (art. 240).

15. There is also a widespread, but not unanimous, belief that consideration will have to be given to the substantive broadening of naval disarmament agreements which are indirectly but clearly related to the Convention on the Law of the Sea if the principle in the Convention of the peaceful uses of the seas is to be implemented effectively. A case in point is the broadening in scope of the aforementioned Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof.

16. The Convention on the Law of the Sea applies the principle of the peaceful uses of the seas to the high seas and the exclusive economic zone. The waters of both these areas are to be reserved for peaceful purposes. The international sea-bed area shall also be open to use exclusively for peaceful purposes. Its development means in effect the peaceful use of the sea-bed beyond national jurisdiction. This is the reason for the importance of the Convention régime governing the sea-bed and ocean floor and subsoil thereof beyond national jurisdiction (known as the "Area") and its resources as the "common heritage of mankind" (art. 136). This régime provides that activities in the Area shall be carried out for the benefit of mankind as a whole, taking into particular consideration the interests and needs of developing States and of peoples who have not attained full independence or other self-governing status. In this respect, the régime makes an integral contribution to fulfilling the requirements of a new international economic order.

17. The Convention on the Law of the Sea is discussed in greater detail in chapter V, but there can be little doubt that its entry into force, 12 months after ratification or accession by 60 States, will have a major impact on the conduct of international relations related to the uses and exploitation of ocean space.

C. Brief historical background of measures of naval arms limitations and related matters up to 1945

18. Although naval arms limitations have received almost no attention in recent years, such was not the case before the Second World War; in fact, there has been a long history of measures to achieve control and even reductions in naval arms. 3/ One of the early and best-known examples is the Rush-Bagot Agreement of 1817 regarding the naval forces on the North American Great Lakes which demilitarized part of the frontier between Canada and the United States of America. This agreement was very successful and is still in force. The political climate between the two States improved to such an extent that they could later dispense with all military protection of their common border.

19. The Paris Peace Conference of 1856, after the Crimean War, is of interest in three respects. First, the Peace Treaty demilitarized the Black Sea, and the Straits of the Dardanelles and the Bosphorus were closed to warships. Russia and Turkey undertook not to establish or to maintain on their shores any military-maritime arsenals. Furthermore, they were not to maintain in the Black Sea any warships other than six steam vessels, not exceeding 50 metres (m) in length and 800 tons burden, and four light vessels, not exceeding 200 tons each.

Second, the Treaty demilitarized the archipelago of the Aaland Islands in the Baltic Sea and defortified the islands. Third, the Peace Conference adopted a declaration on some basic principles of the law of maritime warfare. The provisions concerning the demilitarization of the Black Sea were, however, almost completely abrogated by a treaty concluded in London in 1871.

20. In 1902 Argentina and Chile, by the Pactos de Mayo, agreed to cancel their orders for war vessels under construction and to give notice in advance of any new construction. This agreement functioned successfully for the following six years and temporarily halted a naval arms race in the area.

21. In 1907 thirteen conventions were adopted at The Hague, almost all of them on the law of warfare and neutrality and eight of them (Nos. VI to XIII) on the law of naval warfare. The subject-matter dealt with by the different conventions included automatic submarine contact mines, bombardment by naval forces and the humanitarian principles of the Geneva Convention of 1906 adapted to war at sea.

22. In 1920 a treaty concluded at Paris gave Norway full sovereignty over the Spitzbergen (Svalbard) archipelago. Norway on its part undertook "not to create nor to allow the establishment of any naval base in the territories specified". According to the treaty, the archipelago "may never be used for warlike purposes".

23. In 1921 a conference convened by the League of Nations adopted a Convention on the Aaland Islands. The Convention reaffirmed and extended the non-fortification rules of 1856 and introduced a régime of neutralization in case of war. The result is a régime of demilitarization applicable to a defined zone, i.e. the Aaland Islands and a three-mile-wide zone surrounding them.

24. The Washington Conference on the Limitation of Armaments in 1921-1922 resulted in a number of limitations on the naval armaments and certain activities of the contracting Powers, namely the United States of America, the British Empire, France, Italy and Japan. The Naval Treaty, adopted on 6 February 1922, introduced quantitative, qualitative and numerical restrictions on large warships. For instance, the capital ships that could be retained were listed by name; limitations were placed on capital ship and aircraft-carrier replacement tonnage; maximum individual tonnage limits were fixed for capital ships and aircraft-carriers; limits were placed on gun size; and agreements were made on the exchange of certain information and on the transfer of warships to other States. The Treaty also contained a clause (art. XIX) the sense of which was to forbid new fortifications or naval bases on islands in the Pacific except as specified, e.g. in Australia, New Zealand and Hawaii.

25. Another treaty adopted at the Washington Conference on 6 February 1922 laid down specific rules governing the use of submarines in warfare. These rules, popularly known as the Root Resolution, prohibited surprise attacks on merchant vessels and imposed certain standards on submarine operations, standards which were seen as an "established part of international law". However, this treaty never entered into force.

26. The London Treaty for the Limitation and Reduction of Naval Armaments, of 22 April 1930, contained further restrictions (quantitative and qualitative) relating to warships. The London Treaty also contained a restatement of the Washington rules on submarine warfare (art. 22). It was laid down in the Treaty that this article - being declaratory of international law - should remain in force without limit of time. Accordingly, when the Treaty of 1930 expired at the end of 1936, article 22 remained in force. However, in view of the last paragraph of article 22, which states that the Contracting Parties invite all other Powers to express their assent to the rules embodied in this article (e.g. submarines may not sink merchant vessels without having first placed passengers and crew in a place of safety), a new document was drawn up. This was the famous London Protocol of 6 November 1936, which incorporated verbatim the provisions of article 22 of the Treaty of 1930. A considerable number of States acceded to this Protocol, but in the event, submarine commanders during the Second World War were given instructions not to abide by its rules.

27. The question of the Turkish straits, the Dardanelles and the Bosphorus, was paid considerable attention during the inter-war period. A separate Straits Convention was concluded in 1923. Among other things, the Convention created demilitarized zones along both shores of the straits within which no military establishments could be maintained. This arrangement was abrogated in 1936 when a new Straits Convention was concluded at Montreux. However, the Montreux Convention, laid down elaborate provisions with respect to the passage of merchant vessels and warships in times of peace and in times of war. For example, in times of peace the maximum aggregate tonnage of foreign naval forces in transit, except the forces of the Black Sea Powers, must not exceed 15,000 tons, and individual warships cannot exceed 10,000 tons, except for courtesy visits at the request of the Government of Turkey. Warships of Black Sea States enjoy a more favourable status. 4/ All the States parties continue to adhere to the provisions of the Convention.

28. The arms control measures mentioned above, as well as some further examples of naval arms control arrangements prior to 1945, are listed in annex I.

D. The sea and its resources and their value to mankind

29. Use of the sea for the benefit of mankind is as old as the history of the human race, but it has been only in the past 500 years that the oceans have been used to any large extent for purposes other than local fishing or exploration.

30. With the development of the ocean-going sailing ship came the development of overseas trade and, subsequently, the age of colonialist expansion. Other than as a medium of travel and transport, however, the sea and its resources have not been generally used for the benefit of mankind until the present century, parallel with the general technological development in the world. Even now, many significant benefits from the vast resources of the sea still lie beyond human reach due to the natural hazards of the element and the technological challenges of overcoming them. All the more reason, therefore, to establish a climate of greater

international security, mutual trust and co-operation within which the resources of the sea can be developed to meet some of the growing social and economic needs of the world's human population.

1. Fisheries

31. Fish is a major source of protein and as such is an important part of the human diet almost everywhere, particularly in some developing countries where it is often the main source of animal protein to supplement rice or maize. It provides nearly one quarter of the world's supply of animal protein. If countries are ranked by reliance on animal protein derived from fish, 39 of the first 40 places are occupied by developing countries. 5/

32. The main fishing grounds producing three quarters of the world's total catch are:

The temperate and sub-Arctic waters of the North Atlantic and North Pacific;

The continental shallows of the same oceans;

The areas off the western coasts of the continents of Africa and the Americas (between Chile and California) where cold, nutrient waters rise to the surface.

Of the 1983 catch of 76.5 million tons, 67 million tons was harvested from the sea. 6/ At present more than 95 per cent is caught within 200 miles of shore. In other words, almost all the total fish catch is taken from less than 35 per cent of the world's sea area (see annex III, map 1).

33. The years since 1945 have seen much-improved techniques with the introduction of electronic equipment to find fish, accurate navigational equipment, automated gear handling, high-capacity freezing equipment to conserve the catch over long periods of time and increased propulsion power in fishing vessels. In addition, the introduction of industrial fishing to produce fish-meal for use as fertilizer and animal feedstock and self-contained factory fishing fleets have led to much larger catches than was thought possible 40 years ago.

34. In some cases these improved methods have resulted in overfishing in certain parts of the oceans; sometimes natural events such as shifts in sea-water currents have led to scarcities of fish. For example, between 1975 and 1980 the catch of North Sea herring dropped from 3.7 million to 675 thousand tons, and that of pilchards off the south-west African coast from 1 million to 12 thousand tons. 5/

35. The present global average consumption annually is 11.6 kilograms (kg), but if this average is to be maintained in the face of the anticipated increase in the world's population, the world's annual fish catch will have to be over 100 million tons by the year 2000. The Food and Agriculture Organization of the United Nations (FAO) estimates that with proper management, and after the recovery of depleted stocks, a steady level of 100 million tons could be reached for conventional species. Greater catches would be possible by using resources at present not used or not fully used, such as squid, mesopelagic fish and krill.

36. The advent of 200-mile exclusive economic zones, introduced by the Convention on the Law of the Sea, will provide a new dimension to national rights and duties and present a number of States with opportunities to exploit new resources but also with problems of how to develop maritime capabilities to protect their interests and enforce the obligations of other States fishing in their respective zones. In turn, the development will also present a number of other States with the problem of how to maintain access to traditional fishing grounds with historic rights which will now fall under different jurisdiction. One example of new arrangements has been the establishment in January 1983 of a common fisheries policy for the European Communities, providing, inter alia, for yearly decisions on the allowable catch of each type of fish for each member State.

37. Globally, a major event was the FAO Conference on World Fisheries Management and Development held in Rome from 27 June to 6 July 1984. The Conference adopted a resolution entitled "The Strategy for Fisheries Management and Development" comprising guidelines and principles which are to be taken into account by Governments and organizations when planning and implementing fisheries management and development. The Conference also approved an integrated package of five Programmes of Action to assist developing countries to increase fish production and improve their individual and collective self-reliance in fisheries.

38. In sum, it may be seen that ocean fisheries represent a major resource. With an increasing human population there will be rising demands for protein from the sea which will best be met by a judicious use of modern technology and methods and a combination of international and national management of available and potential fish resources. Furthermore, the increased rights and duties of States in their respective exclusive economic zones arising from the Convention on the Law of the Sea will stimulate significant national interest in and requirements for the development of improved methods and tools for management in the respective areas of the fishing industry.

2. Mineral resources of the sea-bed

39. Four categories of minerals can be identified:

Group I — Liquid and gaseous substances such as petroleum, gas, condensate, helium, nitrogen, carbon dioxide, water, steam, hot water, sulphur and salts extracted in liquid form in solution. This group includes important sources of energy and will be discussed in paragraphs 40 to 42 below.

Group II — Minerals which occur under the sea-bed at depths greater than 3 m - unlikely to be recovered until low-grade deposits more easily available on land are nearing exhaustion.

Group III — Ore-bearing silts and brines. Massive amounts have been found in four deep basins on the floor of the Red Sea, but the high costs of extracting iron, zinc and copper make exploitation uneconomic at present.

Group IV Useful minerals occurring as polymetallic nodules on the surface of the sea-bed or under it at depths less than 3 metres, mixed with calcareous and siliceous oozes. This group includes phosphorite nodules, found more frequently on the continental margin, and manganese nodules, located on the deep sea-bed in certain parts of the world.

40. The exploitation of the resources of the deep sea-bed was the subject of much discussion and negotiation during the preparation of the Convention on the Law of the Sea. Using the term the "Area", meaning the sea-bed and ocean floor and subsoil thereof beyond the limits of national jurisdiction, the Convention declares in part XI that the Area and its resources are the common heritage of mankind, and it sets out provisions governing activities in the Area. International support for the Convention, although very considerable, was not completely unanimous. The principles were accepted, but some of the objections from a number of industrialized countries concerned the effects of the provisions of part XI.

3. Energy from the sea and the sea-bed

41. Since the first production of oil offshore out of sight of land, in the Gulf of Mexico in 1947, the technical ability to exploit offshore oil and gas fields has been greatly developed. The great increases in oil prices in the 1970s further spurred offshore exploration as it made locations more economic to develop. In addition, rapid consumption of this non-renewable source of energy led to a vigorous search for new deposits. The present result of all these efforts is a strong offshore oil industry that, in 1983, produced more than 26 per cent of total world production. It has been estimated 7/ that the annual expenditure by the offshore oil industry is about $US 40 billion and that by 1990, production will be about 24 million barrels per day at an annual expenditure of over $100 billion.

42. Future crude oil discoveries are expected to fall roughly into three categories: one third on land, one third offshore on the outer continental shelf and one third offshore in deep water and polar regions. 8/ A large proportion of the offshore potential hydrocarbon basins has been identified as lying within the 200 miles of the exclusive economic zone agreed to under the Convention on the Law of the Sea, and many nations will be keen to develop the deposits that may lie in their national jurisdictional areas.

43. Offshore coal has been mined for many years, usually through the use of extended coal-seams dipping under the sea from land. However, significant quantities of coal have been discovered lying at great depths under the continental shelf in many parts of the world which, although inaccessible with present-day technology, may be exploited in the future by gasification techniques.

44. There are also renewable energy sources, such as tidal energy, wave energy, salinity gradients and sea thermal power. It has been estimated that the oceans absorb about three quarters of the solar energy received by the planet. Successfully harnessed, the oceans could provide enormous and potentially inexhaustible energy sources for the future.

4. Sea-borne trade and shipping

45. The sea provides another asset of considerable value to mankind - its service as a medium for the international exchange of goods and people. Sea transport is significantly the least expensive means of moving large quantities of commodities over long distances, and sea-borne trade accounts for over 80 per cent of international trade by volume. Notwithstanding the world-wide recession, in 1982 an estimated total of 3,273 million tons of goods were moved by sea, of which 1,793 million tons were dry cargo and 1,480 million tons were liquid hydrocarbons. 9/ A transport task of about 13,699 billion ton-miles was performed by merchant ships at an average freight cost of 0.6 cents per ton-mile (see annex III, map 2).

46. The major commodities transported are crude petroleum and petroleum products, iron-ore, coal, grain, bauxite and alumina, and phosphate in bulk. Of dry cargoes, about 50 per cent are mixed products known as general cargo. This includes fruit, meat and other foodstuffs, manufactured goods, chemicals and raw materials. Shares of sea-borne trade in 1982 are shown in the following figure.

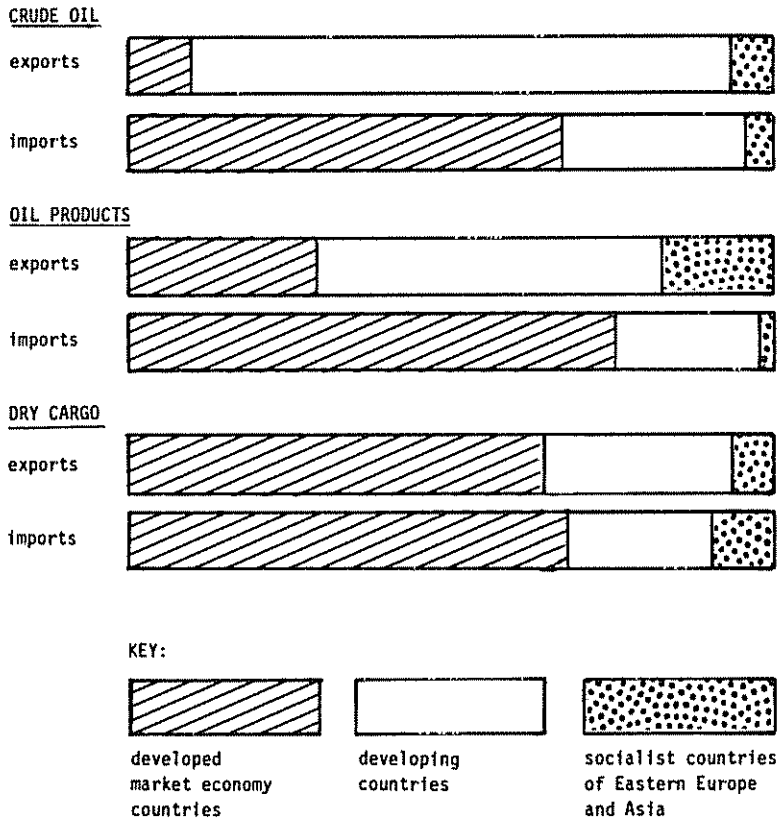
47. The world merchant fleet increased from about 33,000 ships in 1971 to some 37,000 ships in 1983. Of the 1983 total, measuring some 686 million in deadweight tonnage, the developed countries owned just over 47 per cent, open-registry countries 29.1 per cent, developing countries 15.3 per cent and socialist countries of Eastern Europe and Asia 7.9 per cent. 10/ The division of sea-borne trade is under active discussion in the context of the United Nations Convention on a Code of Conduct for Liner Conferences which entered into force on 6 October 1983 and which may be expected to have considerable effect on future distribution of cargoes. An impression of the comparative amounts of sea-borne trade may be gained from the following:

	Percentage tonnage of world fleet
Tankers	44.1
Bulk carriers	24.7
General cargo	16.5
Combined bulk/tankers	7.1
Container ships	2.1
Passenger/ferries	0.4
Vehicle carriers	0.5
Barge carriers	0.1
Others	1.2

Source: United Nations Conference on Trade and Development "Review of Maritime Transport, 1983" (TD/B/C.4/266), p. 11.

Figure. Shares of sea-borne trade in 1982

(shown as a percentage of international sea-borne trade)



Source: Derived from "Review of maritime transport, 1983", United Nations Conference on Trade and Development (TD/B/C.4/266), table 3.

48. An important role in the field of governmental co-operation concerning international sea-borne trade is played by the International Maritime Organization (IMO). IMO has two major objectives. The first is the adoption and application, through international co-operation, of the highest practicable standards for ensuring maritime safety, efficiency of navigation and other shipping operations and the prevention of maritime pollution from ships and from dumping and, thereby, also ensuring the promotion of the availability of efficient and reliable shipping services for the commerce of the world. The second objective of IMO as a specialized agency of the United Nations is to promote programmes of technical co-operation with the developing world with a view to providing assistance in the endeavours of developing countries to build up their technical maritime capability as well as adequate and efficient national merchant marines and ports.

49. IMO has promoted the adoption of over 30 international conventions and treaty instruments, 27 of which are currently viable internationally. IMO has also adopted a large number of codes and recommendations concerning maritime safety and the prevention of pollution. In addition, the organization devotes a considerable part of its efforts to helping the developing countries by means of an expanding technical assistance programme.

5. Pollution

50. Mounting concern has been expressed in recent years at the rise in pollution in the world's oceans and associated seas. The Convention on the Law of the Sea (art. 1, para. 1 (4)) defines pollution of the marine environment as:

> "... the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities".

51. Although much of the open oceans remain as yet not seriously threatened, this is not the case closer to shore. The major sources of marine pollution, accounting for some 80 per cent, are land-based activities. Chemicals enter the sea from coastal industries and via rivers, e.g. insecticides and fertilizers from agricultural run-off; or by atmospheric deposit; or by dumping at sea of chemical wastes. Heavy metals are carried down rivers from mining operations and industrial processes. Sewage is discharged into the seas either directly from sewage systems or dumped from barges. Oil and other petroleum products find their way to the seas as a result of accidental spillage, industrial waste, urban run-off or deliberate tank-cleaning operations by ships. Radioactive pollution occurs from industrial outfalls, dumping of packaged industrial radioactive waste, discharge of low-level nuclear waste from coastal nuclear installations or from earlier nuclear tests.

52. Measures to limit and control marine pollution have been the subject of several multilateral efforts, both within and outside the United Nations and it is clear that these will have to be continued if the value of the seas to mankind is

to be protected. Maritime forces, both afloat and air-borne, can and do provide considerable assistance in pollution control, particularly in areas of prime responsibility ascribed to States in the Convention on the Law of the Sea. The International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL), which was modified by the Protocol of 1978 relating thereto (generally referred to as MARPOL 73/78), provides the basis for such action.

CHAPTER II

DEVELOPMENT OF NAVAL CAPABILITIES

A. Motivations for States to develop naval capabilities

53. A widely respected authority on the definition of sea power and its uses, Admiral Alfred Thayer Mahan of the United States Navy, wrote at the end of the nineteenth century that he regarded the sea as "a great highway" for commercial and military transport. 11/ Giving a historical perspective to his survey, in Mahan's view navies had two purposes - to protect commerce and to promote the interests of trading nations by the acquisition of trading stations, colonies and bases in foreign lands.

54. While States no longer use sea power to acquire colonies, in essence the motivations ascribed by Mahan remain valid today, almost 100 years later. As may be seen from earlier paragraphs, many States have major interests in sea-borne trade, in the continued viability of shipping routes and in the protection of those routes and the ships that ply them in times of peace and war. The preservation of sea lines of communication during war can become vital to a nation's survival, as can the denial of the use of the sea to adversaries. Traditionally, this has been the principal motivation for acquiring naval capabilities. States that have identified the need for a maritime strategy, and have been able to afford one, have taken steps to develop naval forces accordingly. Another motivation for States to acquire naval capabilities has been to protect themselves from aggression from the sea or from the effects of piracy.

55. However, the modern world is significantly more complex than the world of 100 years ago. The decline of colonialism and the emergence of many sovereign States, each with its own responsibilities and interests, together with a refusal to accept the continuance of the previous political and economic order, have been major and irreversible developments. The continued increase in the world's human population, the much increased levels of industrialization and technological advance, and the needs for social and economic progress - particularly in developing countries - have created new demands and necessitate fresh methods and arrangements to meet the new challenges.

56. The changes in the uses of ocean space and the exploitation of the sea's resources, identified in the 1960s by the international community and now embodied in the Convention on the Law of the Sea, will bring new rights and responsibilities to many States and the need to police and protect them. There are therefore additional motivations for States, including those that may not previously have had any naval capabilities, to develop such forces.

57. Separately, the existence of a much greater number of sovereign States and their inherent rights of self-defence are likely to lead to perceptions on the part of some that naval capability is required in order to be able to exercise those rights and to resist interference and intervention, particularly in the absence of an effective system of international security.

58. Above all, the most significant technological change has been the advent of nuclear weapons. The sea has now become the operational environment of ballistic missile submarines, each of which has been estimated to be carrying the equivalent of more explosive power than was used by all the combatants in the Second World War. The combination of missile and warhead design, nuclear propulsion power, highly accurate navigation and guidance systems and sophisticated hull design and construction techniques has provided the opportunity for the development of an entirely new naval capability of awesome specific purpose.

59. The spur to deploy such capabilities, and to continue to improve them, has been the political confrontation between certain major Powers and their respective allies, which has been in evidence since 1945. In order to maintain the effectiveness of those strategic nuclear forces and the levels of general-purpose naval capability that each side has considered to be necessary, naval forces of significant strength - and cost - have been developed.

60. The motivations for developing naval capabilities are thus several. They vary from local self-defence to the potential for strategic nuclear use; from preparation of the capacity for overseas intervention to establishment of seaboard protection and security; from traditional protection of commerce and national interests to newly established areas of exclusive economic jurisdiction. In addition to these major reasons there are other aspects, such as national prestige, the protection of territorial integrity, affirmation of an overseas presence, support for friendly or allied States, defence against subversion by sea, coercion and intimidation of adversaries or efforts to counterbalance adversaries' ability to take action in a certain area. Naval forces also continue to be used in the context of the global rivalry between the two leading nuclear-weapon States and their allies. Together, and according to differing national economic strengths and assessments of priorities, these factors lead some States to expend considerable resources on the development of naval forces and weapons.

61. The possession and continued development of maritime forces in all their forms constitute a part of the global arms race, the overall cost of which was estimated to amount to over $800 billion in 1984. 12/ Though national security and the needs of self-defence are recognized to be of prime importance to States, such a sum represents a massive diversion of valuable resources away from helping to meet the economic and social needs of a troubled world. Furthermore, by using for military purposes large amounts of human effort, material and financial resources which could be used more productively elsewhere, expenditures on arms and armed forces often represent a significant burden on the economic health of a country.

B. Sea power in the general political, economic and security context

62. It is generally agreed by writers on maritime strategy that sea power encompasses many interlocking elements. Mahan identified six factors as being necessary for a State to develop a naval capability: geographical position (astride sea lanes); physical properties (natural harbours etc.); extent of territory (large enough to support a navy but not so large as to encourage a continental strategy); number of population; national character; and character of Government (willing to support a maritime policy). With such factors, a State would have the constituents for the development of merchant shipping and a beneficial overseas trade, the acquisition of bases and for the construction of a navy to protect the sea lines of communication. A more modern commentator, S. G. Gorshkov, Admiral of the Fleet of the Soviet Union and Commander-in-Chief of the Soviet Navy, has described a State's sea power as possibilities for the State to explore the ocean and harness its wealth, the status of the merchant and fishing fleets and their ability to meet the needs of the State and also the presence of a navy matching the interests of that State. 13/ In this sense, naval forces per se are part of a wider, more comprehensive sea power which can have significant political, economic and security implications. Primarily, however, it remains true that a naval force is a declaration by a nation that it has specific maritime interests and has the political will to protect them.

63. In common with other instruments of military force, navies have to be designed, built, equipped and trained for war yet spend most of their time in a peacetime environment. Their purposes and tasks in peace often differ from those in war. While a State will endeavour to give primacy to its navy's preparedness and effectiveness in war, in practice various compromises often have to be made to accommodate the conflicting requirements of peacetime responsibilities. The general contexts of naval forces need therefore to be considered in these two different sets of conditions although there are inevitably functions which are applicable to both.

64. A fundamental distinction exists between war on land and war at sea. Historically, at issue on land is the actual possession and occupation of territory, whereas at sea the issue is the unhampered use of the sea. The oceans do not, in general, lend themselves to the notion of occupation but are infinitely available as a medium of communication. Thus, the objective of first obtaining and then maintaining maritime superiority - preferably by decisive battle - becomes a matter of achieving the unhampered ability to use the sea for one's own purposes and/or of denying that use to one's enemy. Having achieved that condition in ocean areas that are considered vital, naval force can then be used to promote and protect such interests and priorities as the State considers necessary to the success of its wider politico-military aims on land, such as successful invasion of foreign territory, effective blockade of an enemy's sea-borne supplies or movements, or assuring a State's own logistic supply routes of food and war materials. In political terms, therefore, supremacy at sea is not an end in itself. Ultimately it may be a means of ensuring national survival or a means towards the end of achieving victory on land. From this general position, it follows that States which consider their security in war to depend on unhampered use of sea lines of communication will take steps to develop a naval capability to

safeguard those lines. In so doing, they may develop naval forces which are perceived as capable of threatening the security or interests of other States, thus leading to the construction of a naval force, to counter the perceived threat. The result can be a naval arms race, a phenomenon which history has witnessed before and which is at present being repeated.

65. In peace, naval forces have several roles. In the first instance, a strong naval force capable of operating far from its home bases offers a significant capacity for becoming involved in regional disputes or conflicts. Its presence and strength therefore provide options for action, either by vigorous involvement or coercion or as a restraint on action by others which would not be available if such a force did not exist. This role, and its attendant ability to support land or air operations against shore targets if necessary, is known as "power projection".

66. The unique characteristic of naval power is that influence can be exercised by simple presence in an area without necessarily having to land any forces on the territory of another State. Naval influence in peacetime environment is often exercised not by actively denying use of the oceans to others but by ensuring their availability to one's own maritime traffic and to that of other nations. This activity is the role of "naval presence", whereby the knowledge that a force of warships is consistently in the area becomes a factor in the politics of the region. Thus, such elements as protection of interests, naval presence abroad (often exercised by courtesy visits to foreign ports known as "showing the flag") and maritime policing are seen by maritime States as important naval functions. The demonstration of the ability to deploy sea power in all its forms - naval force, merchant shipping, oceanographic vessels, fishing fleets etc. - can make a deep political impression, particularly now that the development of maritime resources is becoming the subject of increased national and international attention.

67. The possession in peacetime by maritime powers of naval forces sufficiently strong to carry out their wartime tasks constitutes a factor that has its own momentum. The average hull-life of a warship is at least 20 years and some will serve over 30. A new class of warship can take 10 years from its design to operational service. The provision of a naval force available to perform its allotted war tasks can therefore involve large economic resources in peacetime. Research and development, production, fitting-out, upkeep, maintenance, modernization and replacement particularly in these days of high-technology weapon systems and equipment, have become a very expensive and persistent commitment. These expenditures are quite separate from the very considerable costs of manpower, at sea and ashore, and the day-to-day operating costs of naval forces.

68. Above all other considerations, the advent of nuclear weapons and the decision to use the oceans as the medium for the deployment of a large number of strategic and tactical nuclear-armed forces have introduced an entirely new and particularly dangerous element into naval operations. Although these weapons are in the hands of five nations, they nevertheless can carry grave implications for the security of all. The nature of the strategic nuclear deployments by the navies of nuclear-weapon States will be discussed later in the report.

C. Levels of navies

69. The world's navies are of differing sizes, strengths and compositions, reflecting the different strategies, responsibilities and economic strengths of States. For the purposes of this study, it is convenient to consider navies to be at three levels:

(a) World-wide navies, those that can be, and often are, deployed in most oceans of the globe on a continuous basis. Such operations necessitate reliable access to overseas bases and friendly port facilities, a strong logistic support system and sufficient numbers of warships to be able to maintain a presence far from home notwithstanding the need for regular periods off-task for maintenance, repair, refit and modernization. At present only two States possess such navies: the United States and the Soviet Union;

(b) "Blue-water" navies, those that are normally deployed in waters surrounding the State concerned, although often out to a significant distance from shore, and which also possess the capacity to conduct occasional deployments and limited operations in force distant from bases at home. There are perhaps some 15 navies that may be considered to be at this level.

(c) Coastal navies, those that are almost exclusively deployed in waters immediately adjacent to a nation's land territory executing traditional naval tasks such as maritime self-defence, protection of sovereign interests in territorial waters, protection of national economic interests in offshore waters, maritime policing and counter-smuggling duties, local search and rescue etc. Such navies may undertake only occasional deployments further afield and then usually in small numbers for courtesy visits. Most navies are at this level, although there exists a wide range of capabilities.

70. A numerical comparison between the navies of the Soviet Union and the United States has only limited use as each State has its own historical background and geopolitical situation which have given rise to different maritime strategies. The United States is bordered by two oceans and has extensive coastlines which, for the most part, are ice-free and permit access to the open sea at all times of the year. The Soviet Union, on the other hand, has a very large land area with restricted access to the oceans, and much of its coastline is subject to severe ice conditions each year. Historically, the United States has been a significant naval power for many years whereas the Soviet Union has developed long-range naval capabilities comparatively recently, although the Soviet Navy has been numerically large for much longer. Both countries, like many others, have significant interest in maintaining the principle of the freedom of the high seas and the right of innocent passage through territorial waters.

71. The development of massive sea-borne strategic nuclear forces by each State, and the activities which that development has involved in the sense of each countering the perceived threats of the other, have had a considerable influence on the composition and mode of operation of their forces. Again, however, there are significant asymmetries which render numerical comparisons of doubtful value. In addition to their strategic nuclear missions, both navies are deployed on a

world-wide basis and have a potent capacity for general operations far from their home waters. It is their ability to conduct a strategic nuclear exchange, the possibility of conflict at sea including the use of tactical nuclear weapons and their capacity for intervention abroad that cause concern on the part of many other States.

72. The "blue-water" navies vary considerably in size, as do the States themselves, and in military capability. Some of the States concerned still have territorial responsibilities in distant parts of the world or arrangements with friendly States which involve naval manoeuvres and exercises from time to time. In a number of cases the States depend heavily on sea-borne trade and open sea lines of communication which they would seek to defend in time of war in order to survive. Three States (China, France and the United Kingdom) possess maritime strategic nuclear forces and, presumably, also a tactical nuclear weapon capacity. These capabilities, although small in comparison with those of the Soviet Union and the United States, nevertheless form part of the world's stock of nuclear weapons.

73. Finally, over 125 nations are capable of carrying out almost solely coastal operations although many to only a very small degree. Again, the navies vary considerably in size and fire-power, and numerical comparison would be of little value. Although some warships and weapons are not modern and the total naval capability of a State may be minor, it may well be quite sufficient for the limited tasks set by national policy. In other cases, however, modern ship design, together with up-to-date sensors and weapons, provide very effective capabilities over a restricted distance. For example, highly accurate missiles can be put to sea on small and inexpensive ships and thereby can constitute a significant naval force in a limited engagement. Despite increasing facilities for indigenous production in various parts of the world, most of these navies, particularly those of developing countries, are often dependent on arms suppliers abroad for ships and much naval equipment as well as for training assistance.

D. Transfers of naval arms

74. There are many reasons for States to consider it necessary to have some form of naval force. The composition of the force, its size, the numbers of vessels and other components and the capabilities of its weapon systems vary according to the tasks it may be called upon to perform. However, for other than comparatively simple warships, the large majority of nations often have to seek shipbuilding and weapons expertise elsewhere. There is therefore a thriving international market in the transfer of naval arms.

75. The major factors involved in the supply and demand of conventional weapons were described in the United Nations study on all aspects of the conventional arms race and on disarmament relating to conventional weapons and armed forces, presented to the General Assembly in 1984. 14/ On the supply side, the factors range from the continuous escalation of the arms race and the military buildup by the major Powers, through attempts to exert political influence or ensure the supply of raw materials, to straightforward commercial profit or improvement in the supplier's balance-of-payments situation. Arms transfers are also used to help

supplier nations finance the research and development and subsequent production of arms. On the demand side, the factors include the requirement to satisfy legitimate needs for self-defence or other responsibilities, the acquisition of military capability, the ambition for local or regional superiority and - on a broader level - the continuing uncertainty in certain regions about the future of regional and international stability.

76. There are also transfers arising from arrangements within alliances or for military co-operation such as gifts, offsets, co-production, standardization, technical co-operation and the transfer of technology. Within the context of naval arms transfers, it is also important to bear in mind the causes and consequences of the transfers themselves and of the associated technology. In the national production of arms in some developing countries, one of the results is an increase in joint arms industries manufacturing arms or components under licence.

77. The range and value of the transfers of naval arms are difficult to assess with accuracy partly because information is incomplete due to the sensitivity of many States on such matters; partly because announced intentions of sale, purchase or transfer are not necessarily carried through to conclusion; and partly because the basis for calculating value in a world of variable exchange rates is highly unreliable. For these reasons, the following statistics should be regarded with caution; they serve only to illustrate general trends. In the first place it is useful to note the increase in the numbers of potential recipients. The index of the publication Jane's Fighting Ships, an internationally recognized and respected source of naval information, listed 67 navies in the period 1958-1959, 91 in 1966-1967, 135 in 1976-1977 and 143 in 1984-1985. Most of this increase reflects the emergence of newly independent States.

78. According to the United States Arms Control and Disarmament Agency, the number of arms delivered to developing countries, cumulative 1978-1982 by selected supplier and major weapon type was as follows:

Table 1. Naval arms deliveries to developing recipients, cumulative 1978-1982

(WTO: Warsaw Treaty Organization;
NATO: North Atlantic Treaty Organization)

	Supplier							
Naval craft	Total	USSR	Other WTO	USA	France	UK	Other NATO	China
Major surface combatants a/	125	32	5	27	17	13	31	-
Other surface combatants b/	497	134	7	97	48	35	155	21
Submarines	20	8	-	1	2	-	7	2
Missile attack boats	94	53	-	-	16	6	11	8

Source: United States Arms Control and Disarmament Agency, World Military Expenditure and Arms Transfers 1972-1982 (Washington, D.C., April 1984), p. 99.

a/ Major surface combatants include aircraft carriers, cruisers, destroyers, destroyer escorts and frigates.

b/ Other surface combatants include motor torpedo boats, submarine chasers and minesweepers.

79. As with other conventional weapons, there has been a noticeable increase in the demand for the most modern weapons, including anti-ship guided missiles, the delivery of which has provided relatively small coastal navies with a significant increase in war-fighting capabilities.

80. International stability is at risk due to many factors, among which there is sometimes a disproportionate increase in arms transfers, both quantitative and qualitative in nature and tending to disseminate at the global level high-level weapon technology. Despite the declarations of the General Assembly in the Final Document of the Tenth Special Session, held in 1978, that the limitation and gradual reduction of armed forces and conventional weapons should be resolutely pursued within the framework of progress towards general and complete disarmament, (para. 81), and that consultations should be carried out among major arms supplier and recipient countries on the limitation of all types of international transfer of conventional weapons (para. 85), no such consultations have taken place. As with other conventional weapons, the transfer of naval arms has continued unabated.

CHAPTER III

NAVAL FORCES AND NAVAL ARMS SYSTEMS

A. Major developments in the past 50 years

81. Navies had changed significantly by the end of the Second World War. The battleship, the capital ship in 1939, had to yield to the aircraft-carrier. Battles were fought over the horizon without the opponents ever exchanging gun-fire. Grouped around the aircraft-carrier, other vessels acted as escorts or provided shore bombardment during landing operations. The submarine underwent great changes as well. The invention of the snorkel (a device extended from just below the surface permitting the submarine to take in air and so operate its diesel engines to recharge its batteries) enabled it to remain submerged for long periods, which was essential if it was to survive against radar-equipped surface vessels and aircraft. At the same time, however, the development of radar and of acoustical detection devices underwater (sonar) greatly enhanced the detection capabilities of surface ships, submarines and aircraft.

82. These transformations were relatively minor compared to what was to come. Since the 1950s navies have experienced such profound developments that their appearance has completely changed. Nuclear energy, electronics and new weapons systems have improved the capabilities of navies to levels inconceivable 30 or 40 years ago. Recent reports suggest that further new developments are imminent, the consequences of which are still difficult to evaluate.

B. The nuclear revolution

83. Of all the changes that have taken place, those linked to nuclear energy are doubtless the most significant and have multiplied the capabilities of naval vessels and the weapons they carry. The most impressive demonstrations of this

revolution are clearly the development of nuclear energy for propulsion purposes and the development of nuclear-armed intercontinental ballistic missiles (ICBMs) for deployment on board nuclear-powered submarines, as described in paragraphs 102 to 106 below.

84. Atomic energy is also used for propulsion in some vessels, particularly in submarines. It is estimated that there are at present over 550 nuclear-power reactors installed in ships or submarines, which is more than are installed on land although of course the latter have a significantly greater aggregate power output.

85. Nuclear-powered submarines are completely independent of the surface, and their independence is limited only by the physical and psychological endurance of their crews. Formerly often the weapon of countries not able to control the seas by surface forces, the submarine is now a major component of the most powerful navies. Submarine performance has improved tremendously. The first nuclear submarine, the USS Nautilus, commissioned in 1954, achieved speeds of over 20 knots and could dive to a depth of 200 m. The development of the tear-shaped hull, hydrodynamically more efficient, and the installation of more powerful reactors made it possible to reach 30 knots in later series. Now, titanium hulls, better hydrodynamic characteristics and even more powerful reactors in some present nuclear submarines make possible speeds in excess of 40 knots and dives to 1,000 m and deeper.

86. Nuclear submarines have thus become a most formidable weapon of naval warfare in that they can often outrun any surface ship and foil pursuit by using the depth of the sea to evade detection. However, the nuclear submarine is at present beyond the technical and financial reach of nearly all countries. The traditional diesel-powered submarine still presents certain advantages. Being both smaller and often quieter underwater than its nuclear counterpart and easier to use in shallow waters, it is more difficult to detect in coastal areas. It is also less expensive to build and to maintain.

87. Nuclear power has not been developed so extensively in surface vessels. Because of special requirements, such as the nuclear technology and specialized welding techniques, nuclear-powered vessels are about twice as expensive as traditional ones and require higher skills to construct and to operate. The United States has four aircraft-carriers and nine cruisers which are nuclear-powered. According to Jane's Fighting Ships 1984-85, the Soviet Union has built two nuclear-powered heavy cruisers, and a nuclear-powered aircraft-carrier is under construction; in addition, it has three nuclear-powered ice-breakers in service and a fourth under construction. France plans to use nuclear power in its new aircraft-carrier due to be operational at the end of the next decade. Other than the ice-breakers mentioned above and three experimental commercial vessels, nuclear propulsion has remained the exclusive preserve of warships.

C. The electronic revolution

88. Before 1940, ships differed from country to country only in numbers, the quality of their construction and certain mainly quantitative aspects: engine power, size of guns, thickness of armour and so forth. Comparisons between navies were therefore relatively easy, and the Treaty of Washington in 1922 was able to impose limitations on the displacement and weapons equipment of vessels, features that were specific and easy to verify. Now such comparisons are much more difficult. The decisive criterion for evaluating the effectiveness of a vessel and the weapons it carries is no longer quantitative but qualitative; in this respect a major element is the electronic systems that govern all operations, from navigation to communications and from detection to guidance.

89. Electronic equipment has become an essential part of navigational aids. Inertial navigational systems, first used in missiles, are now widely in operation in submarines which no longer need to surface in order to fix their position. They still need to update their inertial guidance system from time to time by means of information provided by satellites. Surface vessels also increasingly use navigational satellites.

90. Satellites are also used for communications, where they are extremely important. Fleets no longer operate independently of their bases but are in constant contact with shore, sending and receiving a density of traffic over very great distances that only satellite transmissions make possible.

91. Communication with submarines has long been a problem as normal radio waves do not effectively penetrate water. Up to now for transmission, submarines have used aerials that pierce the water's surface and for reception, wire antennae (wire floating on the surface); such devices are far from ideal as any floating object, no matter how small, can be detected. The use of extremely low-frequency transmissions, which are able to penetrate water much more efficiently, is being developed although the technical difficulties are still far from solved.

92. With regard to detection, radar remains the primary sensor above the surface. There are many types of radar: surface and air surveillance, height-finding, navigational and so forth. With air-borne radar surveillance, surface ship formations are able to establish a detection zone around themselves reaching out more than 700 km. With the use of integrated computers, target identification and tracking data information is sent to a tactical information processing system that can indicate the options of weapons appropriate to deal with the threat. There is now also increasing use of satellites for detection purposes, either for photographic intelligence using high-resolution camera equipment or using advanced technologies such as heat-sensing devices or very sensitive radar.

93. Below the surface, sonar is the most important detection system. Modern active sonar equipment can be operated from ships, submarines, helicopters or devices dropped by aircraft. Whether the sonar devices are ship-borne or towed (sonar devices towed below the surface so as to avoid surface layers where sound transmission is bad), active sonar range can reach over 30 km under favourable conditions. Whereas active sonar transmits underwater pulses and then collects

return responses, passive sonar is in effect a listening device that does not make its own transmissions. Passive sonar enables submarines to listen to external underwater noises without revealing their own presence through transmissions. In general, passive sonar has a much longer underwater range than active sonar. However, the sea environment is so diverse that a quiet submarine hiding in a cold-water layer still has a good chance of eluding detection. In practice, nuclear submarines are often the best vehicles to carry out anti-submarine operations, and several countries have developed specially designed classes of submarines for this purpose. In order to increase their chances of avoiding detection, submarines are sometimes coated with a special anechoic surface material that absorbs some of the sonar striking it, and any internal machinery that may vibrate is suspended on special mountings.

94. The electronic revolution has also given birth to another very important facet of naval warfare, electronic countermeasures (ECM), by use of which potential targets endeavour to evade detection, or to conceal their true positions and movements or to confuse incoming attacks by missiles or other weapons in such a way as to render the attacks unsuccessful. ECM devices and techniques vary widely. Some are comparatively simple, such as the jamming of enemy radar transmissions, while others demand a very high degree of technology and extremely specialized equipment. Various electronic countermeasures exist which, if used in time, can seek to turn missiles aside but which can also be neutralized by electronic counter-countermeasures (ECCM).

D. Weapons systems

95. Technological developments have profoundly altered the weapons carried by warships. The missile is now often the standard main weapon, replacing the gun, and there are many types with a wide variety of missions. Since the first models were introduced in the 1950s, missiles have become much lighter and been much improved. Deployed in submarines, surface vessels, helicopters and aircraft, they can be used against surface, air, sub-surface and land targets. There are also missiles that change their medium, for example, starting off as missiles above the surface and becoming torpedoes below the surface. Missiles have various types of guidance systems, ranging from inertial systems to radar or infra-red sensors, usually with an active homing device for the final approach.

96. Missiles can be entirely independent once they are fired, known as "fire-and-forget", or they may be guided for part of the trajectory, either by the initial launching platform or by a relay guidance vehicle, such as a helicopter. Each type has advantages and disadvantages. The fire-and-forget missile is limited in range (out to the horizon, i.e. 40 km) and its trajectory cannot be corrected, but it allows the launching platform to minimize its exposure to counter-attack by the target. Other missiles are equipped with on-board computers and guidance systems which assume control once the target is within the missile's detection range. The development of long-range supersonic missiles is well advanced and first deployments have begun. The speed of these missiles rules out any midcourse trajectory corrections, and reaction time for the target is dangerously short. This will considerably increase the threat zone around a warship: today a vessel needs to monitor everything taking place within a radius of several dozen kilometres, but that radius will probably have to increase in the coming decades to several hundred kilometres.

97. Guns have not entirely disappeared, however. Missiles are too expensive for minor or undefended targets. Furthermore, guns are often more effective at short range, against low-flying targets and in shore bombardment. Guns have been restored to ships from which they had been removed, and they are now often mounted in automatic turrets without crews and have high rates of fire. Recent experience has shown that close-range guns can, in some cases, shoot down incoming missiles as a last line of defence.

98. Although a trend towards the deployment of more missiles in submarines is now emerging, missiles are not yet the principal weapons of such vessels. The main weapon of the submarine continues to be the torpedo, although it can also be carried in surface ships, aircraft and helicopters. During the Second World War, a torpedo's useful range was perhaps between 2 and 3 km at best, whereas wire-guided torpedoes are now capable of hitting targets up to 50 km distant. Torpedoes can also be equipped with search systems and homing devices that can distinguish between the real target and decoys.

E. New technologies

99. Research now under way will probably again transform navies. One of the most significant developments is anaerobic propulsion, using the principle of closed-cycle combustion, which should enable non-nuclear submarines to remain submerged several weeks (rather than today's several days); new hull designs that should reduce the tonnage of deep-sea vessels without reducing their performance; and unconventional vessels, such as surface-effect vessels, that could upset the balance of forces between surface vessels and submarines by virtue of their very high speed. Very great efforts are being made to improve submarine detection and tracking; rapid advances in computer technology and communications equipment produce constant progress in command, control, communications and intelligence; and missile guidance and effectiveness are constantly being improved.

100. It is still too early to assess the impact of the most recent improvements and of future innovations. It is already clear, however, that they will continue to strengthen the qualitative side of the naval arms race. Missiles are become increasingly available, which makes it possible for navies that had been considered coastal up to now to acquire fire-power capabilities equivalent in part to some of the blue-water navies. Technological developments beginning in the late 1940s and continuing into the 1970s, led to a concentration of naval force in the hands of a small number of countries that were the only ones able to afford and develop complex and expensive navies, in particular nuclear submarines and aircraft-carriers. Now, however, the situation is more diverse. Not only are the navies of the United States and the Soviet Union, and those of their allies, in competition, but naval power itself is becoming more diffuse and these developments will certainly have profound consequences on the security of the seas.

F. Existing forces

101. The following description of existing naval forces is for illustrative purposes only. It is compiled from open, published sources which are not necessarily completely reliable nor are they accepted by all States as authoritative. The details given are intended as a general description of the sizes, capabilities and numbers of various naval forces and naval arms systems. The information is not exhaustive and should not be interpreted as making any form of numerical comparison; indeed, the wide disparities of size, age and weapon-fit between ships that may appear to be of the same class may make comparisons widely misleading. The purpose of the description in the following paragraphs is to shed some light, for the reader who may be unacquainted with naval affairs, on the extent and complexity of naval forces. To the well-informed it will be clear that the description of naval units and systems is incomplete, but for others it is hoped that the content will be sufficient to present a broad picture of naval forces and their capabilities.

1. Strategic nuclear forces 15/

(a) Ballistic missile nuclear submarines

102. The numbers of ballistic missile nuclear submarines (SSBNs) are as follows:

USA	USSR	France	UK	China
6 OHIO	3 TYPHOON	6	4	2
19 LAFAYETTE	36 DELTA			
12 FRANKLIN	23 YANKEE			

(Note: The above figures for the Soviet Union and the United States show those SSBNs within the bilateral Strategic Arms Limitation Talks (SALT) Agreement. New construction is under way or being planned and, separately, the Soviet Union has a number of smaller, older SSBNs outside that Agreement. The United States announced on 10 June 1985 that, as the seventh OHIO-class SSBN puts to sea later in 1985, an existing LAFAYETTE/FRANKLIN SSBN will be deactivated and disassembled according to agreed procedures in order to remain within the unratified SALT II limits.)

103. SSBNs vary in size, e.g. from about 8,000 displacement tons in the case of the British and French vessels to 18,000 displacement tons for the OHIO class and some 25,000 displacement tons for the TYPHOON class. They normally operate, it is believed, in the North Atlantic, North Pacific and Arctic Oceans, usually remaining on submerged patrol for over two months at a time. Although most SSBNs have two crews which go to sea on alternate patrols in order to maximize the operational availability of the submarines, it is believed that in normal peacetime conditions owing to periods of maintenance, major refit, modernization and trials, about half the SSBNs are operationally available at any one time.

(b) Submarine-launched ballistic missiles

104. The numbers of submarine-launched ballistic missiles (SLBMs) are as follows:

USA	USSR	France	UK	China
640 a/	928 b/	96	64	24

a/ Mid-1985.

b/ Early 1985.

Most SSBNs carry 16 missile tubes, although the Soviet TYPHOON class of SSBNs is reported to have 20 and the United States OHIO class 24. Missile ranges vary from about 3,000 km to about 8,000 km. The longer ranges permit operations closer to protected home coasts. The number of warheads per missile varies according to missile type but is between 1 and 14. For the most part, United States SLBMs carry more warheads than Soviet SLBMs resulting, it is believed, in a significant numerical superiority in favour of the United States, although superiority in individual weapon yield is believed to lie with the Soviet Union. Most modern SLBMs in service in United States and Soviet SSBNs have multiple independently targetable re-entry vehicle (MIRV) capabilities. Target accuracy is constantly being improved, but as yet sea-launched ballistic missiles are believed not to have the accuracy of land-based ballistic missiles. In the next few years technological advancements in the matter of accuracy will undoubtedly continue to be made. Of the combined United States and Soviet potential totals of 3,992 strategic missiles (ICBMs and SLBMs), 1,568 of them - or some 40 per cent - are sea-borne. It has been estimated 16/ that there are more than 7,200 SLBM strategic nuclear warheads distributed among the navies of the five nuclear-weapon States, by far the large majority being on board United States and Soviet SSBNs.

105. Until the end of the 1970s it was generally believed that SSBNs were invulnerable. As there was doubt about the ability of strategic bomber aircraft to penetrate anti-aircraft defences and the capacity to carry out missile launches from land in time of surprise attack, SSBNs appeared to be the most stable element of deterrence. Furthermore, the development of more accurate missiles provides SSBNs with a precision capacity against specific targets previously reserved to bombers and land-based missiles.

106. Advances in anti-submarine warfare, the entry into service of improved "hunter-killer" or "attack" submarines, very fast and quiet submarines, and the constant improvement in detection devices have aroused certain doubts regarding the maintenance of invulnerability. Such apprehensions are largely exaggerated: the extent of the zones that must be surveilled in order to find SSBNs on station is immense, and it has been further enlarged by the extension of the range of new missiles. Furthermore, underwater detection remains very difficult. The probability that a significant number of submarines on patrol can be destroyed is thus very slim, and this situation seems likely to last at least until the next decade, a major technological breakthrough appearing improbable. None the less, such perceptions have contributed to acceleration in the naval programmes of the United States and the Soviet Union.

2. Other nuclear-weapon systems at sea

107. Separate from strategic nuclear forces, a wide variety of other nuclear weapons is available for maritime use - either at sea or against coastal targets. These weapons include short-range ballistic missiles, cruise missiles, short-range non-ballistic missiles, bombs and depth-charges. Depending on type, such weapons can be carried operationally by aircraft-carriers, battleships, cruisers, destroyers, frigates, submarines, anti-submarine warfare (ASW) aircraft, ASW helicopters, attack aircraft and fighter aircraft. It has been estimated 17/ that there are in existence some 5,900 tactical nuclear warheads for use by naval forces against ships, submarines, aircraft and land targets. Annex II describes the functions and characteristics of some of those weapons. Such weapons are now widely in service in the naval forces of the nuclear-weapon States, although very largely concentrated in the navies of the Soviet Union and the United States. The nature of the weapons themselves, and continued technological advances, often make it impossible for the external observer to tell whether or not a particular ship, submarine or aircraft is carrying such weapons and, if so, the number that might be on board.

3. Sea-launched cruise missiles

108. Sea-launched cruise missiles (SLCMs) warrant a particular mention. The Soviet Union has deployed shorter-range SLCMs (500 km or less) for several years for anti-ship use, but in 1984 long-range SLCMs (over 2,000 km) began to appear in service in the navies of both the United States and the Soviet Union. Capable of being launched from submarines and, in the case of the United States, from surface ships, and capable of carrying either nuclear or conventional warheads, these weapons represent a major new addition to the capabilities of the navies concerned. It has been announced that the United States SLCM will have three versions of which two will have conventional warheads and one will have a nuclear warhead. The nuclear version will number some 758 (out of the total of almost 4,000) and will be for use against land targets. It has also been announced that SLCMs will be deployed in battleships, cruisers, destroyers and attack submarines. Details of deployments intended by the Soviet Union are not known, but the Soviet version has been said to be deployed in submarines; it, too, has the dual capability of either nuclear or conventional warheads.

4. Conventional naval forces 18/

109. There are very wide ranges in naval strengths and effectiveness. While simple comparison of numbers certainly is a primary indicator of naval strength, there are many other factors which have an important bearing on the calculation of a State's naval capabilities, such as political and financial constraints; the amount of operational sea time; the extent of training; the number of ships in refit or reserve; the age of hulls, propulsion systems or weapons. The human element is also very important, including such aspects as the qualities of professional naval leadership at various levels, the average length of service of the personnel, the geographical factors relevant to the naval tasks, the extent of maritime interests and tradition etc.

110. Although there are differences in nomenclature and other details from publication to publication, in general there is agreement on assessments of naval strength. Table 2 below contains information on a selection of the larger navies of the world, according to one widely recognized source. It should be noted that sizes and capabilities vary widely within ship types. For instance, aircraft-carriers can vary in size from 13,000 to 90,000 tons with significant variations in the numbers and types of aircraft carried. Similarly, the capabilities of a small diesel submarine cannot be compared with those of the advanced types of nuclear-powered attack submarines now in service in some navies. There are therefore many difficulties in assessing naval capabilities, and comparisons are highly unreliable. For these reasons, the information that follows should not be regarded as absolute but rather as illustrative and indicative of trends.

(a) Large surface combatants

111. For the purposes of this study, it is sufficient to include under the heading of large surface combatants all surface warships of frigate size and above. They may then be subdivided into aircraft-carriers (see paras. 113-116), battleships and cruisers, destroyers and frigates. Only one navy operates battleships, that of the United States which at present has two and by 1988 expects to have four in service. All four ships were built in the early 1940s but have been recently (or are being) reactivated and equipped with modern weapons and equipment, including sea-launched cruise missiles. The Soviet Union has constructed two new battle-cruisers, significantly larger than traditional cruisers and with a wide variety of modern weapons and sensors. At a lower level than battleships and battle-cruisers, cruisers are a powerful component of a naval force, providing a platform for missiles, guns, helicopter operations, detection and communications equipment and good facilities for fleet command and control.

112. Many navies possess destroyers and/or frigates. Varying considerably in size (generally between 2,000 and 7,000 tons), age, weapon-fit and other equipment, they perform many of the long-standing naval tasks described in chapter IV. It is often not possible to differentiate between destroyers and frigates, particularly in recent years, and in general they are classified by the primary function for which they are best equipped, e.g. ASW frigate.

(b) Naval aviation

113. Several nations have significant naval air forces. Sometimes these operate from aircraft-carriers, which may have a variety of missions, or from ships with other landing platforms, but there are also several States that have few or even no aircraft-carriers yet operate strong naval air power from bases on shore. Naval aircraft include fighters, bombers, anti-submarine aircraft, electronic warfare aircraft, air-borne early-warning aircraft, tankers for in-flight refuelling, reconnaissance aircraft and a wide variety of helicopters. Helicopters are particularly useful in anti-submarine operations, for which they are carried on many ships down to frigate size, and in amphibious assault operations.

Table 2. Selected conventional naval strengths (active service) a/

	Aircraft-carriers b/	Battleships	Cruisers	Destroyers and frigates	Corvettes/FAC c/ (missile)	FAC (torpedo)/ FAC (gun)	Submarines (excl. Ballistic Missile Subs.)
Argentina	1	-	-	11	7/-	2/2	3
Brazil	1	-	-	18	16/-	-/3	7
China	-	-	-	41	14/222	250/345	103
France	2	-	2	43	-/5	-/-	19
India	1	-	1	28	3/16	-/-	8
Indonesia	-	-	-	10	-/4	2/-	2
Italy	2	-	2	19	8/-	4/-	10
Japan	-	-	-	52	-/-	5/-	14
Spain	1	-	-	26	5/-	-/-	9
Sweden	-	-	-	2	-/30	6/-	12
Turkey	-	-	-	17	-/14	5/1	17
Union of Soviet Socialist Republics	4	-	41	263	59/105	10/-	279
United Kingdom	2	-	4	56	-/-	-/-	27
United States of America	14	2	28	168	-/-	-/-	99

Source: Jane's Fighting Ships 1984-85, pp. 150-151.

a/ Excluding ships in reserve or under construction or modernization.

b/ The term "aircraft-carrier" is used in a broad sense; some of the vessels so classified carry mostly helicopters. The Soviet classification is "tactical aircraft-carrying cruiser".

c/ Fast Attack Craft (see para. 129 below).

114. Effective control has been seen to demand effective control of the adjacent airspace. In this sense, since the 1940s the aircraft-carrier has superseded the battleship as the capital ship of naval surface forces. The largest aircraft-carriers are at present operated by the United States Navy. Displacing over 90,000 tons at full load, they are over 330 m (1,000 feet) in length, nuclear-propelled, carry over 90 aircraft and a total naval and air crew of over 6,000. The USS Theodore Roosevelt, the fourth ship of its class, is at present being built and is expected to cost well over $2 billion. The Soviet Union has been reported 19/ to be constructing its first large aircraft-carrier in a shipyard on the Black Sea. Believed to be nuclear-powered and about 65,000 tons, the ship will reportedly be able to carry about 60 aircraft.

115. Conventionally powered aircraft-carriers carry several thousand tons of fuel oil. In order to provide greater wind over the deck when operating, the ships often have to proceed at close to maximum speed, and their consequent high fuel consumption rates necessitate refuelling at sea every few days. Nuclear-powered aircraft-carriers require reactor refuelling every 10 to 13 years, and therefore their operational endurance depends more on the fuel consumption rates of their aircraft and the consequent need to replenish ship-borne supplies.

116. Fully equipped with aircraft catapults and arresting gear, large aircraft-carriers are so costly that the majority of navies which possess them are obliged to forgo their replacement, notwithstanding their advantages. If the present trend continues, in several years only three States will retain such ships. However, this does not signify the end of sea-borne airpower for other countries. A worthwhile replacement solution is the much less costly helicopter-carrier which can also operate aircraft capable of vertical or short take-off and landing (V/STOL). The performance of these aircraft has improved considerably in recent years. Several countries already have them in service and more countries seem likely to acquire them.

117. The importance of naval aviation continues to increase with the growth of aircraft anti-ship missiles which have demonstrated their possibilities in recent conflicts. More and more countries have equipped themselves with such weapons which present a major threat to all ships out to 200 or 300 km from the coast. On the other hand, several maritime States have long-range maritime patrol aircraft capable of sustained endurance and of tracking their targets over a wide sea area. Some of these traditionally anti-submarine aircraft are now being equipped with missiles, giving them an anti-ship capability and additional defences against surface vessels.

(c) Submarines

118. The underwater speed and endurance of conventionally powered submarines is strictly governed by the available power from electric batteries which have to be recharged by diesel generators every few days, for which the submarine has to snorkel or surface. However, with nuclear submarines this is not the case, as they are able to operate without the need to surface at frequent intervals, and underwater patrols are limited more by other factors such as food and air for the crew. Thus, nuclear submarines can remain submerged for over two months, operate

under ice for long periods or circumnavigate the world without surfacing. Nuclear submarines are also capable of much higher underwater speeds than conventional submarines - at best, over 40 knots compared with about 21 knots.

119. For the most part, ballistic missile submarines are nuclear-powered. For many years the Soviet Union has also deployed various classes of cruise missile submarines, first conventionally propelled and then nuclear-propelled, carrying missiles with ranges of up to 650 km.

120. Most submarines are attack submarines, equipped to hunt and destroy either ships or other submarines. All five nuclear-weapon States have both nuclear-powered and conventionally powered attack submarines in service, although in the case of the United States almost all its submarines are nuclear-powered. At present, all other States have only conventional submarines.

121. In addition to the 111 SSBNs shown in paragraph 102 above, it is estimated that there are more than 800 other submarines (in round numbers, more than 200 nuclear and some 600 conventional) serving in the navies of the world. At the opposite end of the scale from the very large submarines, there are very small submarines with crews of only two or three and used for inshore operations. There are also unmanned bottom-crawling devices that operate on the sea-bed.

(d) Amphibious forces

122. The troops involved in amphibious assaults are often marines. Some States regard such troops as part of naval strength, some regard them as army personnel and others consider them separate from either. Amphibious operations often require vessels with quite different capabilities from those involved in purely naval operations. They must be able to carry heavy equipment, including tanks, and accommodate large numbers of troops with the weapons and other supplies needed to achieve a successful landing. The ability to land quickly large quantities of ammunition, petrol, oil, lubricants, food, communications equipment, field hospitals, field kitchens etc. is vital. Recent years have seen the rapid development of the ability to use helicopters for amphibious operations. The transportation capabilities of appropriate commercial vessels, in some cases pre-planned, can be of significant assistance in supporting such operations.

123. Some of the largest amphibious ships are able to open doors at the rear and flood the stern to provide docking bays for smaller landing craft to ferry vehicles and troops from ship to shore. Others are designed to be "roll-on/roll-off" for vehicles or are specially strengthened to accommodate tanks, such as the Soviet ROGOV class of vessel. The largest amphibious ships, some 39,000 tons full load, are operated by the United States and provide comprehensive control of assault forces, weapons, sensors, landing craft and electronic warfare. At the other end of the scale, there are many individual landing craft of between 60 and 300 tons. Also now being introduced are air-cushion vehicles of some 150 tons, gas-turbine powered and able to operate up to 3 or 4 feet above the sea surface with ranges of up to 500 km and speeds in excess of 40 knots.

124. Amphibious operations need not be large-scale to be significant from a security point of view. There are also low-level operations which, carried out in coastal waters, harbours, river estuaries etc., might be referred to as "brown-water activities". Such activities have as their purposes amphibious infiltration, intelligence-gathering or sabotage and may use small and mini-submarines, other submerged vehicles and swimmers.

(e) Mine operations

125. For many years offensive mining has been recognized as one of the least expensive and most effective means of denying the use of the sea area to an enemy. The mining of areas through which an enemy must pass in order to achieve his objective has on several occasions had major results in the form of disruption of the other side's activities; there have been recent instances of mine interference with the use of the world's seas by commercial shipping.

126. Mines may rest directly on the sea-bed or may be moored to it. The methods used to activate and explode the mines establish them as contact- or influence-mines. The former explode when in physical contact with the target ship or submarine. The latter are actuated by certain influences, such as magnetic, acoustic or pressure effects caused by the target. It is also possible to create firing systems that combine any of these effects, thus permitting small targets to pass but actuating when targets of a certain size come into range. In addition, mines can contain counters so that they remain dormant until a specified number of targets has passed. Mines may be laid by aircraft, submarines or ships, including merchant ships.

127. Mine countermeasures are not easy. Minesweeping can be either by mechanical means, in which sweep wires armed with cutters are towed behind minesweepers and sever the mine mooring cables, or by influence means, in which devices are used to trick the mine into exploding harmlessly. Mine-hunting is a different method, whereby high-resolution sonars locate and identify underwater objects as mines or non-mines, and then the objects can be exploded or divers or remote-controlled vehicles can be put down to take appropriate action.

128. Most navies have at least limited minesweeping or mine-hunting capacity and a few have sophisticated equipment. Of the world total of over 1,000 minesweepers and mine-hunters, it has been reported that the Soviet Union possesses by far the largest single proportion, amounting to about one third of the total. The United States mine countermeasures capability rests largely with some 23 minesweeping helicopters, but plans have been announced to buy 44 new mine countermeasures helicopters and to support them with about 30 mine countermeasures ships.

(f) Fast Attack Craft

129. A type of vessel which is of particular value to many coastal navies is the Fast Attack Craft (FAC). Generally of about 100 to 200 tons displacement, about 50 metres in length and carrying a crew of some 20 to 30 personnel, these craft are comparatively inexpensive. Powered by diesel engines or gas turbines, they can be hull vessels or hydrofoils and can be capable of speeds of up to 55 knots. Fitted

with light guns, missiles or torpedo tubes they can be used in a variety of coastal roles, but they do not have prolonged endurance or ocean-going capacity for very heavy weather, although there is now a definite trend towards the construction of larger vessels. According to Jane's Fighting Ships 1982-83, there are at present more than 2,000 of such craft in service in the navies of the world. Separate from these vessels, there are also some 2,500 other coastal and patrol craft which, although armed, cannot be considered as Fast Attack Craft.

5. Support services

(a) Seagoing logistic support

130. Extended operations at sea demand efficient and reliable logistic support. Navies which are sufficiently large and well organized to be able to contemplate such operations require supplies of fuel of various kinds, ammunition, food and general supplies, and the ships carrying them, in turn, have to be defended. The result is that the navies of the United States and the Soviet Union, and some of the blue-water navies mentioned earlier, have developed considerable numbers of seagoing replenishment ships, tankers, specialized repair and maintenance vessels, missile support ships and miscellaneous craft. The larger the navy and the more its long-range commitments, the greater - and more costly - its support organization must be. Indeed, any navy which seeks to become a blue-water navy has to develop such logistic support capabilities.

131. Merchant ships in commercial use are not part of naval strength, but some States have an integrated command structure controlling all merchant ship activities, with close association, at the time of ship design and construction, between fleet requirements and the ability of the class of ship concerned to meet some of those or other demands if and when so required. Thus, the provision of cargo-hatch sizes of certain dimensions, a specific crane capacity, repair facilities or helicopter landing facilities may have more to do with potential military use than with normal commercial operation. It is also possible to design containers of weapons systems or maintenance equipment that can be placed on board merchant ships at very short notice. The ability quickly to divert merchant ships to naval-support activities in time of war is a naval asset of very great value and one that is really available only to States possessing a flag merchant fleet of substantial size.

132. Large or medium-sized navies also have the services of certain specialist ships. The importance of anti-submarine warfare (ASW), particularly strategic ASW (i.e. the detection and tracking of SSBNs) has led to a considerable need for better knowledge of the contours of the sea-bed, the direction and speed of ocean currents, the salinity and temperature of the sea at various depths, the movements of sea-ice and other oceanographic details. Separately, there are requirements for powerful ice-breakers, missile-range instrumentation ships, salvage vessels, deep-sea rescue vessels, ocean-going tugs, intelligence-gathering vessels, cable-repair ships, submarine tenders and a large number of auxiliaries and harbour craft. All these are part of the seagoing "tail" that lies behind the effectiveness of the "teeth" of the warships themselves. Table 3 gives some impression of the extent of certain afloat support forces.

Table 3. Support ships and craft

	Depot repair	Survey research ships	Supply	Tankers	Miscellaneous
Brazil	2	15	1	4	76
Canada	1	3	3	1	46
China	16	39	22	34	450 plus
France	6	7	2	6	190
Indonesia	4	4	-	5	35
Italy	7	3	1	9	103
Japan	3	6	1	25	80
Spain	-	6	-	13	125
Union of Soviet Socialist Republics	80	144	7	59	360 plus
United Kingdom	3	13	5	20	191
United States of America	25	15	33	47	1 300 plus

Source: Extracted from Jane's Fighting Ships 1984-85, pp. 150-151.

(b) Support facilities abroad

133. In addition to seagoing logistic support, warships operating far from home waters require extensive and reliable logistic support from shore in one form or another. Aircraft-carriers and other ships may not have to enter port very often, but their need for logistic support is constant. However, all ships need port facilities from time to time in order to carry out maintenance and repair tasks that cannot be performed at sea, to undergo longer periods of upkeep or overhaul and to allow their crews periods of off-duty time for relaxation. It is also highly important to reduce as far as possible passage time between the operating area and the base. For such pragmatic reasons as these, navies with overseas commitments find it necessary to establish naval bases abroad or at least to have access to support facilities, quite apart from other reasons that may arise from political considerations.

134. Once established, in order to be effective, considerable financial investment is required to provide the facilities needed and keep them up to date, for example alongside berths, jetties, cranes, workshops, stores, fuel tanks, buildings and often facilities for aircraft. Thus developed, foreign naval bases quickly become not only practical sources of fleet support but also strong focal points of military presence and power in areas far distant from the home territory of the navy concerned and they are often perceived by other States as visible demonstrations of the projection of political power.

135. The number of major naval bases abroad has diminished sharply in the past 20 years. Whereas there used to be several such bases in various parts of the world, they are now reduced to a small number and in their place bilateral arrangements have been developed between sovereign States for the provision of much simpler naval support facilities.

(c) Command, control, communications and intelligence

136. All navies require considerable administrative and organizational infrastructure ashore - headquarters staffs, training facilities, dockyards and maintenance facilities, ammunition depots, refuelling and fuel storage facilities, food and general-stores yards. These can be extensive and costly. But navies also require effective arrangements to facilitate control at various levels over the naval activities taking place far from the centres of political decision-making in capitals.

137. Known as "command, control, communications and intelligence" (C^3I), the complex webs involved can be regarded as the nerve systems of military activities. The functions are threefold: warning and threat assessment, command and decision, and supporting communications. The warning and threat assessment function requires a large variety of sensors such as radar, sonar and other detection equipment. Information from such detections is passed to control centres, whether ashore, at sea or in the air. At these centres the information is assessed, command decisions are taken, and orders are sent out as necessary. Transmitting the information and instructions to whatever level is appropriate is the task of the communications function, requiring an extensive network of transmitting and receiving equipment and trained personnel capable of handling large amounts of urgent signal and data traffic, often on a real-time basis. Such a network also has to have sufficient capacity to be able to perform its tasks under conditions of high stress and action damage.

138. Modern C^3I systems in use in the larger navies include the use of satellites for gathering intelligence and for maintaining reliable and secure communication channels; air-borne surveillance, warning and communications systems; underwater detection and communications systems; tactical information and control systems; and an ever-growing use of high-speed computers. The cost of achieving the necessary degree of co-ordination is very high and represents an increasing share of the overall defence budgets of the Soviet Union and the United States. As an illustration of the importance given to this aspect, the total cost to the United States Department of Defense of C^3I in all its military services has been estimated to comprise over 6 per cent of the 1984 United States defence budget. 20/

CHAPTER IV

APPLICATIONS AND USES OF NAVAL CAPABILITIES

A. Deployment and modes of operation

139. From the discussion so far it may be seen that naval forces vary widely in numbers and capabilities and therefore in their ability to carry out certain tasks. It is evident that the navies of the Soviet Union and the United States are able to deploy very powerful forces composed of modern vessels and aircraft carrying highly potent weapon systems of advanced technology. Such forces are to an extent also available to certain other States although not in the same strength and composition. The deployments of naval vessels and the duties such vessels are called upon to perform are many and varied. Although only a few States possess extensive naval capabilities, most navies can carry out some of these functions even if only to a limited extent.

B. Strategic nuclear deterrence

140. Within the overall strategic nuclear policies of the States possessing such weapons, the mission of strategic nuclear deterrence is of prime importance among modern naval tasks. As indicated in paragraph 102 above, this mission is carried out by the SSBNs of the navies of only five States, and the strategic nuclear forces available to the United States and the Soviet Union are significantly greater than those available to the other three. Operating in the northern hemisphere, the development of missiles with increased accuracy and greater range is permitting these submarines to remain closer to their home bases, where they can be given greater protection, than used to be the case.

141. Much effort is made to ensure the invulnerability of SSBNs on patrol and to avoid any chance of their being detected and trailed. At the same time, efforts are constantly made to locate the SSBN forces of the potential adversary; known as strategic ASW, the extent of the research and development, unceasing surveillance and operational attention expended on this issue clearly indicate its sensitivity and significance to the countries concerned. A technical breakthrough in this area by one side or the other, thereby resulting in a major advantage, would have highly destabilizing effects.

C. Power projection

142. Power projection by navies was described briefly in paragraph 65 above and the possible nature of amphibious operations in paragraphs 122 to 124. Power projection on a large scale in support of forces on shore is generally a role available to only a very small number of navies, owing to the specialized nature of the vessels and equipment needed. Although commercial ships can be used as hospital ships and troop transports, "roll-on/roll-off" ferries can transport vehicles, and container ships, with some modifications, can serve as helicopter-carriers or even as decks for vertical take-off and landing (VTOL) aircraft, such ships have to be present in the merchant fleets of the State

concerned. This requisite therefore demands that the State wishing to exercise power projection will already be a State that possesses the attributes and naval assets of a maritime country.

143. However, on a much smaller scale it is possible for coastal navies to mount limited power-projection operations. For example, such operations may be very appropriate in countries where overland communication is difficult and where sea and river routes may be the best ways to deliver military force where it is needed.

D. Sea control and sea denial

144. In the event of a widespread naval conflict between the navies of the two alliances, NATO and WTO, many of their resources would be devoted to the functions of sea control and sea denial. Owing to geopolitical features, the members of NATO are very dependent on their sea lines of communication and, similarly, the Pacific Ocean is of major importance to links between the United States and States on the western rim of that ocean. The Soviet Union, on the other hand, a continental State, does not have open access to the world's oceans except through comparatively restricted "choke-points", particularly from the Baltic Sea into the North Atlantic, from the Black Sea into the Mediterranean and from the Seas of Okhotsk and Japan into the Pacific.

145. Whereas until a few years ago the superiority of the navies of the United States and its allies was clear, the expansion of the Soviet Navy's ability to carry out other tasks and the development of new classes of vessel and aircraft enabling it to conduct full fleet operations on a world-wide basis have been seen by the United States as a direct challenge. The United States has recently embarked on a significant warship construction programme aimed at achieving a 600-ship navy "of 15 carrier battle groups; four battleship surface-action groups; 100 nuclear-powered, multimission attack submarines; 10 underway-replenishment groups; and increased amphibious lift". 21/

146. For all navies, the tasks of coastal protection in time of war are of great importance and include such duties as protection against attacks on coastal shipping, guarding against covert or open incursions against shore targets and anti-mining and minesweeping operations. States with overseas territorial responsibilities have also to take into account the need to offer those territories the same level of protection as the homeland in the event of a threat to their security. This aspect raises various political perceptions which are discussed in more detail in chapter VI.

E. Operations in sea areas covered by ice

147. Between the land masses of North America and the Soviet Union lies the ice-covered Arctic Ocean (see annex III, map 3). Although exceedingly hostile as an environment for normal activities, the ice offers excellent cover for operations by nuclear submarines. With the advent of nuclear propulsion and improvements in navigation systems, the United States Navy was able to make the first extensive

submarine exploration under the ice-cap in 1958, 22/ thus pioneering nuclear submarine operations in the Arctic.

148. The permanent polar ice-cap consists of numerous ice blocks, some over 300m deep and several kilometres across, and polar ice floes (sheets of floating ice), beneath which the waters may be 5 km deep and the ice 10 or 15m thick. Instead of icebergs, huge "keels" of ice extend as deep as 300m. Despite these difficult geographical conditions, advanced and powerful SSBNs can operate in this region, surfacing through patches of comparatively thin ice or in what are known as "polynya" - spaces of temporarily open water in the midst of ice - to launch their missiles.

149. ASW operations are faced with major problems in ice. Sonar transmissions bounce off the jagged under-ice ceiling in complicated and confusing patterns, and the constant movement and grinding of the ice blocks make passive detection of a hovering SSBN very difficult. Once detected, the target remains difficult to attack, protected as it is by the ice around it.

150. The natural characteristics of the Arctic, the development of advanced navigation systems, deeper diving capabilities, longer-range missiles, the accumulation of oceanographical knowledge and the geographical situation of the Soviet Union have combined to provide a strong incentive to the Soviet Navy to make more use of the Arctic for SSBN missions. Such use also corresponds with the "bastion" concept by which the Arctic becomes a defended sea area adjacent to the northern coastline of the Soviet Union and thus part of the in-depth territorial defence around the homeland, in which Soviet naval forces give high priority to defending SSBN forces against attack.

151. In turn, however, this is now leading to greater efforts by the United States to develop improved methods of detecting, tracking and attacking SSBNs operating in the northern seas and under the Arctic ice. It has been reported 23/ that the United States Navy is adapting existing submarines for under-ice operations, modifying an existing torpedo and developing a new sonar system. In addition, a multi-billion-dollar programme for the construction of a new class of nuclear attack submarine is currently in the design stage.

152. From this brief description it can be seen that even the Arctic Ocean and its approaches have been brought into the arena of fierce rivalry between the Soviet Union and the United States.

F. Affirmation of sovereignty, naval presence and surveillance

153. In peacetime, naval presence and surveillance are very important missions. A navy is an attribute and symbol of sovereignty and many coastal States tend therefore to have navies; this is likely to increase with the added responsibilities of the exclusive economic zone. Other specific factors also play a role: reaction to the naval acquisitions of a neighbour and perhaps a desire to be able, using a State's own forces, to prevent an influx of subversive elements arriving by sea, as has happened in a number of African and Asian countries. These

factors vary in importance but all tend to lead to the strengthening of the means of surveillance.

154. To assist in this task of surveillance, many Governments have established separate Coast Guard forces. A Coast Guard is often responsible for civilian maritime affairs in the coastal area, whereas a navy generally deals with purely military missions at sea. Often the Coast Guard is not part of the ministry or department of defence but is assigned to a civilian ministry (transport, fisheries or interior). At the same time, most Coast Guards have a military structure and return to the control of the navy in the event of armed conflict. This arrangement is widely practised, particularly in Latin America, but it can lead to duplication of functions with the navy and this, in turn, can result in conflicts of responsibilities.

155. Besides the task of surveillance in coastal areas there is also that of presence on the high seas. To some extent this involves what is now sometimes referred to as public service, which is described later in this chapter. There is also, however, the purely political aspect or what is often called naval diplomacy. Gunboat diplomacy in its traditional form has fortunately become a rarity but the political use of naval forces continues to be common. The motivations may be very different and may include co-operation, such as protocol visits, friendly visits and joint manoeuvres; different forms of coercion, such as naval presence in protection of nations or threatened interests; or affirmation of sovereignty over disputed territory or even intervention. There are many types of examples and the large number of such occurrences each year involving navies demonstrates that navies continue to be of great political importance. By maintaining strong fleets in various parts of the world, capable of taking offensive or intervention action, the naval forces of certain States are able to play a deterrent role in many circumstances, thereby bringing the threat or use of military force to bear on the course of situations far from their own shores. Examples of this activity may be seen currently in the Mediterranean, the Indian Ocean, the China Sea, the South Atlantic and in Central American waters.

G. Public service

156. In addition to their war-fighting and other military duties, naval ships often perform other very valuable tasks. The different aspects of public service described in this section are not only a matter of national policy; they also reflect that States increasingly strive for co-operation in this field in order to discharge themselves of the responsibilities allocated to them by international agreements and to meet their legitimate concern about activities outside areas under their national jurisdiction. It should be borne in mind that military assistance rendered in the public service is mostly carried out under the responsibility of the ministries concerned, for instance, the ministry of justice in the case of counter-terrorism. The prerequisites for such activities are formulated by civil authorities. Navies are, in this context, therefore instruments of civilian policy.

1. Law enforcement actions

Protection of economic resources (counter-smuggling, fishery protection, counter-terrorism, counter-piracy)

157. The protection of economic resources covers a wide area of responsibilities, and each country tends to adopt different and individual approaches according to circumstance.

158. Although not protection of marine resources, efforts to counter smuggling provide a long-standing demonstration of naval activities designed to protect a nation's economic trade. Smuggling, which takes place off many coasts, can in certain commodities have major harmful effects on national economic and other interests.

159. Naval involvement in fishery protection is more than simple protection. It is enforcement of the rules on size and type of fish caught and minimum net mesh used; guarding against unlawful fishing in prohibited areas or by those not permitted to fish in protected areas; and a police function concerned with avoiding the catching of fish that are temporarily or permanently protected. These protection duties and police functions are supported by many national and international treaties and agreements.

160. Another essential and difficult area of protection of resources is defence against possible terrorist attacks on offshore installations. Nations with offshore assets normally have plans to counter this type of threat. Naval presence is considered to be of great value in deterring potential attacks of this nature. Planning between government, naval forces and industry, from time to time supported by an exercise, is now regularly carried out by a number of countries.

161. In some parts of the world piracy continues to be a significant problem; it has been reported to be on the increase in certain areas. 24/ In general, merchant shipping companies and seamen's unions have resisted suggestions that merchant ships should be armed. The task of controlling and eradicating piracy therefore falls on naval forces, and in most cases on those that have comparatively little capacity to maintain the continuous patrols and availability of high-speed reaction that success in counter-piracy operations demands.

2. Miscellaneous activities (hydrography and oceanography, pollution control, disaster relief, search and rescue)

162. Many navies in the world add to the safety of international shipping by making a consistent, high-quality contribution to the international hydrographic effort and to the subsequent publication of charts, books and other material.

163. In the past two decades, the task of survey has become increasingly specialized with the development of deep-diving submarines, deep-draught tankers and the special needs of the offshore industry. Routing through confined waters is a normal procedure today to increase the safety of navigation and it, too, often requires special planning and charting by the hydrographic offices of co-operating countries.

164. In addition to the hydrographic activities of States and international organizations, a considerable effort is concentrated on oceanographic survey. Many States, with the Soviet Union and the United States providing the major efforts, carry out surveys of the oceans, covering the total range of scientific research of the sea and the sea-bed. It is clear that these surveys have considerable economic, military and environmental significance and so for many countries the national interest in them is understandably high. In many countries the tasks are given to special branches of navies which plan and co-ordinate activities nationally and internationally and often operate the survey vessels involved.

165. The seriousness of the world-wide ocean pollution problem dates from the time when rapid development of industry, agriculture and shipping came into conflict with the intensifying use of the riches of the oceans, as described in chapter I. Over the past 30 years a number of international conventions have been adopted in efforts to control pollution, and the United Nations has been active in these multilateral efforts. The Convention on the Law of the Sea provides a comprehensive framework of rules covering all sources of marine pollution (see part XII of the Convention).

166. Many national systems of pollution control involve the resources of navies. Whether by carrying out surveillance patrols, reporting culprits, or escorting them to anchorages for further investigation when pollution accidents occur, naval forces can assist in many different ways. A typical example was when minesweepers with high-definition sonar equipment searched for and found drums of a very dangerous toxic substance on the bottom of the sea. Earlier the drums had been lost overboard from a merchant ship in heavy weather. Similarly, special teams trained to retrieve explosive ordnance from the sea bottom have proved to be necessary, especially in areas shallow enough for fishing, exploration and exploitation.

167. Another aspect of pollution control sometimes appropriate for naval vessels and aircraft is the peaceful surveillance of maritime commercial traffic in busy areas. By encouraging compliance with rules of navigation and safe use of traffic separation lanes, the risks of collisions which might then lead to pollution can be reduced.

168. With the introduction of offshore production platforms for oil and gas, States have had to consider the consequences of accidents on these platforms. The two main elements, the importance of which has been recognized in the Convention on the Law of the Sea, are safety and the rescue of human lives and control of the pollution resulting from this type of accident. Navies with fixed-wing aircraft and helicopters, proper command and control arrangements and communication facilities are obvious choices for these kinds of operations as well as other kinds of assistance and police operations. With their well-tried liaison capacity with national and international authorities, and their capabilities for quick and effective action, naval resources are often the best fitted to take effective emergency action which can then be supplemented, at a later stage, by outside assistance from appropriate experts.

169. The combination of organizational expertise, fire-fighting capabilities, technical and medical skills and general capabilities enables naval forces to render valuable assistance at times of disaster at sea or ashore in coastal areas. In such incidents and events as mercantile collisions or breakdowns, rescue operations, earthquakes or hurricanes, naval ships have been ready sources of emergency assistance and civil support. They can also bring supplies of essential commodities to stricken areas. Such operations often involve ships of several nations and close co-ordination with governmental authorities and international organizations.

170. In sum, it can be stated that naval forces are eminently suited for many different peacetime tasks in the public service when the situation demands, the majority of which tasks are often above the level of national interest and are to the benefit of the international community at large.

CHAPTER V

MARITIME LEGAL CONTEXT

171. So far, the study has presented an overview of the maritime environment, its uses and resources, and the general nature and disposition of naval forces and naval arms systems, including maritime nuclear weapons. Before addressing the security and other implications of these factors, it is necessary to consider in broad terms the maritime legal context. In particular, the importance and scope of the Convention on the Law of the Sea should be noted. Although it has not yet entered into force, it is significant that since the opening of the Convention for signature an important additional number of States have become signatories (see para. 182 below). In addition, several States have incorporated, or are in the process of incorporating, into their national legislation rules similar to those of the Convention, especially with regard to such aspects as territorial seas and the exclusive economic zone. Some States are also engaged in modifying their legislation to reflect relevant provisions contained in the Convention. In consequence, the Convention on the Law of the Sea provides in the present circumstances a solid basis for further development of the existing rules of customary law.

172. The following paragraphs present only a brief discussion of complex legal subjects. The observations contained therein are not intended to prejudice any existing laws and agreed principles, nor to trespass on matters that may be currently under negotiation in any international forum.

A. General rules of international law restricting the use of force, right of self-defence and collective self-defence at sea

173. The use of force in general international law is governed by the provisions of the Charter of the United Nations, in particular by Article 2, paragraph 4, and Article 51, which read as follows:

Article 2, paragraph 4,

"All Members shall refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations."

Article 51

"Nothing in the present Charter shall impair the inherent right of individual or collective self-defence if an armed attack occurs against a Member of the United Nations, until the Security Council has taken measures necessary to maintain international peace and security. Measures taken by Members in the exercise of the right of self-defence shall be immediately reported to the Security Council and shall not in any way affect the authority and responsibility of the Security Council under the present Charter to take at any time such action as it deems necessary in order to maintain or restore international peace and security."

174. A distinction should be made in maritime matters between the use of force in self-defence and the lawful use of force to enforce jurisdiction. The latter has assumed particular importance in the new law of the sea.

175. One of the significant features of the new law of the sea is that coastal States have been extending their sovereignty and jurisdiction over adjacent maritime areas. The 1958 Geneva Conventions had already given coastal States sovereign rights over the natural resources of their continental shelves and had codified the right of hot pursuit and the right of warships to board ships on the high seas in certain circumstances. The 1982 Convention on the Law of the Sea continued this process, for instance by granting coastal States sovereign rights over all the resources in their exclusive economic zones and giving archipelagic States sovereignty over their archipelagic waters. The question of the degree to which force may be used to enforce these recognized rights of sovereignty and jurisdiction is therefore of some importance.

176. The Charter in Article 51 recognizes that States have the inherent right of individual or collective self-defence. It also recognizes that Members of the United Nations may exercise collectively what is their individual right. To this end States have entered into collective security arrangements in various parts of the world, among them the following:

In the Americas

Inter-American Treaty of Reciprocal Assistance (Rio Treaty), 1947

In Europe and the North Atlantic

Treaty between Belgium, France, Luxembourg, the Netherlands and the United Kingdom (Brussels Treaty), 1948

North Atlantic Treaty (NATO), 1949

Warsaw Treaty of Friendship, Co-operation and Mutual Assistance (Warsaw Treaty), 1955

In the Middle East

Collective Security Pact between States of the Arab League, 1950

In the Pacific area

Security Treaty between Australia, New Zealand and the United States (ANZUS Treaty), 1951

These treaties envisage taking measures of collective self-defence at sea since their zones of application cover maritime areas.

177. The legal validity of these arrangements are all expressly based on the Charter of the United Nations, in some cases in particular on Article 51 of the Charter. Specific reference to Article 51 is found in the Rio Treaty, the Brussels Treaty, the NATO Treaty and the Warsaw Treaty. No such reference is made in the ANZUS Treaty. However, it is expressly declared in that Treaty that the rights and obligations of any of the Parties under the Charter are not affected and the responsibility of the United Nations for the maintenance of international peace and security is not prejudiced.

178. In the exercise of the right of collective self-defence it is clear that parties to these security arrangements may use force upon the high seas, within the limits prescribed by international law, to protect their armed forces, public vessels or aircraft. As always in the case of legitimate self-defence, the use of force shall not exceed a proportional response to the armed attack, taking into account its nature and magnitude.

179. The principle of non-intervention in international law is embodied in the Charter of the United Nations. Armed intervention is prohibited by the general prohibition of force in Article 2, paragraph 4, and various forms of indirect intervention are prohibited by the provisions of Article 1, paragraph 2 (calling for respect for the principle of equal rights and self-determination of peoples) and by Article 2, paragraph 1 (setting forth the principle of the sovereign equality of States). In the Declaration on Principles of International Law concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations (see General Assembly resolution 2625 (XXV), annex), an authoritative interpretation of the Charter was established, according to which the principle of non-intervention should be given a wide scope of application. The Declaration covers all forms of interference or threats against "the personality" of States. Modern naval capabilities permit the political use of naval forces new and subtle forms which do not have to be explicit in order to be perceived as coercion.

180. One example of prohibited activity - prohibited in the interests of maintaining international peace and security - is the blockade. In its definition of aggression, adopted without a vote in 1974 in resolution 3314 (XXIX) of 14 December 1974, the General Assembly, inter alia, specifies that, "the blockade of the ports or coasts of a State by the armed forces of another State" qualifies as an act of aggression (annex, art. 3 (c)). Such a blockade is, in the absence of a Security Council decision to that effect, not even permitted as a form of reprisal against a State which has committed a crime against international law.

B. The Convention on the Law of the Sea

181. The Convention on the Law of the Sea confirms to a large extent the maritime régime established by the four Geneva Conventions of 1958. It clarifies the law in many respects, setting a clear limit for the territorial sea and introducing definitive limits to the continental shelf. It also introduces new concepts into maritime law: the exclusive economic zone and archipelagic waters. Above all, it gives practical expression to the principle of the common heritage of mankind set out in General Assembly resolution 2749 (XXV) of 17 December 1970, which contains, inter alia, three guidelines:

(a) That the area declared to be the common heritage of mankind shall not be subject to appropriation by national means or to any claim of sovereignty or sovereign rights over any part thereof;

(b) That the exploitation of the sea-bed and ocean floor, and the subsoil thereof, shall be carried out for the benefit of mankind as a whole, taking into consideration the interests and needs of the developing countries;

(c) That the area shall be reserved exclusively for peaceful purposes. Resolution 2749 (XXV) implies, therefore, the recognition of the need for disarmament and the right to development.

182. The Convention, adopted on 30 April 1982, was opened for signature on 10 December 1982. As of 9 December 1984, the closing for signature, it had been signed by 159 States and entities. As of 19 July 1985, 21 States and entities had ratified the Convention. The Convention will enter into force 12 months after the receipt of 60 ratifications or accessions.

1. Freedom of navigation

183. One of the main tasks facing the Third United Nations Conference on the Law of the Sea was to establish a legal maritime order which accommodated the needs of the developing countries and the maritime interests of the developed countries. It was clear that only by such an accommodation could the important aspects of the peaceful uses of the seas and the freedom of navigation be promoted.

184. There were three important interests, among others, which had to be reconciled by the Conference: on the one hand, the security interests of coastal States and the need to protect the mainly resource-oriented interests of the developing coastal States and on the other hand, the necessity of preserving the freedom of navigation of ships and aircraft. In this the Conference was successful as the Convention on the Law of the Sea has managed to balance these interests.

185. One of the dominant reasons for restricting the sovereignty and jurisdiction of coastal States to a fairly narrow band of water known as the territorial sea was to ensure that the freedom of navigation, whether commercial or military, was not affected by any extensions. Thus the new Convention has reaffirmed the freedom of navigation. There are two developments in the new law of the sea with respect to

areas falling under the sovereignty of coastal States which could particularly affect the freedom of navigation: first, the adoption of a 12-mile territorial sea and second, the acceptance of the notion of archipelagic waters. Both these developments are embodied in the Convention on the Law of the Sea, but in both cases, the Convention has sought to mitigate the consequences of these developments on the freedom of navigation.

2. Peaceful uses of the seas

186. The peaceful uses of the seas has been a recurring theme before successive United Nations forums on the law of the sea for almost four decades. At the Conference on the Law of the Sea held at Geneva in 1958, the testing of nuclear weapons on the high seas was a very live issue. It was argued that such tests violated the principle of the freedom of the high seas, and proposals were submitted to the Conference with the intent of obliging States to refrain from testing nuclear weapons on the high seas. The Conference finally accepted a resolution which, while recognizing the serious and genuine apprehension on the part of many States that nuclear explosions constituted an infringement of the freedom of the seas, decided to refer the matter to the General Assembly, in particular to the Disarmament Commission. It may be noted that the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water was opened for signature in 1963 and entered into force later the same year.

187. One of the objectives laid down in the preamble of the 1982 Convention on the Law of the Sea is the establishment of a legal order for the seas and oceans which will promote their peaceful uses. This theme is taken up in various parts of the Convention, in marked contrast to the 1958 Geneva Conventions on the Law of the Sea where no such reference can be found. For instance, it is quite clearly stated that "the high seas shall be reserved for peaceful purposes" (art. 88) and that the sea-bed and subsoil beyond the limits of national jurisdiction (the Area) "shall be open to use exclusively for peaceful purposes" (art. 141). Installations constructed for carrying out activities in the Area are to be used exclusively for peaceful purposes (art. 147, para. 2 (d)). The conference which will be convened to review the operation of the system of exploration and exploitation of the Area "shall ensure", inter alia, "that the principle of using the Area exclusively for peaceful purposes is maintained" (art. 155, para. 2). In addition, under the new Convention marine scientific research is to be conducted exclusively for peaceful purposes. This point is stated in several provisions of the Convention: in article 143, paragraph 1; 240 (a); 242, paragraph 1; and 246, paragraph 3. The Convention also reiterates a general principle of international law already embodied in the Charter of the United Nations: that States shall settle their disputes, in this case those concerning the interpretation or application of the Convention, by peaceful means. The Convention itself has provided a mechanism for the settlement of such disputes.

188. The Convention declares that "the high seas shall be reserved for peaceful purposes", but it does not contain a definition of "peaceful purposes". The Convention may however have provided the answer when, under the heading of peaceful uses of the seas (art. 301), it declares that

"in exercising their rights and performing their duties under this Convention, States Parties shall refrain from any threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the principles of international law embodied in the Charter of the United Nations."

Thus, military activities which are consistent with the principles of international law embodied in the Charter of the United Nations, in particular with Article 2, paragraph 4, and Article 51, are not prohibited by the Convention on the Law of the Sea.

3. Internal waters

189. Before considering the territorial sea it is necessary to deal briefly with the régime of internal waters. Internal waters are situated on the landward side of the baseline from which the breadth of the territorial sea is measured. Internal waters include waters within ports, watercourses and certain gulfs and bays. The principal feature which distinguishes internal waters from territorial sea is that under customary international law the sovereignty of the coastal State in these waters is not limited by a right of innocent passage in favour of foreign shipping. The only exception is the special case in which straight baselines have been drawn across deeply indented or island-fringed coastlines enclosing waters which had not previously been considered internal waters. The right of innocent passage exists in such waters.

4. Territorial sea

190. By virtue of the Convention on the Law of the Sea, coastal States may extend their territorial sea up to a breadth of 12 miles. This has settled a long-standing controversy concerning the breadth of the territorial sea with claims varying from 3 to 200 miles. Coastal States are thus empowered to exercise sovereignty over the territorial sea up to a distance of 12 miles, its sea-bed, subsoil and superjacent airspace.

191. All ships enjoy the right of innocent passage through the territorial sea. Under the régime of innocent passage there is however no freedom of overflight for foreign aircraft, and submarines are required to navigate on the surface and show their flags. The Convention in article 19 clarifies the meaning of innocent passage by enumerating activities which can be considered not innocent, many of which fall within the category of military or quasi-military activities. They include, for instance:

"(a) any threat or use of force against the sovereignty, territorial integrity or political independence of the coastal State, or in any other manner in violation of the principles of international law embodied in the Charter of the United Nations;

"(b) any exercise or practice with weapons of any kind;

"(c) any act aimed at collecting information to the prejudice of the defence or security of the coastal State;

"...

"(e) the launching, landing or taking on board of any aircraft;

"(f) the launching, landing or taking on board of any military device;

"...

"(l) any other activity not having a direct bearing on passage."

192. A coastal State may require foreign ships exercising the right of innocent passage to use sea lanes and traffic separation schemes as it may designate or prescribe for the regulation of the passage of ships (art. 22). This requirement applies particularly to tankers, nuclear-powered ships and ships carrying nuclear or other inherently dangerous or noxious substances or materials. Moreover, such ships, when exercising the right of innocent passage, must carry documents and observe special precautionary measures established for them by international agreements.

193. A coastal State may adopt laws and regulations relating to innocent passage with respect to, for instance, (a) the safety of navigation and the regulation of maritime traffic; (b) the protection of navigational aids and installations; (c) the protection of cables and pipelines; and (d) marine scientific research and hydrographic surveys. In exercising the right of innocent passage, foreign ships must comply with such laws and regulations.

194. A coastal State must not hamper the innocent passage of foreign ships. It may suspend such passage temporarily for reasons of security. It must not discriminate on the basis of the nationality of such ships or the destination or origin of their cargo. The coastal State is under an obligation to give publicity to any danger to navigation of which it has knowledge within its territorial sea.

5. Straits used for international navigation

195. The general adoption of the new limit of 12 miles for the territorial sea will change (and has already changed) the legal status of several straits used for international navigation. Such straits will fall completely within the territorial seas and hence within the sovereignty of the States bordering the straits. Thus, in areas where freedom of navigation previously existed, the régime of innocent passage will obtain. This will particularly affect the passage of military vessels and aircraft since first, there is no innocent passage for aircraft in the territorial sea and second, submarines are required to navigate on the surface and show their flag. Some of the world's main navigational straits, passages and canals are shown in annex III, map 4.

196. Where straits used for international navigation fall within the territorial sea of the States bordering straits the Convention provides for the right of transit passage for all ships and aircraft. All ships and aircraft exercising the right of transit passage enjoy the freedom of navigation and overflight solely for the purpose of continuous and expeditious transit and subject to the observance of certain duties during their passage. Such duties include, inter alia, the

obligations to proceed without delay through or over the strait; to refrain from any threat or use of force against the sovereignty, territorial integrity or political independence of States bordering the strait, or in any other manner in violation of the principles of international law embodied in the Charter of the United Nations; and to refrain from any activities other than those incident to their normal modes of continuous and expeditious transit unless rendered necessary by force majeure or distress. In particular, ships in transit passage must observe the generally accepted international rules with respect to safety at sea and the prevention, reduction and control of pollution from ships.

197. States bordering straits have the right to designate sea lanes and prescribe traffic separation schemes for navigation in straits used for international navigation and they may require foreign ships exercising the right of transit passage to use such sea lanes and traffic separation schemes.

198. States bordering straits have the right to enact laws and regulations concerning transit passage. Such laws may relate, for example, to the safety of navigation, the protection and preservation of the marine environment and the prevention of fishing. Such laws must not be discriminatory nor may they in effect deny or impede the right of transit passage. There shall be no suspension of transit passage. Where straits used for international navigation are not covered by the provisions of the Convention - for example, in a strait used for international navigation between a part of the high seas or an exclusive economic zone and the territorial sea of a foreign State - the right of innocent passage obtains. Innocent passage through straits may not be suspended.

199. Transit passage is a new concept in the law of the sea resulting from the extension of the breadth of the territorial sea up to 12 miles. The provisions of the Convention concerning straits used for international navigation do not affect the legal régime of straits which are regulated by "long-standing international conventions in force specifically relating to such straits" (art. 35 (c)). In this connection, the general rule embodied in article 311, paragraph 3, should be borne in mind. This provision states, inter alia, that States parties may conclude bilateral or multilateral agreements modifying or suspending provisions of the Convention on the Law of the Sea provided that such agreements are compatible with the Convention and that they do not affect the rights and obligations of other States parties under the Convention. Long-standing international conventions remain outside the régime established in the Convention for straits used for international navigation. Examples are the Convention concerning the régime of the straits, signed at Montreux in 1936, which regulated transit and navigation in the Straits of the Dardanelles, the Sea of Marmara and the Bosphorus; and the 1881 Treaty between Argentina and Chile, defining the boundaries between the two countries and, inter alia, regulating the legal régime of the Magellan Straits; the Copenhagen Convention on the Sound and the Belts, 1857, defining a régime for the strait between Sweden and Denmark; and the 1921 Convention relating to the non-fortification and neutralization of the Aaland Islands and, inter alia, regulating the régime of part of the strait between Finland and Sweden.

6. Archipelagic waters

200. The Convention recognizes the concept of an archipelagic State - that is, a State constituted wholly by one or more archipelagos. Such a State may under certain conditions draw straight baselines joining the outermost islands and drying reefs of the archipelago. These lines, known as "archipelagic baselines", are used to measure the breadth of the State's territorial sea, contiguous zone, exclusive economic zone and continental shelf. The waters enclosed within archipelagic baselines are known as "archipelagic waters" and the archipelagic State exercises sovereignty over such waters, their sea-bed, subsoil and superjacent airspace.

201. Through these waters ships of all States enjoy the right of innocent passage similar to that enjoyed in the territorial sea. An archipelagic State may designate sea lanes and air routes through or over its archipelagic waters for the passage of foreign ships and aircraft. All ships and aircraft enjoy the right of "archipelagic sea lanes passage" in such sea lanes and air routes.

202. Archipelagic sea lanes passage means the exercise "of the rights of navigation and overflight in the normal mode solely for the purpose of continuous, expeditious and unobstructed transit between one part of the high seas or an exclusive economic zone and another part of the high seas or an exclusive economic zone" (art. 53, para. 3). The archipelagic State may define sea lanes and air routes by axis lines from the entry points to the exit points of such routes. Ships and aircraft may not deviate more than 25 miles to either side of the axis lines. The rules relating to transit passage through straits used for international navigation with respect to the duties of ships and aircraft apply, mutatis mutandis, in archipelagic sea lanes passage. Where an archipelagic State does not designate sea lanes or air routes, the right of archipelagic sea lanes passage may be exercised through the route normally used for international navigation.

203. An archipelagic State must respect existing agreements and recognize traditional fishing rights and other legitimate interests of "the immediately adjacent neighbouring State" in their archipelagic waters. Upon receiving due notice, it shall permit other States to maintain and replace existing submarine cables which do not touch the land and which have been laid by them in waters which may now be considered archipelagic waters.

7. The exclusive economic zone

204. The concept of the exclusive economic zone represents for many coastal States the most important development in the new law of the sea. It was established to meet a demand by coastal States, particularly developing States, most of which are without the means to take advantage of the freedoms governing the high seas and, what is more, have long-distance fishing vessels of other nations harvesting marine resources close to their coasts.

205. In the exclusive economic zone - a zone which may extend up to 200 miles from the baseline from which the territorial sea is measured - a coastal State has sovereign rights with respect to the natural resources, whether living or

non-living, of the waters superjacent to the sea-bed and of the sea-bed and its subsoil, and with regard to other economic activities for the exploration and exploitation of the zone. In annex III, map 5, a delineation of 200 miles is illustrated. (However, it is not intended to represent accurately the agreed limits of exclusive economic zones.)

206. A coastal State has certain competences under the Convention which go beyond its sovereign rights over resources. In particular it has jurisdiction in accordance with the relevant provisions of the Convention with regard to (a) the establishment and use of artificial islands, installations and structures; (b) marine scientific research; and (c) the protection and preservation of the marine environment.

207. It is useful to examine more closely the nature of a coastal State's competence over artificial islands, installations and structures in the exclusive economic zone. A coastal State has the exclusive right to construct and to authorize and regulate the construction, operation and use of artificial islands, installations and structures constructed for economic purposes; and installations and structures which may interfere with the exercise of the rights of the coastal State in the zone. Installations and structures which do not interfere with these rights are outside the exclusive jurisdiction of the coastal State.

208. All other States enjoy in the exclusive economic zone freedom of navigation and overflight and freedom to lay submarine cables and pipelines, and other internationally lawful uses of the sea related to these freedoms, such as those associated with the operation of ships, aircraft and submarine cables and pipelines.

209. The question arises whether those uses of the seas which are not mentioned in the Convention (the residual rights) remain with the international community or now belong to the coastal State. The Convention itself offers a solution in article 59, which states that where the Convention "does not attribute rights or jurisdiction to the coastal State or to other States within the exclusive economic zone, and a conflict arises between the interests of the coastal State and any other State or States, the conflict should be resolved on the basis of equity and in the light of all the relevant circumstances, taking into account the respective importance of the interests involved to the parties as well as to the international community as a whole" (art. 59). Thus the Convention acknowledges that there are uses of the sea over which it has given competence neither to the coastal State nor to other States in the exclusive economic zone and it has provided important substantive guidelines for resolving conflicts of competence over uses which are not mentioned in the Convention.

210. Under the Convention the exclusive economic zone is subject to a specific legal régime. The legal régime of the exclusive economic zone is different from that of the territorial sea or the high seas. It is a zone which partakes of the characteristics of both régimes and belongs to neither. In short it is sui generis.

211. It is expressly stated that "articles 88 to 115 and other pertinent rules of international law apply to the exclusive economic zone in so far as they are not incompatible with this Part" (art. 58, para. 2). This provision has in fact transported almost all the provisions of the high seas régime, except those dealing with the conservation and management of the living resources of the high seas, into the exclusive economic zone.

212. Certain observations can be made on these provisions. First, some of these provisions are of general application since they deal with issues concerning ships: nationality of ships, status of ships, ships flying the flag of the United Nations, its specialized agencies or the International Atomic Energy Agency, duties of the flag State; and so on. Second, other provisions deal with the prohibition of the transport of slaves, drugs, piracy and unauthorized broadcasting. These issues are of international concern and must, it seems, necessarily apply to the exclusive economic zone. Finally, two provisions apply to the régime of the exclusive economic zone: article 88 which states that "the high seas shall be reserved for peaceful purposes" and article 89 which prohibits States from subjecting "any part of the high seas" to their sovereignty.

213. A coastal State is under an obligation to have due regard to the rights and duties of other States and to act in a manner compatible with the provisions of the Convention when exercising its rights and performing its duties under the Convention. Other States, i.e. non-coastal States, are under a similar obligation.

214. In exercising their rights and performing their duties under the Convention in the exclusive economic zone, States shall have due regard to the rights and duties of the coastal State and shall comply with the laws and regulations adopted by the coastal State in accordance with the provisions of the Convention and other rules of international law in so far as they are not incompatible with the régime of the exclusive economic zone (art. 58, para. 3). The Convention also provides for compulsory procedures entailing binding decisions "when it is alleged that a coastal State has acted in contravention of the provisions of the Convention in regard to the freedoms and rights of navigation, overflight or the laying of submarine cables and pipelines, or in regard to other internationally lawful uses of the sea specified in Article 58" (art. 297, para. 1 (a)). There will also be a resort to compulsory procedures entailing binding decisions when a State in exercising the freedoms, rights or uses granted to non-coastal States contravenes the Convention or contravenes laws or regulations adopted by the coastal State in conformity with the Convention and other rules of international law not incompatible with the Convention.

8. The continental shelf

215. Under the Convention on the Law of the Sea, the continental shelf of a coastal State comprises the sea-bed and subsoil of the submarine areas that extend beyond the limit of the territorial sea throughout the natural prolongation of its land territory, or to a distance of 200 miles from the baselines from which the territorial sea is measured.

216. Where the continental shelf extends beyond 200 miles, a coastal State may choose to determine the outer edge of its continental margin either by (a) reference to the outermost fixed points at each of which the thickness of sedimentary rocks is at least 1 per cent of the shortest distance from such point to the foot of the continental slope or (b) a line connecting fixed points not more than 60 miles from the foot of the continental slope. In such cases the outer limits of the continental shelf may not extend beyond 350 miles from the baselines

or 100 miles from the 2,500-m isobath. Coastal States shall establish the definitive limits of the continental shelf on the basis of recommendations by a Commission on the Limits of the Continental Shelf.

217. The coastal State has sovereign rights for the purpose of exploring and exploiting the natural resources of the continental shelf. These rights do not affect the legal status of the waters or that of the airspace above the continental shelf. Thus the freedoms of navigation and overflight have not been affected by the régime of the continental shelf.

9. High seas

218. The high seas are all parts of the sea that are not included in the exclusive economic zone, the territorial sea or the internal waters of a State or in the archipelagic waters of an archipelagic State. On the high seas all States enjoy the freedoms of navigation and overflight; the freedom to lay submarine cables and pipelines and to construct artificial islands and other installations; and the freedom of fishing and of scientific research. The new régime for the sea-bed and subsoil beyond national jurisdiction - identified in the Convention as the Area - does not affect the legal status of the high seas.

10. Enforcement measures

219. A coastal State is entitled to take certain measures to enforce its laws and regulations applicable to the various maritime zones falling under its jurisdiction. For instance, a warship may be required to leave the territorial sea immediately if it fails to comply with the laws and regulations of the coastal State concerning passage through the territorial sea.

220. In the contiguous zone - a zone which may not extend beyond 24 miles from the baselines from which the breadth of the territorial sea is measured - a coastal State may exercise the control necessary to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea, and also to punish infringements of such laws and regulations committed within its territory or territorial seas.

221. In the exercise of its sovereign rights over the living resources in the exclusive economic zone, the coastal State is empowered under article 73 of the Convention to take a wide range of enforcement measures. They include boarding, inspection, arrest and judicial proceeding. In this respect the coastal State has certain obligations. Arrested vessels and their crews must be released promptly upon the posting of reasonable bond and security. Moreover, the penalties for violating fisheries laws and regulations may not include, in the absence of agreement, imprisonment or other form of corporal punishment. The coastal State is also under a duty to notify the flag State of any action taken or penalty imposed in the matter.

222. A coastal State may adopt laws and regulations in the exclusive economic zone in order to combat pollution from vessels. Such laws and regulations must conform and give effect to generally accepted international rules and standards. The coastal State is entitled to take certain measures to enforce these laws. In particular, a vessel may be required to give information regarding its identity and port of registry, its last and next port of call and so on where there are clear grounds for believing that the vessel has violated the pollution laws and regulations of the coastal State. In cases in which the violation results in major damage, the coastal State may detain the vessel and institute proceedings against it.

223. A foreign ship may be pursued on the high seas if the coastal State has good reason for believing that the ship has violated the laws and regulations enacted by the State with respect to the various maritime zones under its sovereignty and jurisdiction - the territorial sea, contiguous zone, exclusive economic zone and continental shelf. This right of hot pursuit ceases when the ship pursued enters the territorial sea of its own State or that of a third State. Only warships, military aircraft or other government ships may exercise this power of enforcement.

224. States are empowered to take police action on the high seas in order to protect certain international community interests such as the suppression of piracy and unauthorized broadcasting and the prohibition of slavery. In particular, a warship is justified in boarding a foreign ship if the ship is engaged in piracy, in the slave trade, in unauthorized broadcasting, the ship is without nationality or though flying a foreign flag or refusing to show its flag, the ship is in reality of the same nationality as the warship.

11. Warships and other government ships operated for non-commercial purposes

225. In article 29 of the Convention, a warship has been defined as:

> "... a ship belonging to the armed forces of a State bearing the external marks distinguishing such ships of its nationality, under the command of an officer duly commissioned by the government of the State and whose name appears in the appropriate service list or its equivalent, and manned by a crew which is under regular armed forces discipline."

Some navies are often assisted or accompanied by government-owned ships whose tasks are specifically those of naval support or other non-commercial functions. Such ships, unless they meet the definition of article 29, are not warships for the purposes of the Convention.

226. Warships and other government ships operated for non-commercial purposes on the high seas enjoy complete immunity from the jurisdiction of any State other than the flag State. In particular, the provisions of the Convention regarding the protection and preservation of the marine environment do not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service (art. 236). By the operation of article 58, paragraph 2, this immunity extends to the exclusive economic zone. In the territorial sea, such ships also enjoy immunity with such exceptions applicable to all ships as are incorporated in the régime of innocent passage.

227. There are two other notable exceptions. First, there is the sanction of expulsion from the territorial sea if any warship does not comply with the laws and regulations of a coastal State concerning passage through the territorial sea, as has already been noted. Second, a flag State is liable for any loss or damage to the coastal State resulting from a warship's not complying with the laws and regulations of the coastal State or with the provisions of the Convention or other rules of international law. The flag State is also liable when such loss or damage occurs during transit passage.

12. Other relevant multilateral regional and bilateral agreements

228. There are certain relevant multilateral treaties or bilateral arrangements which have significant effects on the legal régime of the oceans. On the relationship of the Convention on the Law of the Sea with other conventions and international agreements, article 311 states, inter alia, that:

> "1. This Convention shall prevail, as between States Parties, over the Geneva Conventions on the Law of the Sea of 29 April 1958.
>
> "2. This Convention shall not alter the rights and obligations of States Parties which arise from other agreements compatible with this Convention and which do not affect the enjoyment of other States Parties of their rights or the performance of their obligations under this Convention."

The Convention on the Law of the Sea thus prevails as between States parties over the 1958 Geneva Conventions on the Law of the Sea but as between States Parties does not affect other agreements which are compatible with it.

C. Multilateral treaties since 1945

1. The Antarctic Treaty (1959) 25/

229. The Antarctic Treaty raises two issues of relevance to the law of the sea. First, there is a clear prohibition against the carrying out of any military activities in Antarctica. For the purposes of this Treaty, Antarctica is defined as the area south of 60° south latitude, which embraces a large extent of high seas (see annex III, map 6). According to article I, Antarctica is to be used for peaceful purposes only. Any measures of a military nature, such as "the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons" are prohibited. Article V prohibits in Antarctica any nuclear explosions or the disposal of radioactive waste.

230. It should be noted that "nothing in the Treaty shall prejudice or affect the rights, or the exercise of the rights, of any State under international law with regard to the high seas within that area" (art. VI).

231. The Treaty contains provisions on the promotion of international scientific co-operation in Antarctica. It also facilitates scientific research and provides for the rights of inspection in Antarctica (arts. VII and IX).

2. Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (Partial Test Ban Treaty) (1963) 25/

232. By the Partial Test Ban Treaty the parties are obliged to prohibit, to prevent, and not to carry out any nuclear explosion at any place under their jurisdiction or control whether it takes place in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas; or in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted (art. I).

3. Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-Bed and the Ocean Floor and in the Subsoil Thereof (Sea-Bed Treaty) (1971) 25/

233. The Sea-Bed Treaty was concluded during the deliberations of the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor beyond the Limits of National Jurisdiction - the precursor, as it were, of the Third United Nations Conference on the Law of the Sea. At a certain stage the debates on the issue of the peaceful uses of the oceans in the Sea-Bed Committee ran parallel with those conducted in the Conference of the Committee on Disarmament. It can be said that the adoption of the Sea-Bed Treaty to a certain extent stilled the debate on this issue in the context of the Conference transactions, although there was a brief debate in that Conference on this issue in 1976.

234. The Sea-Bed Treaty forbids the emplanting or the emplacement on the sea-bed and the ocean floor and in the subsoil thereof beyond a 12-mile sea-bed zone of "any nuclear weapons or any other type of weapons of mass destruction as well as structures, launching installations or any other facilities specifically designed for storing, testing or using such weapons" (art. I, para. 1).

235. Article II defines the meaning of the expression "beyond the outer limit of a sea-bed zone". It states "for the purpose of this Treaty, the outer limit of the sea-bed zone shall be coterminous with the 12-mile outer limit of the zone referred in part II of the Convention on the Territorial Sea and the Contiguous Zone, signed at Geneva on 29 April 1958, and shall be measured in accordance with the provisions of part I, section II, of that Convention and in accordance with international law".

236. States parties have the right to verify through observation the activities of other States parties on the sea-bed and the ocean floor and in the subsoil thereof beyond the 12-mile limit zone provided that observation does not interfere with such activities (art. III, para. 1). Verification activities pursuant to the Treaty must not interfere with activities of other States parties and "shall be conducted with the regard for rights recognized under international law, including the freedoms of the high seas and the rights of coastal States with respect to the exploration and exploitation of their continental shelves" (art. III, para. 6).

237. By article V of the Treaty, the States parties undertook "to continue negotiations in good faith concerning further measures in the field of disarmament for the prevention of an arms race on the sea-bed, the ocean floor and the subsoil thereof". At both subsequent Review Conferences of the Treaty, held in 1977 and 1983, article V has been reaffirmed. Noting that negotiations on such measures had not yet taken place, the Review Conference requested the Conference on Disarmament to proceed promptly with consideration of further disarmament measures in consultation with the States parties to the Treaty, and taking into account existing proposals and any relevant technological developments. A third Review Conference is expected to take place between 1988 and 1990.

4. Treaty for the Prohibition of Nuclear Weapons in Latin America (Treaty of Tlatelolco) (1967) 25/

238. The objective of the Treaty of Tlatelolco is the military denuclearization of Latin America, this being understood to mean the creation of a nuclear-weapon-free zone so that the region will be, in the words of the preamble, "forever free from nuclear weapons". In article 1, paragraph 1, the Treaty states:

> "1. The Contracting Parties hereby undertake to use exclusively for peaceful purposes the nuclear material and facilities which are under their jurisdiction, and to prohibit and prevent in their respective territories:
>
> "(a) The testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons, by the Parties themselves, directly or indirectly, on behalf of anyone else or in any other way, and
>
> "(b) The receipt, storage, installation, deployment and any form of possession of any nuclear weapons, directly or indirectly, by the Parties themselves, by anyone on their behalf or in any other way."

239. For the purposes of the Treaty, the term "territory" includes the territorial sea, airspace and any other space over which the State exercises sovereignty in accordance with its own legislation (art. 3). The zone of application is described in article 4, and under certain conditions, that is when certain requirements are fulfilled, the terms of the Treaty could apply to extensive areas of the high seas. A diagrammatic presentation of the zone of application of the Treaty is shown in annex III, map 7.

240. The Treaty of Tlatelolco has a number of very important characteristics, including the following:

(a) In the fourth preambular paragraph, it is recognized that militarily denuclearized zones are not an end in themselves but rather a means for achieving general and complete disarmament at a later stage. That the establishment of nuclear-weapon-free zones on the basis of arrangements freely arrived at among States of the region concerned constitutes an important disarmament measure was recognized by the General Assembly in paragraph 60 of the Final Document of the Tenth Special Session in 1978;

(b) The zone of application is regionally contiguous (the Antarctic quadrant adjacent to South America) with the zone of peace established for Antarctica by the Antarctic Treaty of 1959 (specifically prohibiting nuclear weapons);

(c) The Treaty is compatible, from the regional point of view, with the Inter-American Treaty of Reciprocal Assistance (TIAR), even though that instrument does not constitute a military alliance but rather a collective defence pact;

(d) The Treaty provides regional support and complementarity for the Convention on the Law of the Sea, with regard to the peaceful uses covered by the Treaty;

(e) Once the provisions of the Treaty have been fully implemented, the zone of application provided for in that instrument will be much greater than the sum of the maritime areas of the States parties for which the Treaty has entered or may enter into force.

5. Final Act of the Conference on Security and Co-operation in Europe (1975) 26/

241. The Final Act of the Conference, generally known as the Helsinki Declaration, prescribes pre-notification of "major military manoeuvres exceeding a total of 25,000 troops, independently or combined with any possible air or naval components (in this context the word "troops" includes amphibious and air-borne troops)". Notification will be given of such manoeuvres taking place on the territory in Europe of States participating in the agreement as well as, if applicable, in the adjoining sea area and air space.

D. Bilateral agreements 27/

1. Agreement between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics on the Prevention of Incidents on and over the High Seas (1972)

242. By this Agreement the two States concerned sought to "assure the safety of navigation of the ships of their respective armed forces on the high seas and flight of their military aircraft over the high seas" (preamble). The parties agreed to observe strictly the letter and spirit of the International Regulations for Preventing Collisions at Sea (the Rules of the Road). In a Protocol to this Agreement signed in 1973 the parties agreed not to simulate attacks against non-military ships.

243. It is noteworthy that in article II of this instrument the parties recognized "that their freedom to conduct operations on the high seas is based on the principles established under recognized international law and codified in the 1958 Geneva Convention on the High Seas".

2. Treaty on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty) and SALT I and SALT II Agreements

244. In one Treaty and two bilateral agreements the United States and the Union of Soviet Socialist Republics have undertaken certain limitations which have maritime effects. In the ABM Treaty, which entered into force in 1972, the parties pledged, inter alia, not to develop, test, or deploy ABM systems or components which are sea-based (art. V, para. 1). In the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms (known as the SALT I Agreement) which came into force in 1972, the parties agreed to limit submarine-launched ballistic missile (SLBM) launchers and modern ballistic missile submarines. The understanding as expressed in the Protocol to the Interim Agreement was that the United States should not have more than 44 modern ballistic missile submarines and 710 SLBMs while the Soviet Union should not have more than 62 modern ballistic missile submarines and 950 SLBMs.

245. Further limitations on and reductions in strategic offensive arms were envisaged in the Treaty between the United States and the Union of Soviet Socialist Republics on the Limitation of Strategic Offensive Arms (SALT II, 1979). However, this Treaty has not formally entered into force although both parties state that they have been abiding by the provisions of the agreement. The Treaty was to have remained in force until 31 December 1985.

E. Declarations

1. Declaration of Ayacucho

246. The Declaration of Ayacucho, which was signed by Argentina, Bolivia, Chile, Colombia, Ecuador, Panama, Peru and Venezuela in 1974 and ratified by the parties in 1978, and the Conference on Conventional Weapons held at Mexico City in 1978 are noteworthy regional contributions with regard, inter alia, to arms control, including naval arms, and the peaceful settlement of international disputes and the prohibition of the threat of use of force and of armed aggression or of economic or financial aggression in relations between States. There has been no further progress in either case, except for the two years' work on elaboration of projects of arms control accomplished by experts of the Andean Group within the framework of the Declaration of Ayacucho.

2. Declaration on the Denuclearization of Africa

247. At its first regular session, held at Cairo from 17 to 21 July 1964, the Assembly of Heads of State and Government of the Organization of African Unity (OAU) adopted a declaration on the denuclearization of Africa in which the Heads of State and Government announced their readiness to undertake, in an international treaty to be concluded under the auspices of the United Nations, not to manufacture or acquire control of nuclear weapons. Since that date, the General Assembly has repeatedly called upon all States to consider and respect the continent of Africa, including the continental African States, Madagascar and other islands surrounding Africa, as a nuclear-weapon-free zone. 28/

248. On that occasion the African States have stated that, recognizing that the denuclearization of the African continent constitutes a practical measure for impeding the proliferation of nuclear weapons in the world and for permitting the attainment of general and complete disarmament and the achievement of the objectives of the Charter of the United Nations, they reaffirm their appeal to all States, particularly those of the nuclear club, to respect the continent of Africa as a nuclear-weapon-free zone. The African States have also reaffirmed their long-standing attachment to nuclear disarmament and to the prevention of a nuclear war as well as to the non-proliferation of nuclear weapons, in particular to the prevention of the introduction of nuclear weapons in the Continent. The African States have considered that any non-proliferation régime depends essentially on the attitude of the States members of the nuclear club. If those States wish to move forward in this field, the African States have declared, they should not advocate non-proliferation while, at the same time, reinforcing their own nuclear stocks, or directly or indirectly helping their allies, in particular South Africa, whose military and nuclear capabilities threaten international peace and security.

3. Declaration of the Indian Ocean as a Zone of Peace

249. The Declaration of the Third Conference of Heads of State or Government of Non-Aligned Countries, held at Lusaka from 8 to 10 September 1970, called upon all States to consider and respect the Indian Ocean as a zone of peace from which great Power rivalries and competition as well as bases conceived in the context of such rivalries and competition should be excluded, and declared that the area should also be free of nuclear weapons. Subsequently, the General Assembly adopted resolution 2832 (XXVI) of 16 December 1971, by which the Indian Ocean, within limits to be determined, together with the airspace above and the ocean floor subjacent thereto, was designated for all time as a zone of peace. The Assembly also called upon the great Powers to enter into consultations with the littoral States of the Indian Ocean with a view to halting the further escalation of their military presence there and to eliminating from the area all bases, military installations and logistical supply facilities, nuclear weapons and other weapons of mass destruction. Furthermore, it called upon the littoral and hinterland States, the permanent members of the Security Council and other major maritime users of the Indian Ocean to enter into consultations aimed at the implementation of the Declaration whereby (a) warships and military aircraft would not use the Indian Ocean for any threat or use of force against any littoral or hinterland State; (b) the right to free and unimpeded use of the zone by the vessels of all nations would be ensured; and (c) international agreement would be reached for the maintenance of the Indian Ocean as a zone of peace.

250. In 1972, by resolution 2992 (XXVII) of 15 December 1972, the General Assembly established the Ad Hoc Committee on the Indian Ocean and, since 1973, the Assembly has generally considered the question of the Indian Ocean, and the matter of holding a conference on the issues, in connection with the annual reports of the Ad Hoc Committee. The number of Ad Hoc Committee members has been increased, at various dates, from 15 to 48, and the General Assembly has adopted many resolutions on the subject. 29/ On 11 December 1979 it was decided, by General Assembly resolution 34/80 B, to convene a Conference on the Indian Ocean at Colombo as a

necessary step for the implementation of the Declaration of the Indian Ocean as a Zone of Peace. The preparatory work relating to the Conference is at present being discussed by the Ad Hoc Committee on the Indian Ocean.

4. South-East Asia as a Zone of Peace and Nuclear-Weapon-Free Zone

251. In November 1971, the member States of the Association of South East Asian Nations (ASEAN), comprising at that time Indonesia, Malaysia, the Philippines, Singapore and Thailand, issued a Declaration pronouncing their intent to secure international recognition of, and respect for, South-East Asia as a zone of peace, freedom and neutrality. Since then, the ASEAN States have been actively engaged in the further elaboration of the principles, objectives and elements of such a zone, which would embrace the entire region of South-East Asia and within which a nuclear-weapon-free zone would form an essential part. Subsequently, the Seventh Conference of Heads of State or Government of Non-Aligned Countries, held at New Delhi in March 1983, in its Political Declaration "noted with approval the efforts being made for the early establishment of a zone of peace, freedom and neutrality in the region and called upon all States to give those efforts their fullest support". Considering the vast sea areas and strategic international waterways that would be encompassed by such a zone, ASEAN countries believe that its eventual establishment in conformity with the provisions of the Convention on the Law of the Sea would constitute another significant regional contribution to the lessening of the naval arms race and the enhancement of economic co-operation and development in a vital region of the world.

5. Security and co-operation in the Mediterranean

252. Questions relating to security and co-operation in the Mediterranean were considered, inter alia, by the Conference on Security and Co-operation in Europe (CSCE) between July 1973 and August 1975. The outcome of that consideration was reflected in the Mediterranean Chapter of the Final Act of the Conference in which the participating States declared a number of intentions in recognition of the fact that security in Europe was closely linked with security in the Mediterranean area as a whole. Further consideration was given to the issues at the CSCE follow-up meetings held at Madrid between November 1980 and September 1983.

253. Within the United Nations, the General Assembly in recent years has adopted several resolutions on the subject of strengthening security and co-operation in the Mediterranean region. 30/ Separately, action has been taken by some of the Mediterranean States themselves, and the first ministerial meeting of the Ministers for Foreign Affairs of the Mediterranean members of the Non-Aligned Movement was held at Valletta on 10 and 11 September 1984. In the Final Declaration of that meeting (see A/39/526-S/16758) it was stated, inter alia, that:

> "The Ministers also considered that the freedom of the high seas in a closed sea like the Mediterranean should be exercised scrupulously and exclusively for the purposes of peace, and that naval deployment, particularly by States outside the region, that directly or indirectly threatened the interests of non-aligned Mediterranean members should be excluded." (see para. 13)

6. South Pacific Forum

254. Meeting at Tuvalu in August 1984, the countries of the South Pacific Forum, comprising Australia, Cook Islands, Federated States of Micronesia (as an observer), Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa, agreed on the desirability of establishing a nuclear-free zone in the region at the earliest possible opportunity in accordance with certain principles. Bearing in mind the geographical features of the region, it is clear that such a zone, if established, will embrace large areas of the seas.

CHAPTER VI

IMPLICATIONS FOR SECURITY AND THE PEACEFUL USES OF THE SEAS

A. Implications for international security

255. The foregoing chapters of this study have described, in general terms, the nature of the competitive accumulation and qualitative development of arms taking place in the oceans and seas of the world that constitute the naval arms race. This phenomenon is a part of the global arms race; in turn, the global arms race is a reflection of the political perceptions of States and the continued absence of a condition of international security. However, while being an integral part of the global arms race, the naval arms race has its own characteristics and, in part, its own intrinsic motivations: one of the unique features of the naval arms race is that a great part of naval operations takes place on the high seas. These waters are open for use by all who have interests in the peaceful uses of the sea and the peaceful development and exploitation of its resources. To many of the States seeking to use the oceans for such peaceful purposes, particularly if such States do not have strong naval forces of their own, naval operations conducted on the high seas can in certain situations create anxiety and insecurity rather than reassurance.

256. The unremitting quest for security has been at the forefront of the activities of the United Nations since its inception in 1945, as recognized by the fact that the very first purpose of the United Nations expressed in Article I of the Charter of the organization is: "to maintain international peace and security" (Art. 1). That the quest has been one of long standing was indicated by the General Assembly in the opening words of the Final Document of the Tenth Special Session, adopted by consensus in 1978: "The attainment of the objective of security, which is an inseparable element of peace, has always been one of the most profound aspirations of humanity." (para. 1). Additionally, it could be noted that the Convention on the Law of the Sea is also seen as contributing to the strengthening of security, as reflected in the preamble: The States parties to this Convention believing that "the codification and progressive development of the law of the sea achieved in this Convention will contribute to the strengthening of peace, security, co-operation and friendly relations among all nations".

257. Yet the goal of security has persistently eluded humanity's grasp. In its continued absence, States have instead accumulated weapons in an apparent effort to guarantee by arms what international negotiation and co-operation have so far failed to provide. The advent of nuclear weapons and the constant technological progress in their means of delivery, their accuracy and their lethality have brought greatly increased dangers to the survival of the entire human race. The threats to basic survival, and the harmful effects of the unproductive and spiralling arms race on economic and social progress in both developing and developed countries, have been fully described in the Final Document, in previous United Nations disarmament studies and in many other governmental and non-governmental statements and publications.

258. The implications for security of the burgeoning quantitative and qualitative developments taking place in the world's navies are many. First and foremost, there is the threat to world security represented by the strategic nuclear weapons at sea. By one estimate amounting to more than 7,200 SLBM warheads, 31/ some 40 per cent of the estimated world total of strategic nuclear warheads are designed for naval deployment. Owing to the operating cycles of SSBNs, this total cannot be operationally available at sea all at once, but even so there is no doubt that significant numbers are continuously at sea. According to the same source, at any one time from 17 to 20 United States, 10 Soviet, 2 French and 1 to 2 British SSBNs may be on station, carrying some 3,100 nuclear warheads. On submerged patrol in the oceans, including under the Arctic ice-cap, every endeavour is made by SSBNs to remain entirely undetected at all times, despite the considerable efforts that are made to locate and trail them from the moment they leave harbour to their return at the end of their patrols. These activities, which up to now have taken place continuously in the world's northern oceans and seas, arouse concerns on the part of States which do not participate in them.

259. In that world security is held hostage to the strategic nuclear policies of the nuclear-weapon States, in particular those of the Soviet Union and the United States, the unceasing deployment of such strategic nuclear forces at sea constitutes the most potent naval capability endangering international peace and security. The arguments on the part of some that such deployments represent successful mutual deterrence are to others insubstantial and inadequate protection against the prospect of misunderstanding, technical fault or human error unleashing a nuclear exchange which would affect the whole world. In brief, in the view of the overwhelming majority of States, the possible consequences are too disastrous to warrant the smallest risk and therefore measures of nuclear disarmament are urgently needed.

260. At a different level, the numbers and extent of the deployment of tactical nuclear weapons also give rise to very great concern. As indicated in chapter III, many of the warships, submarines and aircraft of the nuclear-weapon States can be considered nuclear-capable and, as far as can be ascertained, there would appear to be a wide availability in service of tactical nuclear weapons, including short-range missiles. In the wide-open spaces of the ocean it is possible to use tactical nuclear weapons in a military encounter without direct damage to civilian life or property. Notwithstanding the existence of rigorous control procedures, it is possible to envisage circumstances in which such use might be initiated. Such

possibilities might easily lead to a highly dangerous reaction or response which could have grave implications for international security as a whole. In addition, there are important questions concerning custody on board, safety in cases of collision and the absolute reliability of control systems in peacetime, even though the nuclear-weapon States maintain that in fact their safety record to date has been sound. Overall, very serious doubts remain on the part of non-nuclear-weapon States concerning the assurances given by the present five nuclear-weapon States on these issues.

261. There is also the very real difficulty of externally identifying which ships, submarines or aircraft are actually carrying tactical nuclear warheads. In addition, with submerged submarines there is the further difficulty of identifying even their nationality and of establishing communications with them. In this regard the development of sea-launched cruise missiles, or torpedoes, capable of carrying either a nuclear or a conventional warhead creates extremely complex verification problems. While accepting that because a ship is nuclear-weapon-capable it does not necessarily mean that such weapons are on board, the wide availability of tactical nuclear weapons that now appears to exist, and the custom of certain nuclear-weapon States neither to confirm nor to deny the presence on board of nuclear weapons, will raise very deep misgivings on the part of non-nuclear-weapon States when requested to allow such vessels to pay port visits or enter their territorial waters. Therefore, for several reasons, early consideration should be given by the nuclear-weapon States to agree on effective measures of curtailing the numbers and deployment of tactical nuclear weapons.

262. The world-wide capabilities of the general-purpose naval forces of the United States and the Soviet Union also have significant international security implications. To a lesser extent, there can be similar effects from the activities of some of the blue-water navies.

263. In the first instance, as part of their respective alliance arrangements the navies of the member States of NATO and WTO regularly conduct exercises, including amphibious exercises, and take part in training. While such activities are considered by their respective participants as part of their collective defence arrangements, States outside those alliances often consider them to be demonstrations of military force which are more provocative to the other side than reassuring. As such, in the opinion of non-aligned and neutral States, naval exercises and training of this nature are more likely to unsettle international security than to consolidate it: this may be particularly so in the case of large-scale exercises, especially if world-wide, which are clearly designed to create exercise conditions and incidents close to those anticipated in the event of actual conflict. There have been instances of unduly prolonged naval manoeuvres which, even though carried out with the approval of an adjacent coastal State, have in effect constituted a risk to the region or sub-region involved, including the potential aggravation of conflicts.

264. The principle of freedom of navigation on the world's oceans makes a coastal State the neighbour across the sea of every other coastal State, including all significant naval Powers. While naval forces have the recognized legal right to cruise and operate off the coasts of foreign States, coastal States, particularly

those which are small or medium in size, have on the other hand a legitimate claim for a reasonable "seaboard security" and should not be subjected to power projection possibly originating from such activities. It should be noted in this regard that the Convention on the Law of the Sea includes balanced provisions which would meet security needs of both flag States and coastal States provided they are strictly implemented. It should also be noted that the security of both categories of States could be further enhanced by means of agreed confidence- and security-building measures in harmony with the Convention and customary international law.

265. It is true that naval exercises are not limited to the naval forces of the two main alliances: exercises and co-operative manoeuvres take place between the navies of many countries, but for the most part such activities are seen as more regional or subregional in nature and they do not have the potential for global confrontation.

266. When employed on normal deployments as part of national peacetime tasks, activities by world-wide and blue-water navies outside their own territorial and regional areas can become a significant political factor in regional and local situations. As stated previously, the knowledge that there is a strong naval presence in the area, particularly if it is known to have the capability of projecting military force on shore, can become an important political factor in regional and local situations. Many regional States may become concerned at the implications of such deployments for regional security and strongly dislike the implied threat, real or perceived, of external intervention in the regional or internal affairs of other States.

267. Extra-regional States may consider that they have specific national interests in the area concerned that necessitate naval presence. In this context it is relevant to consider the nature of such naval presence in areas that are often far from the national territory of the State or States concerned.

268. In the first category, there are such activities as routine co-operation in times of peace between the navies of maritime Powers and those of coastal States. These can take the form of joint manoeuvres and other traditional activities arising from bilateral or multilateral agreements of co-operation, support or assistance between States.

269. The second category arises from the development of serious local conflicts not directly linked to any confrontation between major Powers. In such cases there may be legitimate interests by extra-regional States in the maintenance of the freedom of navigation and the continuation of maritime trade in order to facilitate the transportation of vital commodities, to the extent that such naval activities remain in conformity with the Charter of the United Nations and the provisions of the Convention on the Law of the Sea.

270. A third category is that in which confrontation between the two principal military States is projected to other regions through naval presence. There would appear to be certain cases in which such confrontation has been spread to distant geographical areas which were previously free of external involvement. It is

widely believed that the dispatch of warships as a "show of force", or as a form of coercion or other pressure, particularly to areas of international tension, can often have harmful rather than helpful effects on regional security.

271. Finally, there is the category in which open conflict takes place and in which one of the parties is a significant naval Power acting in a theatre of operations distant from the scope of application of its own military alliance although perhaps with the support, in different ways and to different extents, of other members of that alliance and with the most sophisticated military means, including the hypothetical, but not a priori discounted, utilization of nuclear weapons in that conflict.

272. In connection with the above-mentioned forms of naval presence, the continued establishment and/or reinforcement of military bases abroad, particularly foreign naval bases, constitute a problem deserving particular attention. In most cases foreign naval bases are established as a result of bilateral arrangements between sovereign States; recent years have witnessed a decline in the number of such bases owing to a variety of factors. However, to a large majority of States, foreign naval bases are perceived as generating greater points of friction and tension in the regions concerned rather than contributing to greater stability and security. These States therefore regard the continuing presence of foreign naval bases as an unwelcome factor of destabilization to regional security and hence as a potential threat to international peace and security. Bases and other military installations in Non-Self-Governing Territories give rise to additional problems to which the Special Committee on the Situation with regard to the Implementation of the Declaration on the Granting of Independence to Colonial Countries and Peoples and the Fourth Committee of the General Assembly have devoted continuing attention for a number of years and which have been the subject of numerous resolutions receiving wide support in the General Assembly.

273. At the local level, the existence of naval forces has often tended to prompt the use of force in the settlement of disputes, in direct contravention of the Charter of the United Nations. Incidents of open conflict have occurred in several parts of the world in the past few years, and the conjunction of a greater number of sovereign States, each with the inherent right of self-defence, and larger sea areas which fall under national jurisdiction gives cause for the belief that there may be more rather than fewer such incidents in the future. Moreover, in addition to incidents on the high seas, there may be increased risk of incidents in coastal waters or violations of coastal security along the shoreline itself; this may be particularly the case in the light of the proliferation of light, missile-armed warships. There is even greater need, therefore, for the exercise of moderation and restraint on the part of all, and recourse to the machinery provided in the Charter of the United Nations, if further threats to security are to be contained.

B. Implications for the freedom of navigation and international shipping routes

274. In one particular sense, the activities of naval forces represent something of a paradox with regard to the freedom of navigation and international shipping routes. To some States, naval forces represent a menace to such liberties, in their use of the oceans to demonstrate their mobility and power and in their capacity for the application of force in various ways; whereas, to other States - particularly those that have traditionally depended on overseas trade and free access to maritime resources - naval forces are seen as an essential means of safeguarding their interests in such freedoms. It is believed that this apparent paradox might be resolved by full and positive application of the elements reflected in the following paragraphs.

275. As stated previously, the extension of territorial waters, the introduction of exclusive economic zones and the designation of rules for rights of passage through territorial waters, archipelagic waters and straits used for international navigation, as set out in the Convention on the Law of the Sea, are expected to have interactive effects on the deployment and activities of naval forces.

276. In a growingly interdependent world the freedom of the high seas is as important as it has ever been; indeed, in some respects it may well be even more important than hitherto. Article 87 of the Convention on the Law of the Sea stipulates:

> "the high seas are open to all States, whether coastal or land-locked, freedom of the high seas is exercised under the conditions laid down in the Convention and by other rules of international law" (para. 1).

The Article lists specific freedoms, such as that of navigation and overflight, then continues:

> "These freedoms shall be exercised by all States with due regard for the interests of other States in their exercise of the freedom of the high seas ..." (para. 2).

Article 88 states simply:

> "The high seas shall be reserved for peaceful purposes."

The provisions of articles 87 and 88 apply also to the exclusive economic zone.

277. In the light of such provisions in the Convention on the Law of the Sea to promote freedom of navigation and protection of international shipping routes, the harmful impact of naval activities that curtail the free and open use of sea lanes cannot be over-emphasized. In this context, the applicability of the 1907 Hague Conventions in time of war should be noted. Although the following activities may sometimes be justified on the grounds that they safeguard the ships of States not involved in disputes, such activities as mining, covert submarine operations in coastal waters, blockades, the imposition of restrictions on the use of certain areas of the high seas, the establishment of maritime exclusion zones as a result of conflict and similar practices may constitute interference with the peaceful uses of the sea. The nature of such interference may include interruption of hazard to commercial shipping, activities directed against a State's coastal

security or denial of access to traditional fishing grounds. The part that naval force may play in the exercise of the inherent right to individual or collective self-defence or in actions against terrorism, piracy or smuggling is recognized, but States cannot expect to enjoy the freedom of the high seas and the uncritical support of the international community if at times they deny those freedoms to other States using the seas for peaceful purposes. For States not participating in an ongoing conflict, securing the right to use the seas in times of crisis is an important objective.

C. Implications for the exploitation of marine resources

278. With greater interest in the exploitation of marine resources and the introduction of the exclusive economic zone, the number of offshore and other commercial activities will continue to increase. Although ordinary commercial accidents such as tanker collisions can have major pollution effects, accidents at sea involving a nuclear-armed or nuclear-powered vessel could have very major harmful effects on marine resources, particularly if resulting radiation led to extensive contamination of the sea area concerned; the risk of this possibility is of major importance given the significance of the sea as one of the principal sources of life on the planet. Separately, grave damage to the living resources of the sea could be caused by naval confrontation or attacks on offshore oilrigs. Instances of extensive pollution and damage to marine resources, or interruption of such activities as fishing, have already resulted in recent years from naval activities of a warlike nature.

279. On the other hand, the growing complexity of offshore activities will call for much-improved national and international management arrangements if marine resources are to be exploited in a rational and orderly manner to the benefit of mankind. It has been noted that some maritime States have found their existing bureaucracies unequal to the task: the United States has some 40 overlapping agencies concerned with the offshore estate, the United Kingdom over 20. 32/ New resources, new developments, new activities, new responsibilities - all will demand more co-ordinated maritime policies, administrative machinery and policing capabilities. There are likely to be more, not fewer, disputes over fishing rights and laws and the activities of trawlers. There will probably be increased competition between various parties endeavouring to exploit the same area for different resources. More sea traffic and greater industrialization will create a greater need for more effective pollution controls and improved protection of the marine environment. Other effects of greater sea traffic may include an increased incidence of collisions at sea, more salvage and wreck clearance, an extended need for traffic separation systems and a greater need for search and rescue services in the protection of human life. In many of these aspects much has already been achieved in recent years through the valuable work of IMO.

280. Within this growing range of activities, there is much that appropriately equipped naval vessels could do. There are also many ways in which the greater experience and capacities of the maritime Powers that at present have world-wide and blue-water navies could assist coastal States, if so requested and without interfering in their affairs, in dealing with this entirely new range of problems. In doing so, they would be diverting some of their political and military energies away from a highly expensive naval arms race and towards greater international co-operation to the social and economic benefit of the international community at large.

281. A particular instance that has received much attention in the General Assembly has been the question of Namibia. It is important to recall that since resolution 1803 (XVII), of 14 December 1962, the General Assembly has reaffirmed many times in other resolutions the permanent sovereignty of States, territories and peoples subject to foreign occupation, colonial domination or the régime of apartheid, over their natural wealth and resources, notably the obligation to compensate them for the exploitation, the loss or the exhaustion of their natural resources. The situation becomes more complex in Non-Self-Governing Territories and colonial Territories such as Namibia, where military bases and installations have been established and colonial domination is being exercised over that Territory while its renewable and non-renewable natural resources are being exploited. Moreover, the Charter of the United Nations contains a "Declaration regarding Non-Self-Governing Territories" (Art. 73). In connection with this Article, the Conference on the Law of the Sea declared, in resolution III annexed to its Final Act:

> "...
>
> "(a) In the case of a territory whose people have not attained full independence or other self-governing status recognized by the United Nations, or a territory under colonial domination, provisions concerning rights and interests under the Convention shall be implemented for the benefit of the people of the territory with a view to promoting their well-being and development.
>
> "..."

CHAPTER VII

POSSIBLE MEASURES OF DISARMAMENT AND CONFIDENCE-BUILDING

282. In resolution 38/188 G, the General Assembly requested the preparation of a comprehensive study on the naval arms race and an analysis of its possible implications in order to facilitate the identification of possible areas for disarmament and confidence-building measures. Several of the comments of Member States, addressed to the Secretary-General in response to resolution 38/188 G, included remarks to the effect that the value of the study would be undermined if it led only to the gathering of information on naval armaments, the description of their technical details and methods of comparing naval forces. From the comments submitted by Member States, there was a widespread view that the Group of Experts should endeavour to identify areas of difficulty and possible measures for discussion and negotiation in the appropriate forums.

283. The major significance of the Final Document of the Tenth Special Session of the General Assembly, the first special session devoted to disarmament, held in 1978, has been described in paragraphs 8 and 13 of the present report. The objectives of measures of disarmament and confidence-building in the naval context are as follows:

(a) To strengthen international peace and security in accordance with the purposes and principles of the Charter of the United Nations;

(b) To contribute to the international disarmament strategy set out in the Final Document;

(c) To promote the peaceful uses of the seas and oceans, the equitable and efficient utilization of their resources, the conservation of their living resources and the study, protection and preservation of the marine environment.

284. In accordance with the Final Document, agreements or other measures should be resolutely pursued on a bilateral, regional and multilateral basis with the aim of strengthening peace and security at a lower level of forces and taking into account the need of States to protect their security. Among the other guiding principles of the Final Document that are relevant, it should be noted that the nuclear-weapon States have a primary responsibility for nuclear disarmament and, together with other militarily significant States, for halting and reversing the arms race.

285. Whenever arms control and disarmament in the maritime domain are under discussion, some factors should be considered axiomatic. First, disarmament measures should be balanced and should not diminish the security of any State. But as naval forces are not independent of other military forces, they should be considered in their general military context. There is no such thing as an independent naval balance or parity. Disarmament measures in the maritime field should thus be balanced in that general sense. Second, this fact combined with the very differing geographical situations of States could require multilateral measures of restriction for naval forces and weapons to be numerically asymmetrical in order to maintain an overall military situation in balance. Third, because of the universal nature of the Convention on the Law of the Sea, such measures should not take the legal form of amendments to the Convention. They should be embodied in separate legal instruments in harmony with the Convention. Fourth, as in all arms control and disarmament, appropriate verification and complaints procedures are essential for the proper implementation of agreed measures.

286. Just as this study of the naval arms race has been a wide-ranging consideration of very complex issues, similarly there exists a wide range of possible measures of disarmament and confidence-building. Some may be of general application, while others may be applicable in narrow circumstances such as specific weapon systems or in specific geographical areas. Separately, possible measures that may find favour in one quarter may not be attractive in another, or perhaps may be more acceptable at some point in the future but are not regarded as susceptible to negotiation at present. The following survey of possible measures is presented as an illustrative, though not exhaustive, list of matters that might be considered for negotiation. For convenience, they are grouped as follows:

Quantitative restraints;

Qualitative or technological restraints;

Geographic and/or mission restraints;

- Confidence-building measures;

- Modernization of the laws of sea warfare.

Some of the possible measures relate to more than one group.

A. Quantitative restraints

287. Since the Washington Naval Treaty of 1922, there has been long-standing interest in quantitative restraints that place numerical limits on certain types of naval vessels and weapons. More recent examples of quantitative restraints were the numerical limits on ballistic missile launchers on submarines and on modern ballistic missile submarines agreed in the 1972 SALT I Interim Agreement, and the aggregate limits on strategic offensive arms set by the 1977 SALT II Treaty. Difficulties with quantitative restraints could arise from the subsequent tendency on the part of States to pursue vigorously construction programmes in categories of ships or weapons not covered by the agreed restrictions. Even so, quantitative restraints should not be lightly discarded as they are the most direct means of limiting and reducing the competitive accumulation of arms. It has been suggested that quantitative restraints might include:

(a) A freeze on the manufacture of naval nuclear weapons;

(b) Limitations on numbers of SLBM launchers and nuclear warheads;

(c) Limitations on the introduction of new SLBM systems;

(d) Specific reductions in ballistic missile submarines and in SLBMs;

(e) Prohibition of or limitations on sea-launched cruise missiles with nuclear warheads;

(f) Specific reductions in on-board tactical nuclear weapons, either by numbers or types or by types of ship;

(g) Limitations on numbers of naval ships of main types;

(h) Limitation on amphibious capabilities.

It should be clearly understood that the Group of Experts has not listed these suggestions with a view to legitimizing the continuance of nuclear weapons but on the contrary offers them as means of starting a process of progressive and balanced reductions leading ultimately to the complete eradication of nuclear weapons from naval operations within the overall objective of general and complete disarmament under strict and effective international control.

B. Qualitative or technological restraints

288. The rapid pace of technological advance has been highly evident in recent years. The constant pressure to gain qualitative advantage has resulted in massive diversion of resources to research and development by those States able to afford such activities. In producing significant technological progress, the efforts create a cycle of competition that is very difficult to stop; they are also undertaken at a great cost and can have destabilizing results. The concept of numerical restraints may also present other difficulties owing to some of the asymmetries described earlier in this report. Measures to restrain technological improvements are generally very difficult to verify unless a particular technological development is altogether banned, but on the other hand, technology itself may make possible ways of controlling elements of the naval arms race or the effects of certain weapons. Suggested measures of restraint have included:

(a) Limitations on dual-capable missiles (i.e. those able to carry either nuclear or conventional warheads);

(b) Systems for ensuring that naval armaments have a method for deactivation which will disable them if they do not explode;

(c) Methods for neutralizing, minimizing or banning the emplacement of monitoring systems in or on the sea-bed or ocean floor;

(d) Prohibition on the development and production of new SLBM systems.

289. In the matter of naval arms transfers the diversion of scarce resources to the acquisition or development of arms by countries often has harmful economic effects. For this reason, there may also be merit in considering the applicability of agreed-controls on arms transfers and the transfer of technology for naval application, inter alia, as a complement to the prohibition of certain arms developments. Such restraints should not impede a State's ability to acquire arms in order to discharge its right to self-defence, nor should such means be used to deny access on the part of developing States to technological or industrial progress. Qualitative and/or quantitative limitations on arms transfers could be of significant value, but the difficulties and sensitivities, some of which were described in the recent United Nations Study on Conventional Disarmament, 33/ should be given consideration if satisfactory progress in this area is to be achieved.

C. Geographic and/or mission restraints

290. Limitations of this type have had some success in the past, the best known perhaps being the Rush-Bagot Agreement of 1817 and the Montreux Convention of 1936. A key ingredient of any limitation measure, and of its subsequent success and longevity, rests in the fact that it must contain something of great value to each and every signatory. Without this ingredient, a State may consider that the gain to be had from the proposed agreement is not worth the concessions that have to be made. Furthermore, progress in such negotiations cannot proceed in a political vacuum but is subject to the general pressures and climate of international relations between States.

291. Another important factor to be borne in mind in the consideration of possible geographic and/or mission restraints is the unique mobility and flexibility of naval forces. States may wish to exercise the principle of the freedom of the high seas yet recognize that certain limitations to deployments - for instance, temporary deployments may be permitted but not permanent stationing of naval forces - may provide specific benefits. In other circumstances, it may be possible to negotiate limitations on certain kinds of naval deployment, or naval missions, that would lessen the chances of confrontation in areas of possible regional conflict.

292. There would appear to be considerable interest on the part of many States in the limitation of the deployment of nuclear weapons. Given that the present policies of nuclear-weapon States are neither to confirm nor deny the presence on board of nuclear weapons, one of the major difficulties to be overcome is the matter of identifying which ships, submarines or naval aircraft are carrying nuclear weapons at any particular time. The efforts to introduce nuclear-weapon-free zones, such as in Latin America by the Treaty of Tlatelolco and in Antarctica by the Antarctic Treaty, could provide stepping-stones towards the consideration of new areas in which nuclear weapons would be prohibited. In this respect, it may be possible to give consideration to agreements for extending existing areas that are free of nuclear weapons, e.g. increasing the nuclear-weapon-free régime to cover all sea areas presently demarcated by the Antarctic Treaty at the latitude of 60° south (see article VI of the Treaty, which has the effect of excluding the high seas within the area). There have also been proposals to introduce a contiguous nuclear-weapon-free area at sea between 60° south and some other latitude as may be agreed.

293. Other types of geographical restraint could be the confinement of missile submarines to agreed-areas, disengagement arrangements achieved by limitations on naval deployments in certain oceans or seas or reductions in the level of military presence in appropriate regions distant from home territory; limitations on the length or size of naval manoeuvres in certain areas; and reduction of existing, and prohibition of new, foreign naval bases.

294. Where it is agreed that restrictions and confidence-building measures are to apply to a specific region, there are two general ways in which the area of application might be defined. One is a definition in geographical terms as was done in the case of the Treaty of Tlatelolco. The other is a definition in functional terms as envisaged in the agreed-mandate for the Conference on Confidence- and Security-building Measures and Disarmament in Europe.

295. In recent years, various ideas have been put forward for discussion. These include:

(a) A ban on the transit and transport of nuclear weapons in international waters, globally, by area or by categories of ships;

(b) The withdrawal of vessels carrying nuclear weapons from certain ocean and sea areas, e.g. the Indian Ocean and the Mediterranean Sea;

(c) The establishment of peace zones, or nuclear-weapon-free zones, with ocean or sea areas as their primary constituents, e.g. the Indian Ocean, the Mediterranean Sea, the Baltic Sea, South-East Asia, the South Pacific;

(d) The prohibition of the transit and transport of nuclear weapons through peace zones or through nuclear-weapon-free zones;

(e) The removal of missile submarines from extensive areas of combat patrol and the confinement of their patrol areas within agreed limits;

(f) The restriction of naval activities by the creation of maritime zones within which the rights of non-coastal States of individual zones would be restricted;

(g) The restricting and lowering of the level of military presence and military activity in appropriate regions. In this context, it has been suggested that such restraints may be applicable in many areas such as the Atlantic, the Indian or the Pacific Oceans, in the Mediterranean Sea or in the Gulf, and in sea areas adjacent to northern Europe;

(h) The prohibition on the establishment of new, and the gradual elimination of existing, foreign naval bases;

(i) Various geographical limitations on naval exercises and manoeuvres.

D. Confidence-building measures

296. It has long been argued that one of the best ways of encouraging States to negotiate measures of disarmament is to take steps to increase mutual trust and confidence. In the United Nations Comprehensive Study on Confidence-building Measures, the Group of Experts concluded that "the overall objective of confidence-building measures is to contribute towards reducing or, in some instances, even eliminating the causes for mistrust, fear, tensions, and hostilities as significant factors behind the international arms build-up". 34/

297. It has also long been recognized that confidence-building measures cannot be substitutes for specific disarmament measures. They assist and support disarmament initiatives and they can create an atmosphere conducive to progress, but they are not a replacement for real disarmament action.

298. Confidence-building measures can be agreed in many forms. In the naval context they can be political and/or military. They can be global, regional or subregional, and they can be negotiated multilaterally or bilaterally or even adopted as unilateral initiatives. Among the types of measures that have been suggested in recent years as appropriate to the naval arms race are the following, some of which may be closely related to measures listed in other groups:

(a) Extension of existing confidence-building measures to seas and oceans, especially to areas with the busiest sea lanes;

(b) Agreements not to expand naval activities in areas of tension or armed conflict;

(c) As a corollary of (b), withdrawal of foreign naval forces to specified distances from regions of tension or armed conflict;

(d) Agreements between two or more extra-regional States to forgo on a reciprocal basis some or all forms of naval deployment, activity and/or transit in a particular area;

(e) Restraints on the use of foreign naval bases;

(f) Restraints on the use of certain weapon systems;

(g) The promotion of mutual trust and confidence by more openness between States concerning their naval strengths, activities and intentions, e.g. prior notification of and exchanges of information on naval exercises or manoeuvres or on major movements of naval, including amphibious, forces; the presence of observers during exercises or manoeuvres; notification of the passage of submarines, especially in regions of high international tension;

(h) International agreements to prevent incidents between naval forces on or over the high seas, similar to the existing US/USSR Agreement on the prevention of incidents on and over the high seas of 1972;

(i) Measures related to the non-proliferation of certain technologies of maritime warfare.

E. Verification

299. As stated in the Final Document of the Tenth Special Session of the General Assembly, "Disarmament and arms limitation agreements should provide for adequate measures of verification satisfactory to all parties concerned in order to create the necessary confidence and ensure that they are being observed by all parties" (para. 31). Verification has important political and technical aspects - political because States are often very reluctant to allow verification to be carried out on their own national territory because the nature of the activities may be unacceptably intrusive, technical because there are ways in which certain forms of verification can be carried out reliably by national technical means, and because such means can work adequately without necessitating on-site inspection.

300. Verification of naval disarmament and associated measures has certain features which can be different from verification of such measures on land. In the first place, verification carried out at sea does not raise the aspect of intrusion or violation of land territory or territorial airspace if it is carried out on the high seas, and no on-site inspection is involved. Second, naval vessels and

aircraft are finite units; their presence and movements can under certain circumstances be readily and precisely identified. Third, the international nature of the oceans - indeed, the freedom of the seas - renders observation more practicable, provided that the necessary technical and physical means are available. In this respect, however, significant problems will have to be addressed concerning such aspects as submarines and as the identification of which ships are, or may be, carrying nuclear weapons. On the other hand, some confidence-building measures providing for openness and the transfer of information could contribute to more effective verification.

301. There are wide possibilities for the choice of how verification might be carried out and by whom, depending on the matter to be verified. Technical means might include detection devices on satellites, aircraft or other vessels or deployed underwater. Verification teams could be drawn from the States participating in the measures, or they could be representatives of international or regional organizations or representatives of neutral or other States from within, or outside, the area concerned. There is almost no limit to the types of verification methods that might be used without being intrusive, provided that States demonstrate the necessary political readiness to consider the measures needed to ensure the mutual confidence of States in fulfilling their obligations.

F. Modernization of the laws of sea warfare

302. Most of the treaty law which regulates naval warfare is very old, for example the Paris Declaration of 1856 relating to merchant shipping in wartime and the Hague Conventions of 1907 35/ which today are partly obsolete. The only comparatively modern document on war at sea is the second Geneva Convention of 1949 36/ on the protection of wounded, sick and shipwrecked members of armed forces at sea. However, the long tradition and existence of old treaties in force suggest that this issue should be considered in some detail.

303. The recent revision of, and additions to, the rules of international humanitarian law applicable in armed conflict (the 1977 Protocols Additional to the Geneva Conventions of 1949) 37/ did not fully address the laws of war at sea. The second Geneva Convention does not regulate warfare as such but only the protection of victims of naval war. In the light of the many changes and developments that have taken place in the naval sphere, there seems to be a need for modernization in this field of international law. A complete revision and updating of the relevant Hague Conventions and other older instruments would probably not be a realistic undertaking. However, it should be possible to single out certain issues of particular interest and of pressing urgency and consider the adoption of separate brief protocols on them. The conclusion and adoption of such protocols could mean, first, a progressive development of international law in this field and, second, a degree of protection for civilians and civilian values which, if adhered to by the major military Powers, could have considerable confidence-building effects. For instance, the problems of identification and communication at sea could probably be studied in the framework of the International Telecommunication Union, the International Maritime Organization and the International Civil Aviation Organization.

304. The following is a list of suggested topics that might be dealt with in international instruments:

(a) Zonal restrictions. In order to reflect current circumstances, there is a need for further development of international law concerning such concepts as "interception areas", "war zones", "blockade zones" or "total exclusion zones". Maritime powers have long been resorting to various zonal concepts in crises and in times of war. For States that are not parties to the conflict, such acts can involve enforced curtailment of the principle of the freedom of the high seas. The need for freedom of navigation and for keeping international sea communications open, in times of crisis and war as well as in peace, should be given due regard. The possibility and practicability of geographical and functional restrictions could be investigated. Merchant and fishing vessels (on condition that they are not engaged in unneutral services) should always be legally protected from armed attack, even if they must enter the zone at the risk of unintentional or collateral damage.

(b) Long-range weapons. Modern long-range missiles and torpedoes pose certain problems for the implementation of the general prohibition against indiscriminatory methods and means of warfare that has long been an established principle in international humanitarian law applicable in armed conflicts. When weapons are fired from such great distances it can be very difficult to select and identify targets. There is a danger of accidental strikes on units which are protected under international law, such as hospital ships and neutral merchant ships. In order to prevent disastrous mistakes in warfare and protect peaceful shipping, new practical measures in the context of the laws of sea warfare should be developed.

(c) Sea mines. The 1907 Hague Convention Relative to the Laying of Automatic Submarine Contact Mines (Convention VIII) is of limited value today. Its definition of mines does not accommodate later developments, i.e. modern mines which rely on magnetic, acoustic or pressure effect or a combination thereof. Convention VIII provides for neutralizing mechanisms (art. 1) and information regarding danger zones (art. 3). A new treaty could usefully build on the same concepts, adding requirements on recording the position and type of minefields in order to protect the peaceful uses of the marine environment.

(d) Protection of the marine environment. Part XII of the United Nations Convention on the Law of the Sea is entitled "Protection and preservation of the marine environment". Given the nature of the Convention, there are no explicit provisions therein offering protection of the marine environment against the consequences of armed attacks. As recent events in the Gulf have shown, oil pollution emanating from military operations can have unpredictable and very harmful consequences for the marine environment. According to the 1977 Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I) it is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment (art. 35). Although Protocol I specifically applies to warfare on land or in the air, it is for consideration that this general rule could usefully be extended to cover naval warfare through a specific protocol.

G. Relation to the Law of the Sea

305. Some States have noted that the Convention on the Law of the Sea and the Sea-Bed Treaty are not entirely in accord. As the Third Review Conference of the latter will take place not earlier than 1988 and not later than 1990, it might be appropriate for that Review Conference to given consideration to the matter, with a view to deciding what action, if any, should be taken. It is also for consideration that any future relevant arms limitation and/or disarmament agreements should be in harmony with the United Nations Convention on the Law of the Sea.

H. Appropriate forums for negotiations

306. The Group of Experts notes that in the past two years several States have made various suggestions concerning how progress might best be made and in what forums discussions and negotiations should proceed. These ideas have included the following:

(a) As a first step, consideration could be given to talks among the major naval Powers, the nuclear-weapon States in particular, possibly with the participation of a representative of the Secretary-General attending the talks, and later, an international conference, open to all interested States, could be convened;

(b) All major naval Powers and other interested States should take part in negotiations on the limitation of naval activities and naval armaments. In this context, the possibility could be examined of conducting such negotiations within the framework of the Conference on Disarmament at Geneva;

(c) It might also be possible to hold separate multilateral talks on this complex of questions, although multilateral talks on limiting naval activities and naval armaments should not serve as an obstacle to examining these questions at talks between nuclear Powers;

(d) Use could be made of all potentialities of a regional approach to the limitation of naval activities and naval armaments, e.g. by discussion at the Conference on Confidence- and Security-building Measures and Disarmament in Europe at Stockholm;

(e) The possibility of negotiations could be the subject of a preliminary analysis by the United Nations Disarmament Commission for a maximum period of two years, on the basis of this study.

307. The United Nations, in accordance with the Charter, has a central role and a primary responsibility in the sphere of disarmament. It is relevant to note that certain aspects discussed in the preceding paragraphs are already being discussed elsewhere in different contexts. In the fortieth session of the General Assembly, two initiatives on the subject will be discussed under separate agenda items. It would seem sensible to endeavour to bring the two initiatives together under one

item and, if possible, to arrive at a single course of action. Separately, there are also those who believe that the agenda of the Conference on Disarmament and that of the Disarmament Commission are already overburdened. On the other hand, it is important that action should be taken towards resolving some of the issues of the naval arms race described in the present report. Such action could be taken at a global, regional or subregional level, and multilaterally, bilaterally or even unilaterally.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

308. In carrying out a comprehensive study, as requested by the General Assembly in resolution 38/188 G, the Group of Experts has had to cover a broad compass. In essence, this report is an overview of a very wide and complex subject from which several significant conclusions of a general nature may be drawn.

309. It is useful to recall that some 71 per cent of the earth's surface is sea and over two thirds of the world's human population live within 300 kilometres of a sea coast. The importance of the sea, its uses and resources, to the human race cannot be over-emphasized. A major proportion of the world's international trade goes by sea; fisheries provide a vital source of protein to many hundreds of millions of people; an increasing amount of the world's energy supplies are derived from sea areas; and as technology develops and expands so, too, will the means of further developing the mineral resources of the sea-bed and the sea itself. The world's oceans have already played an important role in human exploration and development, and it can be expected that the role they will play in the future will be of even greater significance to mankind.

310. The specific value of the sea to an individual State varies widely from country to country according to geographical situation, extent of development, maritime outlook, economic dependence or independence and many other factors. Some States accord great importance to their sea lines of communication and marine industries and consequently will go to great lengths to protect them, both politically and if necessary militarily. To others, the seas often represent a challenging opportunity for the fulfilment of some of their basic aspirations for economic advancement. To many, the seas can also represent a potential source of threat to their national security and territorial integrity.

311. Into this picture, the advent of the Convention on the Law of the Sea has introduced a series of major and interconnected new elements. Large areas of what have been parts of the high seas will now become subject to the specific legal régime of the exclusive economic zone in which coastal States will enjoy full economic rights while recognizing important freedoms of the high seas. The provision by which coastal States may extend their territorial sea up to a breadth of 12 miles; the new concept of "transit passage"; the introduction of "archipelagic waters"; the definition of "the continental shelf"; the provisions of the Convention concerning the development of the sea-bed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction - all these are new

factors. Although some of these aspects have not yet received acceptance by all States, without doubt the implementation of the Convention on the Law of the Sea will have far-reaching effects on the international conduct of maritime affairs.

312. In addition to these factors and of particular relevance to the present study, there is the use of the seas by the navies of the world. The majority of the world's States possess naval forces, albeit of widely differing capabilities. The existence of such forces in the exercise of sovereign rights is legitimate and recognized by the Group; however, there are sometimes conflicts of interest between naval activities and non-military uses of the sea, just as there are conflicts between latent security threats and the freedom of navigation. Naval activities should take account, inter alia, of the legitimate interests of coastal States, and it is important that such activities should be compatible with the provisions of the Convention on the Law of the Sea.

313. Naval presence and activities are not new, but recent years have witnessed several fundamental technological developments which have had major effects on the international maritime situation. The most important of these changes, in a technical sense, has been the development of nuclear energy. In its uses for ship propulsion, particularly in submarines, and for nuclear warheads it has multiplied the capabilities of naval vessels and the weapons they carry. In specific form, these are represented by the nuclear-armed ICBMs deployed on board the nuclear-powered submarines of five States. As stated earlier in this report, some 40 per cent of the combined United States and Soviet potential totals of strategic missiles are sea-borne. Together with the strategic nuclear warheads distributed among the navies of the other three nuclear-weapon States, a significant proportion of the world's strategic nuclear capability is at sea, by far the largest part of it on board United States and Soviet SSBNs.

314. The threat to international security represented by these weapons, and the continuing development of improved SLBMs with enhanced guidance and greater accuracy, make even more urgent the need for successful bilateral and multilateral negotiations leading to effective measures of nuclear disarmament.

315. In addition to strategic nuclear forces, there are large numbers of tactical nuclear weapons at sea. This fact, coupled with ever-diminishing warning time within which a prospective target must react, imparts a particularly dangerous dimension to the arms race at sea. Whereas strategic missiles are carried by submarines of specific design and purpose, tactical nuclear weapons may be on board a wide variety of ships, submarines, aircraft or helicopters of the navies of the five nuclear-weapon States. Furthermore, in the near future the situation will be made more complex by the arrival in operational service of versatile, comparatively inexpensive, highly accurate, sea-launched cruise missiles. These missiles, able to carry either conventional or nuclear warheads for use against naval or shore targets, will greatly complicate the difficulties of verification and therefore also the difficulties of negotiating effective measures of disarmament.

316. The proliferation of nuclear weapons at sea, particularly the aspect of geographical dispersion of such weapons, will give rise to mounting concern, particularly among many non-nuclear-weapon States which in being States parties to the Treaty on the Non-Proliferation of Nuclear Weapons or otherwise have declared their intentions not to acquire or develop nuclear weapons themselves yet find that such policies have not stemmed the widening circles of nuclear-weapon deployments.

317. Rapid technological innovation and development, particularly in missiles and electronics, have greatly enhanced the war-fighting capabilities of navies, as described in some detail in chapter III. The navies of the United States and the Soviet Union in this respect are much more powerful than the navies of other States and have the capacity, not possessed by other navies, for prolonged operations in all the oceans of the world. At the same time, however, there are many asymmetries between the two navies, and between the naval forces of their allies, which do not render meaningful any efforts to make direct comparisons. These asymmetries include differing concepts of sea power, different geographical factors, different peacetime and wartime tasks, differing naval compositions in the nature of the vessels and aircraft that make up the respective fleets, and different policies towards national security within which the individual navies discharge their responsibilities. To an extent these asymmetries are also present in some of the world's coastal navies which, by means of technological advance, are in the process of acquiring a small but potent ability to carry out naval actions close to their own shores.

318. In discharging its mandate to assist the Secretary-General in carrying out a comprehensive study, the Group of Experts has endeavoured to present a survey of naval strengths and activities as they exist against a backcloth of the maritime situation as a whole. Navies have their legitimate parts to play in the exercise by States of the inherent right of individual or collective self-defence. However, the development of naval capabilities to carry out such duties has, in the geopolitical circumstances since 1945, become a competitive accumulation and qualitative refinement of arms with a momentum of its own. It is this aspect, as described earlier in this report, which constitutes the naval arms race. In turn, this is itself part of the general arms race described by the General Assembly in the Final Document of the Tenth Special Session in 1978 and which consumes unproductively so much of the world's human, financial and material resources.

319. Naval strength, which by some is seen as an essential guarantor of the protection of vital economic, political or security interests, is sometimes seen by others as a source of threat to international security or a means of potential intervention or interference in the internal affairs of States. The latter perceptions are particularly true for States that do not have strong naval forces of their own. In this context, as has been described in chapter VI, certain naval practices are considered to be inimical to the maintenance of international security and to be incompatible with the rights of those who have interests in the peaceful uses of the sea and the peaceful development and exploitation of its resources.

320. In the context of naval activities, the security régime at sea is based on three pillars of international law: the general restrictions on the use of force,

customary law of the sea, and arms control and disarmament treaties agreed between States. The entry into force of the Convention on the Law of the Sea will give strong additional support to this structure. To give further support, the rules on the non-use of force should be strengthened; existing arms restrictions should be carefully maintained and new measures negotiated; and the early entry into force and full implementation of the Convention on the Law of the Sea should be encouraged.

321. As this century approaches its close, the need for improved and more effective internationally accepted ocean management policies will become ever more apparent. In no way must the widened national responsibilities that will be introduced by the entry into force of the Convention on the Law of the Sea be misused as justification for the expansion and utilization of naval force. Yet within a framework of improved international security, there is much that might be done by naval ships and aircraft to assist in the peaceful uses of the sea for the benefit of humanity. There is also much that could be done by the experienced maritime States to assist in promoting such endeavours.

322. There are thus two basic objectives for action. The first is the achievement by negotiation of (a) effective measures of nuclear disarmament at sea in order to halt and reverse the nuclear arms race until the total elimination of nuclear weapons and their delivery systems has been achieved and (b) measures to achieve security and stability at significantly lower levels of conventional naval arms and armed forces. This objective is within the ultimate objective of the efforts of States in the disarmament process of achieving general and complete disarmament under strict and effective international control. It follows, therefore, that measures of naval arms limitation and reduction - both nuclear and conventional - must be considered in the overall context of halting and reversing the arms race in general, but this should not be an excuse for failing to address the resolution of specific problems of naval disarmament, or the agreement of measures of confidence-building in the naval environment, or negotiation of mutually acceptable measures to limit the transfers of certain naval arms or specific technologies. In these contexts, for instance, consideration should be given to making multilateral the existing bilateral agreement between the Soviet Union and the United States on the Prevention of Incidents on and over the High Seas, to continuing negotiations in good faith on further measures for the prevention of an arms race on the sea-bed in accordance with article V of the Sea-Bed Treaty; to giving full effect to the nuclear-weapon-free régime of the Antarctic Treaty by applying it to the seas within its area of application (south of 60° south), and to modernizing the laws of sea warfare.

323. Chapter VII of the present report reflects a large number of measures that have been suggested in various recent publications, papers and governmental statements. The Group recommends that the measures should be given close attention with a view to discussion and negotiation as appropriate. As, however, their acceptability and priority will probably vary according to political judgements, the Group expresses no opinion other than to urge that the proposals involving measures of nuclear-weapon limitation and disarmament should be given priority.

324. The second objective should be the investigation of possible ways in which naval organization, capabilities and experience might make positive contributions to the establishment of improved and more effective ocean management policies for the peaceful uses of the world's seas in the years ahead, so that future generations may use to best advantage the resources of the sea for the benefit of all mankind. In the sense that security is not a narrow concept confined solely to the military situation but has a broader meaning embracing economic and social development, there is much that might be achieved in the improvement of policies of ocean management which, in turn, could contribute to the promotion of social progress and to better standards of life in larger freedom.

325. It has been said that without development there will be no peace, and without peace there will be no development. Security in the maritime environment is therefore not just military in nature but includes such other facets as food security, resource security, job security and ocean management security. It has significant legal, political, military, organizational and practical implications. As described in earlier paragraphs, international discussion and co-operation are already in hand in several important technical fields in the form of such endeavours as the work of IMO and the establishment of the Strategy for Fisheries Management and Development through FAO. There are also some notable regional initiatives such as the recent Conference on Economic, Scientific and Technical Co-operation in the Indian Ocean held at Colombo from 15 to 20 July 1985 and the OAU Conference for Security and Co-operation in Africa in conformity with the Plan of Action of Lagos, held at Addis Ababa from 18 to 20 July 1985. The view has been expressed in the Group of Experts, however, that there may be considerable merit in holding, at an appropriate time, a global conference on the theme of "Security in the Maritime Environment" as a means of bringing together the disparate threads of these complex issues and determining what further steps might be taken by the international community.

326. With these two objectives in mind, the Group has in this study addressed a wide range of sensitive, complicated and often interrelated topics. Many issues deserve greater attention in the appropriate forums within and outside the United Nations, globally and - where appropriate - regionally and subregionally. It is the Group's hope that the considerations expressed in this report will be of assistance in such discussions.

Notes

General

(a) With some exceptions, the metric system has been used in quoting distances or other measurements. The term "mile" has been used solely in the sense of nautical miles.

(b) Citing of data in the study does not necessarily mean endorsement by all members of the Group.

* * *

Notes (continued)

1/ The Law of the Sea: (United Nations Convention on the Law of the Sea with Index and Final Act of the Third United Nations Conference on the Law of the Sea (United Nations publication, Sales No. E.83.V.5).

2/ The Final Document is contained in resolution S-10/2. For the full text of the resolution, see The United Nations Disarmament Yearbook, vol.3:1978, appendix I (United Nations publication, Sales No. E.79.IX.3). The text has also been published in leaflet form (DPI/679).

3/ Details of naval arms control measures may be found in a number of publications. A useful source for the texts and parties of many arms control agreements is Jozef Goldblat (Stockholm International Peace Research Institute), Agreements for Arms Control: A Critical Survey (London, Taylor and Francis, 1982). See also T. N. Dupuy and S. M. Hammerman, A Documentary History of Arms Control and Disarmament (New York, Bowker, 1983).

4/ For example, article II of the Montreux Convention states that Black Sea Powers may send through the Straits capital ships of a tonnage greater than 15,000 tons. Capital ships are defined in annex II of the Convention as surface vessels of war, other than aircraft-carriers, which either (a) exceed 10,000 tons (10,160 metric tons) displacement or carry a gun with a calibre exceeding 8 inches (203 millimetres) or (b) exceed 8,000 tons (8,128 metric tons) displacement and carry a gun with a calibre exceeding 8 inches (203 millimetres).

5/ The Economist, 23 June 1984.

6/ Food and Agriculture Organization of the United Nations, Review of the State of World Fishery Resources (Rome, March 1985), table 1.

7/ The Times Atlas of the Oceans (New York, Van Nostrand Reinhold, 1983), pp. 102-104.

8/ "Report by Shell Briefing Service of the Royal Dutch Group", in International Petroleum Encyclopedia, 1984.

9/ United Nations Conference on Trade and Development, "Review of maritime transport, 1983" (TD/B/C.4/266), p. 2.

10/ Ibid., p. 7.

11/ A. T. Mahan, The Influence of Seapower upon History 1660-1783 (London, Methuen, 1965), chap. 1. First published in 1890.

12/ The calculation of world military expenditure is of necessity imprecise owing to such variables as differences in exchange rates, secrecy of information, problems of deciding how to allow for differences in the system and costing of military production and difficulties in how to allow for price changes in the civilian and military sectors of the economy. A useful reference point may be SIPRI Yearbook, 1985, p. 223, which gave a figure of $800 to $820 billion for the year 1984, measured in 1984 dollars.

13/ S. G. Gorshkov, Morskaya mosch gosudarstaya (Moscow, Voennoe Izdatel'stvo Ministerstva Oborony SSR, 1976). Published in English as The Sea Power of the State (Oxford, Pergamon Press, 1979).

14/ Study on Conventional Disarmament, (United Nations publication, Sales No. E.85.IX.1) paras. 71-77.

15/ Except for note 16, the sources of the information given in paragraphs 102 to 104 are:

Organization of the Joint Chiefs of Staff, United States Military Posture for FY 1986 (Washington, D.C.).

The Military Balance 1984-1985, (London, The International Institute for Strategic Studies).

Jane's Fighting Ships 1984-85, (London, Jane's Publishing Company).

Soviet Military Power (Washington, D.C., United States Department of Defense, 1985). This was the source of the numbers of United States and Soviet Union ICBMs and SLBMs in paragraph 104. Soviet data on SLBMs put the numbers slightly higher.

16/ W. M. Arkin and others, "Nuclearization of the oceans" background paper for Symposium on Denuclearization of the Oceans, held at Norrtalje, Sweden, on 11-14 May 1984.

17/ Ibid.

18/ Statistics on conventional naval forces may be found in a variety of publications, some governmental and some non-governmental, but there is no single, authoritative source. As the purpose is to be illustrative, and to give a broad overview of the situation, a single source has been used - Jane's Fighting Ships 1984-85 - for the data given in paragraphs 109-132, unless otherwise stated.

19/ Armin Wetterhahn, "Soviet CTOL carrier under construction", International Defense Review, No. 10 (1984) and US News and World Report, 20 August 1984. It should be noted that the Soviet Union does not use the term "aircraft-carrier".

20/ Gerald Green, "C^3I: the invisible hardware", Seapower, April 1983.

21/ Organization of the Joint Chiefs of Staff, United States Military Posture for FY 1985, pp. 58-59.

22/ The USS Nautilus travelled from the Pacific Ocean to the Atlantic Ocean in July and August 1958, passing the North Pole submerged on 3 August.

23/ US News and World Report, 5 March 1984.

24/ Christopher Mayer, "Piracy today", Lloyd's Nautical Year Book 1985 (Lloyd's of London Press, 1984).

25/ For the texts of the multilateral treaties referred to in paragraphs 229-240, see Status of Multilateral Arms Regulation and Disarmament Agreements, 2nd ed. (United Nations publication, Sales No. E.83.IX.5).

26/ See Cmnd. 6198 (London, H.M. Stationery Office, 1975).

27/ For the texts of the bilateral agreements referred to in paragraphs 242-245, see Goldblat, op. cit.

28/ The earliest General Assembly resolution on the subject of Africa as a denuclearized zone was 1652 (XVI) of 24 November 1961. Thereafter, other resolutions have been 2033 (XX) of 3 December 1965, 32/81 of 12 December 1977, 33/63 of 14 December 1978, 34/76 A of 11 December 1979, 35/146 B of 12 December 1980, 36/86 B of 9 December 1981, 37/74 A of 9 December 1982, 38/181 A of 20 December 1983 and 39/61 of 12 December 1984.

29/ In addition to resolution 2832 (XXVI) of 16 December 1971, and resolution 2992 (XXVII) of 15 December 1972, other resolutions adopted have been 3080 (XXVIII) of 6 December 1973, 3259 A (XXIX) of 9 December 1974, 3468 (XXX) of 11 December 1975, 31/88 of 14 December 1976, 32/86 of 12 December 1977, S-10/2 of 30 June 1978, 33/68 of 14 December 1978, 34/80 A and B of 11 December 1979, 35/150 of 12 December 1980, 36/90 of 9 December 1981, 37/96 of 13 December 1982, 38/185 of 20 December 1983 and 39/149 of 17 December 1984.

30/ See, for example, resolutions 36/102 of 9 December 1981, 37/118 of 16 December 1982, 38/189 of 20 December 1983 and 39/153 of 17 December 1984.

31/ Arkin and others, op. cit.

32/ Geoffrey Till and others, Maritime Strategy in the Nuclear Age, 2nd ed. (New York, St. Martin's Press, 1984), p. 203.

33/ See note 14.

34/ Comprehensive Study on Confidence-building Measures (United Nations publication, Sales No. E.82.IX.3), para. 160.

35/ Goldblat, op. cit., pp. 122-131.

36/ United Nations, Treaty Series, vol. 75, No. 971.

37/ Goldblat, op. cit., pp. 239-252.

ANNEX I

Examples of measures of naval arms limitations and related matters prior to 1945

Demilitarization treaties

1817 Rush-Bagot Treaty between Great Britain (Canada) and the United States. Limitation of armaments in the Great Lakes area.

1856 Paris Peace Treaty. Demilitarization of the shores of the Black Sea and non-fortification of the Aaland Islands.

1863 Treaty of London "neutralization" of the Ionian Islands (Corfu, Paxos, Levkas, Ithaka, Kefallinia and Zante).

1878 Treaty of Berlin. Non-fortification and "denavalization" of the Lower Danube (vessels of war prohibited below the Iron Gates); closing of the territorial waters of Montenegro to "the ships of war of all nations".

1881 Treaty of Buenos Aires between Argentina and Chile. Demilitarization of the Magellan Straits.

1905 Treaty of Portsmouth. Non-fortification of Sakhalin and the adjacent islands.

1920 Paris Treaty on Spitzbergen (Svalbard). Norway undertook not to establish any naval bases or other fortifications on the islands.

1920 Peace Treaty of Dorpat. Demilitarization of Finnish territorial waters in the Finnish Gulf, Lake Ladoga and the Arctic Ocean.

1921 Aaland Islands Convention. Confirmation and extension of the demilitarization effected by the 1856 Paris Treaty.

1923 Peace Treaty of Lausanne. Resulting in two naval demilitarization projects:

(a) Demilitarized zones along the shores of the Straits of Dardanelles and Bosphorus. Demilitarized islands in the sea of Marmara;

(b) Demilitarization of two groups of islands in the Aegean Sea, one group west of the Dardanelles (Samothraki, Imbros, Lemnos, Tenedos and Rabbit Islands) and one flanking the approaches to the Gulf of Smyrna (Mytilene, Chios, Samosa and Nikaria).

1936 Montreux Convention on the Turkish Straits. Rescission of the Lausanne demilitarization of the shores of the straits. New provisions on passage of warships in time of peace and in time of war.

Other Arms Control Measures

1856 Declaration of Paris respecting maritime law. Agreement not to seize enemy goods on neutral vessels or neutral goods on enemy vessels with the exception of contraband of war. Blockades, in order to be binding, must be effective.

1902 Pactos de Mayo. Limitation of naval armaments between Argentina and Chile.

1907 Hague Conventions on:

No. VI Status of Enemy Merchant Ships at the Outbreak of Hostilities;

No. VII Conversion of Merchant Ships into Warships;

No. VIII Laying of Automatic Submarine Contact Mines;

No. IX Bombardment by Naval Forces in Time of War;

No. X Adaptation to Maritime Warfare of the Principles of the Geneva Convention of 22 August 1864 on Wounded, Sick and Shipwrecked in War;

No. XI Certain Restrictions with regard to the Exercise of the Right of Capture in Naval War;

No. XII Creation of an International Prize Court (never entered into force);

No. XIII Rights and Duties of Neutral Powers in Naval War.

1909 London Declaration concerning the Laws of Naval War. Rules on blockade, contraband and prizes. (Never entered into force.)

1922 Washington Conventions on:

(a) Quantitative and numerical restrictions on warships;

(b) The use of submarines and noxious gases in warfare (never entered into force).

1930 London Treaty on:

(a) Further restrictions (quantitative and qualitative) on warships;

(b) Reaffirmation of the 1922 restrictions on the use of submarines.

1936 London Protocol on the use of submarines in war. (Never fully applied in practice.)

Confidence-building measures

1902 Pactos de Mayo. Notification between Argentina and Chile of new naval construction.

1922 Washington Naval Treaty. Notification of replacement construction.

1930 Greek-Turkish Naval Protocol. Exchange of information on prospective changes in naval inventories.

1931 Soviet-Turkish Naval Protocol. Exchange of information on prospective changes in naval inventories.

1936 Montreux Convention. Notification to Turkey of the passage of warships through the Turkish Straits.

ANNEX II

Types of tactical nuclear weapons for maritime use

Type	Function	Deployment
Anti-submarine rocket depth-charge	Ship-launched, short-range (under 15 km), unguided rocket carrying nuclear depth-charge which, on hitting the sea, sinks to a predetermined depth before exploding	Can be carried by cruisers, destroyers and frigates
Submarine rocket depth-charge	Submarine-launched version of above, with inertial guidance and a range of some 50 km	Can be carried by attack submarines
Surface-surface and surface-air missile	Ship-launched beam-riding homing guidance, range of 30 km	Can be carried by aircraft-carriers, cruisers and destroyers; primary targets are aircraft and coastal land targets; limited anti-ship capability
Surface-surface and surface-air missile	Ship-launched, dual-capable (i.e. nuclear or conventional warhead) medium-range tactical missile (100 km), command guidance semi-active radar terminal homing	Can be carried by cruisers and destroyers with the necessary fire-control systems; primary targets are aircraft, nuclear-armed anti-ship cruise missiles, surface ships
Sea-launched cruise missile	Ship- or submarine-launched, dual-capable, long-range, subsonic, highly accurate (within 100 m at ranges up to 2,500 km)	Can be carried by battleships, certain cruisers, destroyers and submarines; used primarily against land targets but could also be anti-ship

Type	Function	Deployment
Multi-purpose nuclear depth-charge and nuclear bomb	Freefall, air or surface or subsurface detonation	Can be carried by a wide variety of aircraft, including maritime patrol aircraft, and helicopters; primary targets are submarines or land targets

ANNEX III

Maps

1. World fisheries

2. Major trade routes

3. Proximity of continents to the North Pole

4. Some main navigational straits, passages and canals

5. 200-mile delineation

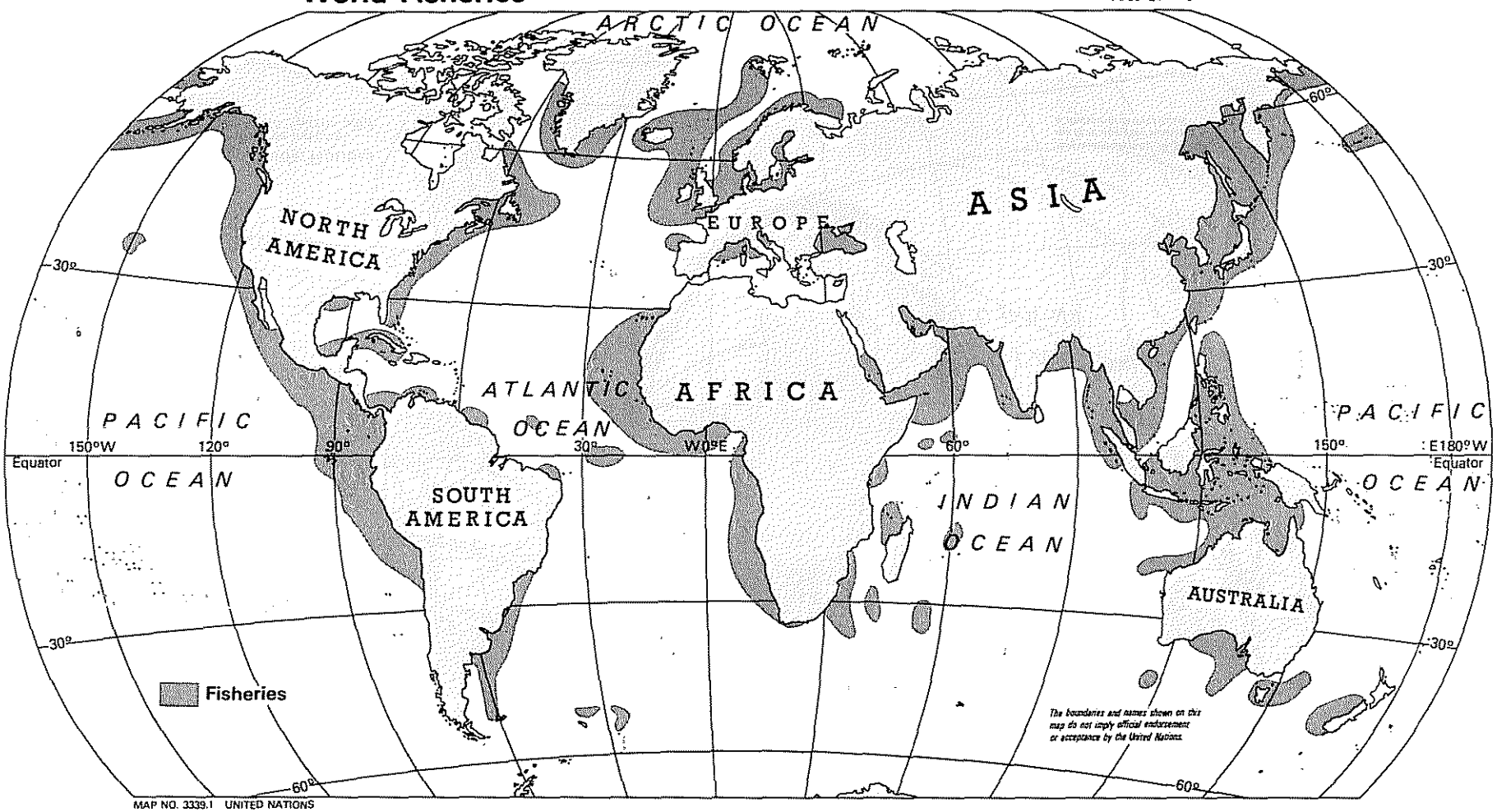
6. Proximity of continents to Antarctica

7. Zone of application of the Treaty of Tlatelolco

Note: The Group had wished to include maps of military information but was unable to identify any that would be appropriate for publication in a United Nations document.

World Fisheries

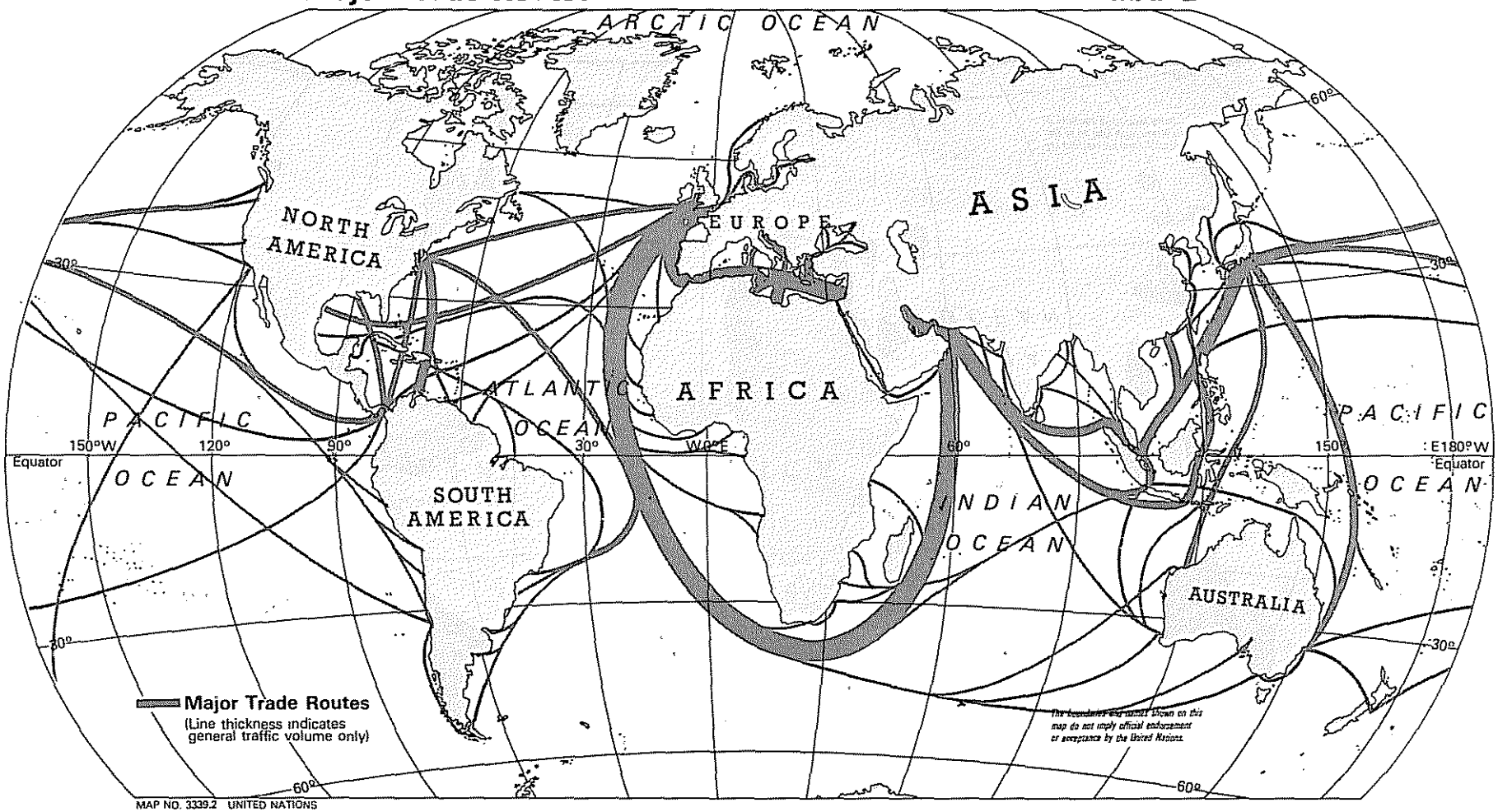
MAP 1



MAP NO. 3339.1 UNITED NATIONS
SEPTEMBER 1985

Major Trade Routes

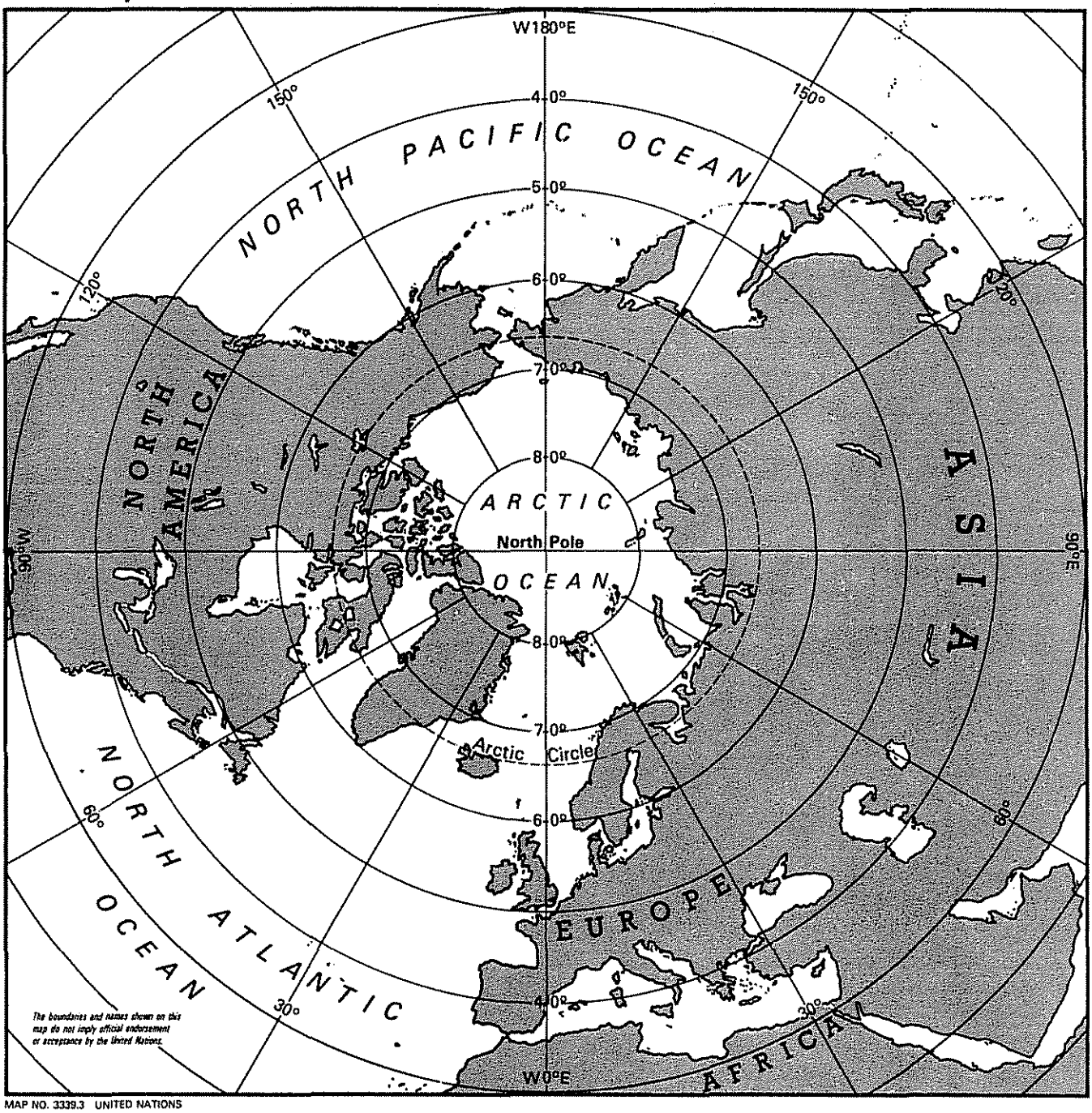
MAP 2



MAP NO. 3339.2 UNITED NATIONS
SEPTEMBER 1985

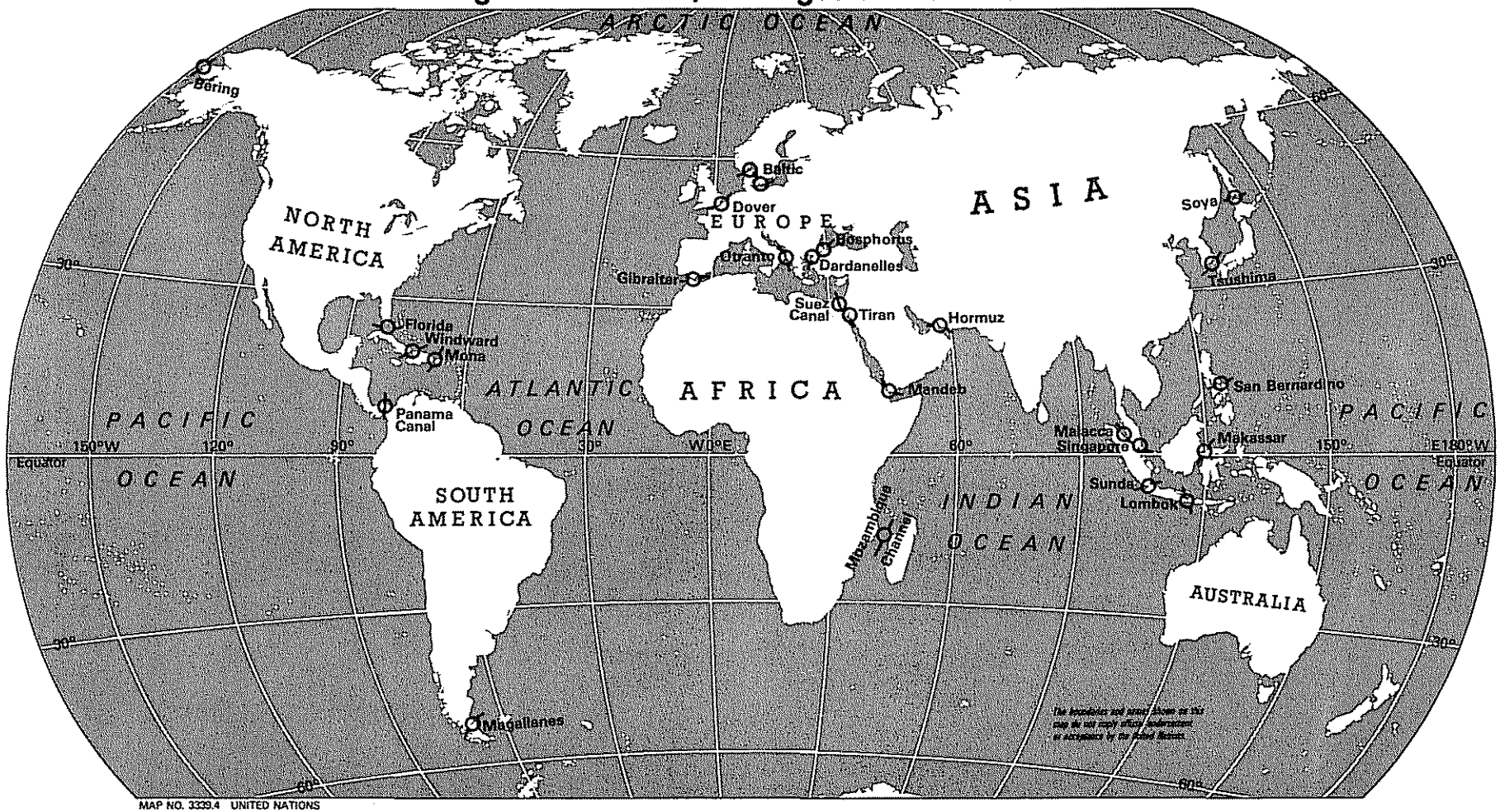
Proximity of Continents to the North Pole

MAP 3



MAP NO. 3339.3 UNITED NATIONS
SEPTEMBER 1985

Some Main Navigational Straits, Passages and Canals MAP 4



MAP NO. 3339.4 UNITED NATIONS
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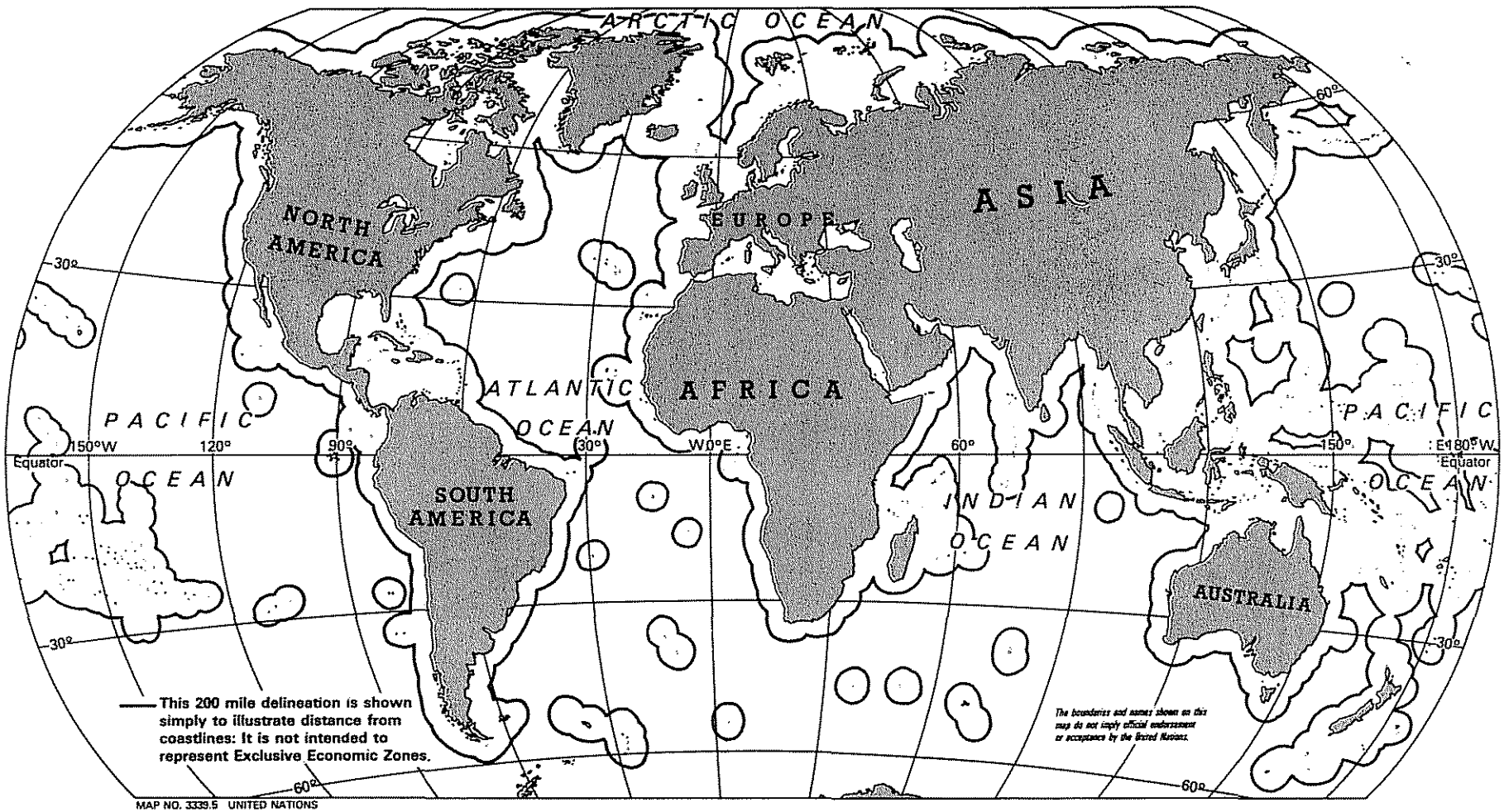
200-Mile Delineation

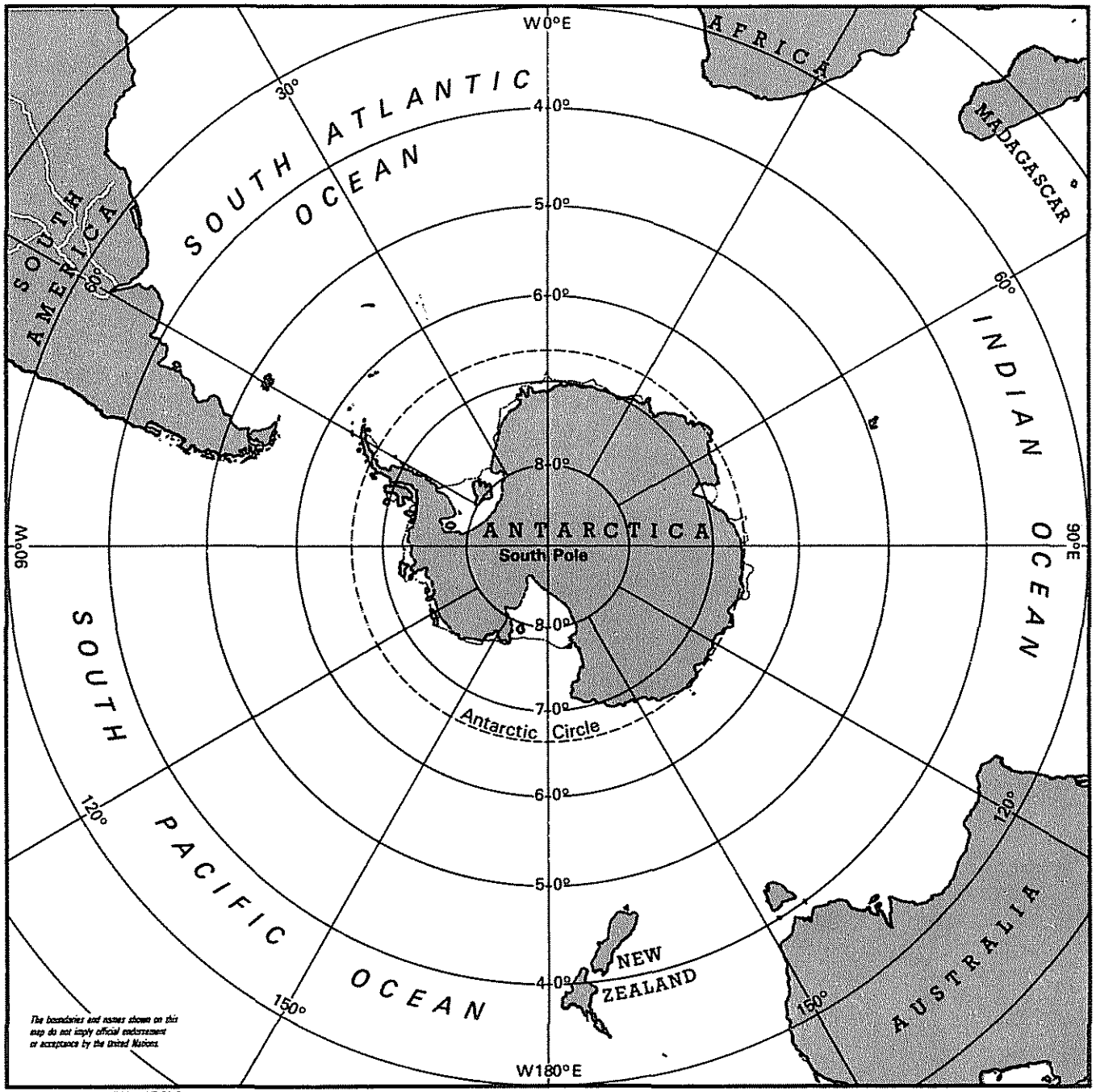
MAP 5



MAP NO. 3339.5 UNITED NATIONS
SEPTEMBER 1985

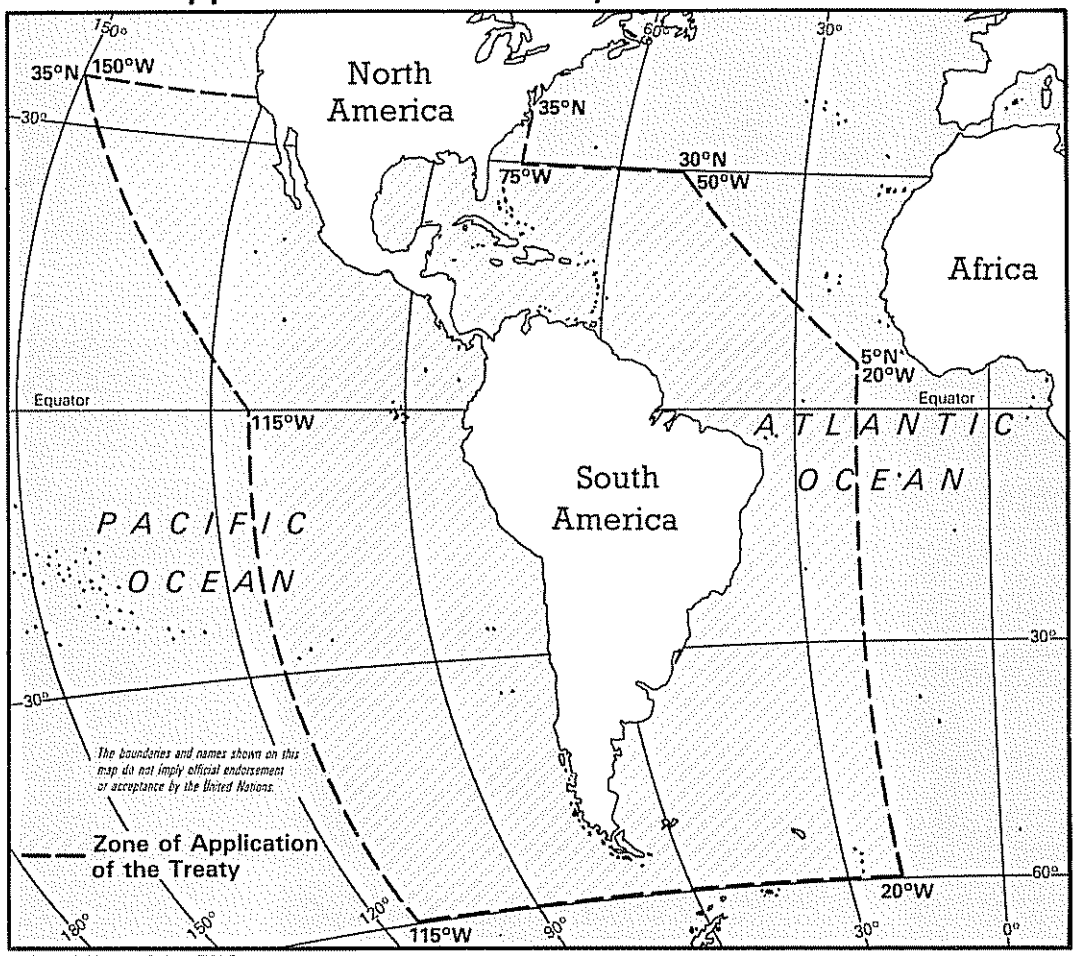
Proximity of Continents to Antarctica

MAP 6



MAP NO. 3339.6 UNITED NATIONS
SEPTEMBER 1985

Zone of Application of the Treaty of Tlatelolco MAP 7



MAP NO. 3339.7 UNITED NATIONS
SEPTEMBER 1985

Notes :

1 The maritime limits indicated above are not yet in force.but the map shows the zone of application that the Treaty will cover if/when it enters fully into force

2. The continental part of the territory of the United States of America and its territorial waters are specifically excluded from the zone of application

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