

**Resolution A.720(17)**  
*Adopted on 6 November 1991*  
*(Agenda item 12)*

**GUIDELINES FOR THE DESIGNATION OF SPECIAL AREAS AND  
THE IDENTIFICATION OF PARTICULARLY SENSITIVE SEA AREAS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety, the prevention and control of marine pollution from ships and other matters concerning the effect of shipping on the marine environment,

NOTING resolution 9 of the International Conference on Tanker Safety and Pollution Prevention, 1978, on particularly sensitive sea areas which, *inter alia*, invited the Organization to initiate studies with a view to assessing in so far as possible, the extent of the need of protection, as well as the measures which might be considered appropriate, in order to achieve a reasonable degree of protection, taking into account also other legitimate uses of the sea,

HAVING CONSIDERED the recommendation made by the Marine Environment Protection Committee at its thirty-first session on the Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas and comments thereon made by the thirty-seventh session of the Sub-Committee on Safety of Navigation,

1. ADOPTS the Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas, the text of which is set out in the annex hereto;
2. INVITES Governments to observe these Guidelines when proposing designation of a special area under MARPOL 73/78 or identification of a particularly sensitive sea area;
3. REQUESTS the Marine Environment Protection Committee and the Maritime Safety Committee to keep the Guidelines under review; and
4. REQUESTS the Maritime Safety Committee to incorporate relevant provisions of these Guidelines into the General Provisions on Ships' Routeing (resolution A.572(14)).

# **GUIDELINES FOR THE DESIGNATION OF SPECIAL AREAS AND THE IDENTIFICATION OF PARTICULARLY SENSITIVE SEA AREAS**

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## PREFACE

The International Conference on Tanker Safety and Pollution Prevention (London, February 1978) adopted a resolution entitled "Protection of particularly sensitive sea areas" (TSPP resolution 9) which, in particular, invited the International Maritime Organization (IMO):

- “(b) to initiate, as a matter of priority and in addition to the work under way, studies, in collaboration with other relevant international organizations and expert bodies, with a view to:
  - (i) making an inventory of sea areas around the world which are in special need of protection against marine pollution from ships and dumping, on account of the areas' particular sensitivity in respect of their renewable resources or in respect of their importance for scientific purposes;
  - (ii) assessing, inasmuch as possible, the extent of the need of protection, as well as the measures which might be considered appropriate, in order to achieve a reasonable degree of protection, taking into account also other legitimate uses of the seas;
- (c) to consider, on the basis of the studies carried out accordingly and the results of other work undertaken, what action will be needed in order to enhance the protection of the marine environment from pollution from ships and dumping of wastes;
- (d) to take action, when appropriate, in accordance with the established procedure, with a view to incorporating any necessary provisions, within the framework of relevant conventions, as may be identified as a result of the above studies.”

Responsibility for dealing with this resolution was assigned by IMO to the Marine Environment Protection Committee (MEPC) which began work on the subject of particularly sensitive sea areas at its twenty-third session in 1986. Particularly sensitive sea areas were defined as "areas which need special protection through action by IMO because of their significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by maritime activities".

The concept of particularly sensitive sea areas was further discussed by the MEPC at subsequent sessions from 1986 to 1991. These discussions resulted in the decision to develop the present Guidelines for the Designation of Special Areas and the Identification of Particularly Sensitive Sea Areas which were adopted by the Assembly of IMO at its seventeenth regular session. The work to develop these guidelines was financially supported by the National Oceanographic and Atmospheric Administration of the Department of Commerce in the United States of America, the Directorate for Nature, Environment and Fauna Management of the Ministry of Agriculture, Nature Management and Fisheries in the Netherlands and by the World-Wide Fund for Nature (WWF). The assistance of Friends of the Earth International (FOEI) in preparing the first draft of these guidelines is also acknowledged.

The Guidelines are primarily intended to assist IMO and national Governments in identifying, managing and protecting sensitive sea areas.

As the title indicates, however, apart from the identification of particularly sensitive sea areas, the Guidelines also include the designation of special areas under the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78). In addition, the Guidelines address the question of environmental protection through ships' routing measures and describe the related methods and procedures. The provisions of the General Provisions on Ships' Routing have been included in these Guidelines wherever this was appropriate. It is, however, essential that the latest version of the General Provisions on Ships' Routing is used for the preparation of proposals which concern ships' routing measures.

## CHAPTER 1 - MARINE PROTECTED AREAS

### 1.1 General

1.1.1 As early as 1935, the Fort Jefferson National Monument in Florida, United States of America, was set up as a conservation area, covering 18,850 ha of sea along with 35 ha of coastal land. It was probably the world's first marine protected area. In 1985, there were some 430 marine protected areas in 69 countries. In 1986, another world-wide survey of marine protected areas listed such areas in more than 80 countries.

1.1.2 In general, marine protected areas have been defined as "areas of intertidal or subtidal terrain together with their overlying waters and associated flora, fauna, historical and cultural features, which have been reserved to protect part or all of the enclosed environment". This very general definition covers a wide variety of marine protected areas. The number of terms used for marine protected areas, such as *marine sanctuary*, *marine reserve*, *marine park*, *protected seascape* or *wildlife sanctuary*, is an indication of this variety.

1.1.3 The global list of marine protected areas contains a wide variety of biotopes such as coral reefs, salt-marshes, seamounts, ice-covered areas, banks, open waters, seagrass meadows and mangroves. Some well-known marine areas which have a statutory protected status are the Great Barrier Reef Marine Park in Australia, the Galapagos Marine Resources Reserve in Ecuador, the Wadden Sea in Denmark, Germany and the Netherlands, and the Channel Islands National Marine Sanctuary in the United States of America.

1.1.4 Most marine protected areas are located close to the shore within territorial waters or even in internal waters and may include land areas as well. The number of marine protected areas exclusively in open waters within the territorial sea is limited; the number of such areas beyond territorial waters is even smaller.

1.1.5 Marine protected areas have been established on the basis of a wide variety of objectives. These include the protection of ecologically or biologically important areas, the protection of specific marine organisms, the protection of important geological or geomorphological processes, the protection of beautiful seascapes, the protection of cultural or historic sites, as well as in the interest of recreation or certain forms of fisheries.

1.1.6 The management of each area varies depending upon the nature of the resources, their utilization and the human activities occurring within it. A range of management techniques can be used: in some areas protection may be given from all activities which could give rise to environmental damage; in other areas protection is given only against a limited number of such activities, for example certain fisheries activities or shipping.

### 1.2 Ships and marine protected areas

Operational pollution	oil noxious liquid substances sewage garbage solid substances carried in bulk air pollution anti-fouling paints alien organisms noise
Accidental pollution	oil noxious liquid substances packaged harmful substances (marine pollutants) solid bulk substances
Physical damage	mechanical destruction of habitats smothering of habitats

**1.2.1** Ships can constitute an environmental hazard to the marine environment in general and consequently also to marine protected areas. Environmental hazards associated with shipping include:

- operational pollution,
- accidental pollution, and
- physical damage to marine habitats or organisms.

**1.2.2** In the course of routine operations, ships may, legally or illegally, discharge a wide variety of substances either directly into the marine environment or indirectly through the atmosphere. Such pollutants include oil and oily wastes, noxious liquid substances, sewage, garbage, noxious solid substances, antifouling paints, foreign organisms and even noise. Many of these substances can adversely affect the marine environment.

**1.2.3** Perhaps the most dramatic illustration of the consequences of oil discharged into the sea is an oiled sea-bird. Attempts by volunteers to rescue birds after many oil spills have attracted widespread attention. Other marine organisms and resources, such as marine mammals or fish, can also be affected by oil. The effects of oil on the marine ecosystem will differ in different biotopes such as rocky shores, sandy beaches, salt-marshes, coral reefs or open waters.

**1.2.4** An assessment of the potential environmental effects of hazardous or noxious substances carried in bulk or in packages is only possible when the exact nature of the substances involved is known. There are thousands of substances which are transported by sea. Their effect on the marine environment has been classified for the purpose of annexes II and III of the MARPOL Convention. Environmental hazards of hazardous and noxious substances include: (a) bioaccumulation, (b) damage to living resources (toxicity), (c) hazard to human health (oral intake), (d) hazard to human health (skin contact and inhalation), and (e) reduction of amenities.

**1.2.5** The environmental effects of the discharge of sewage by ships may include bacteriological pollution (relevant especially near fishing grounds or bathing waters) and eutrophication (especially in coral reef areas).

**1.2.6** The environmental effects of garbage discharged by ships are becoming even more visible. In particular, attention has increasingly focused on the effects of plastics and other persistent materials, through, for instance, entanglement of marine mammals, sea-birds and fish, and the ingestion of such materials by marine organisms. Coastal areas such as beaches and underwater seascapes such as coral reefs can be spoiled aesthetically by the presence of garbage.

**1.2.7** An assessment of the potential environmental effects of solid substances carried in bulk is only possible when the composition of the substances involved is known. In general, the amounts of such substances discharged operationally may be limited. The discharge of cargo residues may affect the environment directly, as in the case of toxic pollutants, or indirectly by oxygen depletion or the deposition of such substances on the sea floor.

**1.2.8** Ships may emit substances into the air as a result of a number of operational functions: (a) the burning of fuels in engines, (b) the incineration of garbage at sea, (c) the use of chlorofluorocarbons and halons in refrigeration equipment and fire-fighting equipment, and (d) the discharge of volatile fractions of substances carried by ships during transport, loading, unloading and tank cleaning. Pollutants from these sources may enter and affect the marine environment via the atmosphere.

**1.2.9** Antifouling paints, such as tributyltin (TBT) used on ships may harm many forms of marine life. One of the first areas where toxic effects of TBTs (on oysters) were observed was in Arcachon Bay (France). At about the same time similar effects were observed in the United Kingdom. Areas at risk from pollution with antifouling paints are estuaries and port areas with high densities of shipping.

**1.2.10** Ships taking in water as ballast in one part of the world may introduce alien marine organisms in other parts of the world when discharging their ballast. Studies carried out with respect to the

introduction of foreign organisms into the Great Lakes have shown that there is a real possibility that this could occur. These findings were confirmed when species not endemic to the Great Lakes or the St. Lawrence estuary were found in samples from those areas. Also, dinoflagellate blooms near Tasmania, Australia, which have had a negative impact on mariculture, have been associated with dinoflagellates originating from Japanese waters.

**1.2.11** Concern has been expressed that the underwater sound generated by ships may disturb marine mammals, in particular through interference with the echolocation capabilities of such species.

**1.2.12** As a consequence of accidents such as collisions, groundings, and loss of cargo, large quantities of substances may be introduced into the marine environment. The substances potentially involved are the same as those which may be discharged operationally but the effects of accidental discharges may be more severe owing to the larger quantities involved. Substances which would have no adverse environmental effects when discharged operationally in relatively small quantities might have serious effects on the marine environment when introduced in large quantities. Another important factor is that these large quantities are introduced into the marine environment in one specific location, the site of the accident.

**1.2.13** Ships can also cause direct physical damage to the marine environment. Anchors may destroy biotopes; such damage has been reported, for example, in the coral reefs of Flower Garden Banks in the Gulf of Mexico and in the Great Barrier Reef. Groundings in certain areas, such as coral reefs, can cause long-term damage to such areas. The continued presence of ships on reefs following the initial grounding can produce additional damage as the wreck shifts. Solid substances released from ships after accidents may physically alter habitats. There is even the possibility of direct physical harm to living organisms as in cases of collisions with cetaceans or wounds caused by propellers to large marine animals.

### **1.3 Protection of sea areas under global, regional and national arrangements**

**1.3.1** Marine protected areas are generally designated on a national level by national Governments. Exceptions to this rule include the Indian Ocean Whale Sanctuary which has been established by the International Whaling Commission. Guidance on the protection of specific sea areas from damage caused by ships, under international instruments and regulations adopted by IMO, in particular by designating special areas and by adopting ships' routing measures, is given in chapters 2 and 3 of these Guidelines.

**1.3.2** Several international (global or regional) conventions encourage the designation of marine protected areas by national Governments.

**1.3.3** The Convention concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972) calls upon Contracting Parties to submit an inventory of property forming part of the cultural and natural heritage for inclusion in the World Heritage List (article 11.1, 11.2). Natural heritage is defined in the Convention as: (a) natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view; (b) geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation; and (c) natural sites or precisely delineated areas of outstanding universal value from the point of view of science, conservation or natural beauty (article 2). Cultural heritage may include sites defined as works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view (article 1). Marine areas can be included as either cultural or natural heritage.

The Great Barrier Reef is an example of a marine area which has been included on the World Heritage List. In October 1981 it was recognized by the responsible Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage (the World Heritage Committee) as fulfilling both the cultural and the natural heritage criteria.

**1.3.4** The Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar, 1971) requires Contracting Parties to designate suitable wetlands within their territory for inclusion in a List of Wetlands of International Importance (article 2.1). Wetlands are defined as areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres (article 1.1). Contracting Parties to the Convention undertake to formulate and implement their planning so as to promote the conservation of wetlands included in the list (article 3.1) and to promote the conservation of these areas by establishing nature reserves on wetlands (article 4.1).

**1.3.5** The Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979) urges Contracting Parties to conserve and, where feasible and appropriate, restore those habitats of endangered migratory species which are of importance in removing the species from danger of extinction (article III.4(a)) or which are of importance in maintaining a favourable conservation status (article V.5(e)), and also to maintain a network of suitable habitats appropriately disposed in relation to the migration routes (article V.5(f)).

**1.3.6** In the Man and the Biosphere programme of the United Nations Educational Scientific and Cultural Organization (UNESCO), biosphere reserves have been introduced. These are not the products of an international treaty or convention, but a project area of the Man and Biosphere programme, established in 1971. Biosphere reserves are defined as protected areas of representative terrestrial and coastal environments which have been internationally recognized under UNESCO's Man and Biosphere programme for their value in conservation and in providing the scientific knowledge, skills, and human values to support sustainable development. Marine areas are also included.

**1.3.7** The United Nations Convention on the Law of the Sea (Montego Bay, 1982) which, with the exception of the sea-bed mining provisions, is widely accepted as customary international law, will, when it has entered into force, provide coastal States with the option of identifying particular, clearly defined areas of their respective exclusive economic zones where the adoption of special mandatory measures for the prevention of pollution from vessels is required for recognized technical reasons in relation to the oceanographical and ecological conditions in such areas, as well as their utilization or the protection of their resources and the particular character of their traffic (article 211.6(a)). Where a coastal State considers that a particular area meets these criteria, it submits to IMO for its approval special measures which exceed existing international rules and standards for such areas. There are, however, some important differences between the concept as defined in article 211.6(a) of the 1982 Law of the Sea Convention and the concept of special areas under the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), a Convention which has already entered into force. The measures and standards applicable to MARPOL special areas are defined in the respective annexes of MARPOL, whereas article 211.6(a) of the 1982 Law of the Sea Convention puts the onus on the coastal State to define area-specific measures and then submit them to IMO for approval. In addition, the article 211.6(a) definition refers to the utilization or protection of the resources of the area in question. It is therefore likely that the approach under article 211.6(a) of the 1982 Law of the Sea Convention will allow for a broader range of measures and standards tailored to discrete sea areas than is currently the case with MARPOL special areas. It will be important for Governments to be aware of these differences once the 1982 Law of the Sea Convention comes into force.

**1.3.8** In addition to the previously mentioned global conventions there are several regional conventions with provisions relating to designating marine protected areas. Within the United Nations Environment Programme's Regional Seas Programme and its related regional conventions special protocols have been developed with regard to specially protected areas.

**1.3.9** The first such protocol (the Protocol concerning Mediterranean Specially Protected Areas) was concluded in 1982 for the Mediterranean Sea within the framework of the Barcelona Convention.

In the Mediterranean, specially protected areas can be established within territorial waters only. Specially protected areas should safeguard, in particular, sites of biological and ecological value, genetic diversity, representative types of ecosystems and ecological processes and sites of particular importance because of their scientific, aesthetic, historical, archaeological, cultural or educational interest.

**1.3.10** Similar Protocols for the Eastern African Region and the Wider Caribbean Region were signed in 1985 and 1989, respectively.

**1.3.11** Other regional agreements of relevance to marine protected areas include the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Washington, 1940), the African Convention on the Conservation of Nature and Natural Resources (Algiers, 1968), the Convention on the Conservation of European Wildlife and Natural Habitats (Berne, 1979), and the Convention on the Conservation of Antarctic Marine Living Resources (Canberra, 1980).

**1.3.12** While these international conventions call for the designation of various types of protected areas, it is up to national Governments to take the appropriate measures to provide effective protection to specific areas.

**1.3.13** The designation of marine protected areas may involve different types of national jurisdiction. Such areas can be located in internal waters, in territorial waters, or even in international waters. The designation of an area as a conservation area or protected area as such may be entirely within the jurisdiction of coastal States; the implementation of protection measures may, depending on the kind of activity which has to be regulated, be subject to various degrees of national jurisdiction in the various jurisdictional zones.

**1.3.14** In many cases, especially with respect to shipping, protective measures cannot be taken unilaterally. Principles such as freedom of navigation (in international waters) and the right of innocent passage (in territorial waters) may be applicable in cases where measures regarding shipping are considered for specific marine areas.

#### 1.4 Protection of sea areas under IMO regulations

**1.4.1** Section 1.2 provided an overview of environmental damage which can result from maritime operations. For the prevention of the various types of damage a wide range of measures is available within the framework of IMO regulations, as shown in table 2.

Operational pollution	oil	MARPOL, annex I
	noxious liquid substances	MARPOL, annex II
	sewage	MARPOL, annex IV
	garbage	MARPOL, annex V
	solid substances carried in bulk	-
	air pollution	-
	antifouling paints	-
	alien organisms	-
Accidental pollution	noise	-
	oil	MARPOL, annex I, COLREG, SOLAS
	noxious liquid substances	MARPOL, annex II, COLREG, SOLAS
	packaged harmful substances (marine pollutants)	MARPOL, annex III, COLREG, SOLAS
Physical damage	solid bulk substances	COLREG, SOLAS
	grounding and destruction of habitats	COLREG, SOLAS
	smothering of habitats	COLREG, SOLAS



## *Operational pollution*

**1.4.2** With respect to operational pollution by oil, noxious liquid substances in bulk, sewage and garbage, uniform global discharge standards and operational requirements have been developed in MARPOL 73/78. The annexes relating to oil, noxious substances in bulk and garbage have entered into force and the annex relating to harmful substances in packaged forms will enter into force on 1 July 1992 while the annex relating to sewage is awaiting entry into force. Discussions are under way with regard to possible regulations for noxious solid substances, air pollution and anti-fouling paints. With regard to alien marine organisms, the Guidelines for Preventing the Introduction of Unwanted Aquatic Organisms and Pathogens from Ships' Ballast Water and Sediment Discharges were adopted by the Marine Environment Protection Committee in July 1991. No efforts were under way regarding noise (situation as at 5 July 1991).

**1.4.3** As regards operational pollution there is a strong preference within IMO and its Member States for the development of globally uniform regulations rather than a proliferation of diverse regional or local standards.

**1.4.4** If stricter discharge standards are contemplated for specific sea areas, the first priority would be to consider whether such stricter discharge standards should not be introduced world-wide. Should there be no basis for the introduction of such global standards, there are a number of options through which specific areas can be given additional protection against operational pollution from ships:

- .1 MARPOL 73/78 provides for the designation of large sea areas as special areas for the purposes of, respectively, operational discharges of oil (annex I), noxious substances carried in bulk (annex II), and garbage (annex V) where the strictest discharge requirements are applicable. Chapter 2 of these Guidelines provides further information on the designation of special areas.
- .2 Another option to limit operational discharges in very small sea areas would be to limit the access of ships into such areas. The International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974), and more specifically IMO Assembly resolution A.572(14) which provides the basis for the General Provisions on Ships' Routeing, provide for the option of designating areas to be avoided by ships or certain classes of ships. Chapter 3, sections 3.4 to 3.7, of these Guidelines provides further information about the designation of areas to be avoided and other ships' routeing measures.

## *Accidental discharges*

**1.4.5** With respect to accidental discharges, IMO administers several international conventions aimed at preventing maritime accidents and consequent environmental pollution such as the International Regulations for Preventing Collisions at Sea, 1972 (COLREG 1972), SOLAS 1974, MARPOL 73/78 and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978). In the aftermath of an accident some instruments of IMO become applicable, such as the International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969. Contingency planning to prevent or limit environmental damage after an accident is primarily a national, or in some regions, a regional responsibility. To assist national Governments in this field IMO is developing a set of anti-pollution manuals, some of which have already been completed (situation as at 5 July 1991). The present Guidelines could be useful to help identify areas where contingency plans need to be developed for reasons of protecting sensitive sea areas.

**1.4.6** As regards accidental pollution there is also a strong preference within IMO and its Member States for the development of globally uniform regulations rather than of diverse regional or local standards.

**1.4.7** There is, nevertheless, a pressing need for local arrangements to provide additional protection to specific areas from the hazards of maritime accidents:

- .1 Ships' routing measures such as traffic separation schemes, recommended routes or tracks, or deep-water routes can be introduced to reduce the risk of collisions in intensively used shipping areas, to reduce the risk of collisions between ships and maritime installations, to keep ships a certain distance from ecologically important areas, or to reduce the risk of groundings in areas where water depths are uncertain or critical. Chapter 3 of these Guidelines provides further information on the introduction of ships' routing systems.
- .2 The establishment of areas to be avoided could serve to keep ships or certain classes of ships from entering specified and closely defined sea areas, in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties which could result in environmental damage. Chapter 3, section 3.6, of these Guidelines provides further information on the designation of areas to be avoided.
- .3 Compulsory pilotage or vessel traffic services could also be introduced to further improve safety of navigation in areas where additional information from shore or from experienced pilots on board ships would reduce the risk of groundings or other maritime incidents. Chapter 3, section 3.8, of these Guidelines provides further information on the introduction of compulsory pilotage and vessel traffic services.

#### *Physical damage*

**1.4.8** There are also a number of measures which can be used to reduce the risk of physical damage to marine habitats and organisms:

- .1 An effect of the introduction of ships' routing measures can be to guide ships a certain distance from ecologically important areas, or to reduce the risk of groundings in areas where water depths are uncertain or critical. Similarly, the establishment of areas to be avoided, which is also a ships' routing measure, could serve to prevent ships or certain classes of ships from entering specified and closely defined sea areas, in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties which would result in environmental damage. Chapter 3 of these Guidelines, particularly sections 3.4 to 3.7, provides further information on the use of ships' routing measures for purposes of environmental protection.
- .2 Compulsory pilotage or vessel traffic services could also be introduced to improve safety of navigation in areas where additional information from shore or from experienced pilots on board ships would reduce the risk of groundings or other maritime incidents which would affect marine habitats or organisms. Chapter 3, section 3.8, of these Guidelines provides further information on the introduction of other IMO measures such as compulsory pilotage, or vessel traffic services.

#### *IMO measures discussed in these Guidelines*

**1.4.9** Table 3 provides an overview of the options available to IMO to provide additional environmental protection to specific sea areas by designating a special area (discussed in chapter 2 of these Guidelines) or identifying a particularly sensitive sea area (discussed in chapter 3 of these Guidelines).

Table 3 – Options available to IMO for protecting specific sea areas		
	Special areas	Particularly sensitive sea areas (PSAs)
Definition	“A sea area where for recognized technical reasons in relation to its oceanographical and ecological conditions and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil is required.”	“An area which needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by maritime activities.”
Size of area	Sea can be seen as an oceanographical or geographical term; in both cases a sea will, by definition, be a rather large area. Every existing “special area” is a (semi-)enclosed sea in an oceanographical sense and pursuant to the methods of protection (see section 2.2), a special area has to be rather large.	No definite size. The term <i>area</i> is flexible. Because of the flexibility in size, every part of marine environment which meets the criteria can be a PSA. The design of a PSA including a buffer zone depends on the environmental risk which should be reduced.
Criteria for designation	One of the following conditions in each category should be satisfied: (a) <i>Ecological conditions</i> <ul style="list-style-type: none"> <li>● endangered species</li> <li>● productivity</li> <li>● spawning, breeding, nursery areas</li> <li>● fragile/rare ecosystem</li> <li>● critical habitats</li> </ul> (b) <i>Oceanographic conditions</i> <ul style="list-style-type: none"> <li>● circulation</li> <li>● residence time</li> <li>● ice state</li> <li>● wind</li> </ul> (c) <i>Vessel traffic characteristics</i>	One of the following categories should be satisfied: (a) <i>Ecological criteria</i> <ul style="list-style-type: none"> <li>● uniqueness</li> <li>● dependency</li> <li>● representativeness</li> <li>● diversity</li> <li>● productivity</li> <li>● naturalness</li> <li>● integrity</li> <li>● vulnerability</li> </ul> (b) <i>Social, cultural and economic criteria</i> <ul style="list-style-type: none"> <li>● economic benefit</li> <li>● recreation</li> <li>● human dependency</li> </ul> (c) <i>Scientific and educational criteria</i> <ul style="list-style-type: none"> <li>● research</li> <li>● baseline and monitoring studies</li> <li>● education</li> <li>● historical value</li> </ul>
Other considerations	<ul style="list-style-type: none"> <li>● threat to amenities by discharge</li> <li>● sources of non-marine pollution (e.g. dumping, sewage)</li> <li>● establishment of reception facilities required for entry into force</li> </ul>	Existing sources of pollution and counter-measures shall be taken into account

## CHAPTER 2 – SPECIAL AREAS

### 2.1 Environmental protection for special areas under MARPOL 73/78 – General

2.1.1 MARPOL 73/78, in annexes I, II and V, defines certain sea areas as “special areas” in relation to the type of pollution covered by each annex. A “special area” is defined as “a sea area where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by oil, noxious liquid substances, or garbage, as applicable, is required”. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea.

2.1.2 A special area should generally be considered a sea area of such a size that, were it not a special area, discharge of a harmful substance could be made there in accordance with the discharge criteria established for open sea areas under annexes I, II and V of MARPOL 73/78 (see tables 4, 5 and 6).

2.1.3 Special area designation should be made on the basis of the criteria and characteristics listed in section 2.4 of these Guidelines to avoid the proliferation of such areas.

## 2.2 Protective measures

2.2.1 Under MARPOL 73/78, all sea areas are protected from discharge of harmful substances from ships. Most sea areas have a level of protection which is considered adequate. In those instances where additional protection is necessary, MARPOL 73/78 provides additional protection through the designation of an area as a special area and imposes correspondingly more stringent restrictions on the disposal of harmful substances.

2.2.2 The additional protection given to special areas with respect to operational discharges of oil (MARPOL, annex I), noxious liquid substances (MARPOL, annex II) and garbage (MARPOL, annex V) is summarized in tables 4, 5 and 6, respectively. In summary, discharge requirements in special areas are considerably stricter than discharge requirements in other sea areas.

Table 4 - MARPOL, annex I, discharge requirements		
Substances	Discharge requirements	
	In special areas	In other sea areas
<p><i>Oil and oily mixtures</i></p> <ul style="list-style-type: none"> <li>From cargo tanks, including cargo pump-rooms, of oil tankers; and from machinery space bilges mixed with cargo oil residues</li> </ul> <ul style="list-style-type: none"> <li>From ships of 400 grt or above other than oil tankers and the machinery spaces of oil tankers; (excluding cargo pump-room bilges of oil tankers, and machinery space bilges of oil tankers when mixed with cargo oil residue)</li> </ul>	<p>Discharges prohibited</p> <p>Discharges prohibited unless:</p> <ul style="list-style-type: none"> <li>(a) the ship is proceeding <i>en route</i>;</li> <li>(b) the oil content of the effluent without dilution does not exceed 15 ppm;</li> <li>(c) the ship has in operation oil filtering equipment complying with regulations 16(7) of annex I; and</li> <li>(d) the filtering system is equipped with a stopping device which will ensure that the discharge is automatically stopped when the oil content of the effluent exceeds 15 ppm.</li> </ul>	<p>Discharges prohibited unless the tanker:</p> <ul style="list-style-type: none"> <li>(a) is more than 50 nautical miles from the nearest land;</li> <li>(b) is proceeding <i>en route</i>;</li> <li>(c) has an instantaneous rate of discharge of oil content which does not exceed 60 l per nautical mile;</li> <li>(d) discharges a total quantity of oil which does not exceed, for existing tankers, 1/15,000 of the total quantity of the particular cargo of which the residue formed a part, and, for new tankers, 1/30,000 of the total quantity of the particular cargo of which the residue formed a part; and</li> <li>(e) has in operation an oil discharge monitoring and control system and a slop tank arrangement as required by regulation 15 of annex I.</li> </ul> <p>Discharges prohibited unless:</p> <ul style="list-style-type: none"> <li>(a) the ship is more than 12 nautical miles from the nearest land;</li> <li>(b) the ship is proceeding <i>en route</i>;</li> <li>(c) the oil content of the effluent is less than 100 ppm; and</li> <li>(d) the ship has in operation an oil discharge monitoring and control system, oily-water separation equipment, oil filtering equipment or other installation as required by regulation 16 of annex I; or alternatively: the oil content of the effluent without dilution does not exceed 15 ppm.</li> </ul>

Table 4 – MARPOL, annex I, discharge requirements (cont.)

Substances	Discharge requirements	
	In special areas	In other sea areas
<p><i>Oil and oily mixtures</i> (cont.)</p> <ul style="list-style-type: none"> <li>From ships of less than 400 grt other than oil tankers</li> </ul>	<p>Discharge allowed under following conditions:</p> <ul style="list-style-type: none"> <li>the oil content of the effluent without dilution does not exceed 15 ppm – or alternatively, if:                             <ol style="list-style-type: none"> <li>the ship is proceeding <i>en route</i>;</li> <li>the oil content of the effluent is less than 100 ppm; and</li> <li>the discharge is made as far as practicable from the land, but in no case less than 12 nautical miles from the nearest land.</li> </ol> </li> </ul>	<p>Discharge is prohibited unless in compliance with the requirements of paragraph (1) (b) of regulation 9 of annex I, i.e. the requirements listed for “From ships of 400 grt...”; or alternatively: Administration shall ensure that the ship is equipped, as far as practical and reasonable, with installations to ensure the storage of oil residues on board and their discharge to reception facilities.</p>
<p><i>Clean/segregated ballast</i></p> <p><i>General</i></p>	<p>All ships can discharge this in any area.</p> <ol style="list-style-type: none"> <li>No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in regulations 9 and 10 of annex I.</li> <li>The oil residues which cannot be discharged into the sea in compliance with regulation 9 or 10 of annex I shall be retained on board or discharged to reception facilities.</li> </ol>	

Table 5 – MARPOL, annex II, discharge requirements

Substances	Discharge requirements	
	In special areas	In other sea areas
<p><i>Noxious liquid substances</i></p> <ul style="list-style-type: none"> <li>Category A</li> </ul>	<p>Discharge allowed only when the discharge involves water added to a tank after this tank has been washed in accordance with regulations, and until the concentration of the substance involved in the effluent to the reception facility is at or below the residual concentration:</p> <p style="text-align: center;">0.05% by weight                                             0.1% by weight</p> <p>and when the tank has thereafter been completely emptied and provided:</p> <ol style="list-style-type: none"> <li>the ship is proceeding <i>en route</i> at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;</li> <li>the discharge is made below the waterline taking into account the location of the seawater intakes; and</li> <li>the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 m.</li> </ol>	
<ul style="list-style-type: none"> <li>Category B</li> </ul>	<p>Discharge allowed only when:</p> <ol style="list-style-type: none"> <li>tanks have been prewashed in accordance with approved requirements and the resulting washings have been discharged to a reception facility;</li> <li>the ship is proceeding <i>en route</i> at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled</li> </ol>	<ol style="list-style-type: none"> <li>identical to requirement (b) for special areas</li> </ol>

Table 5 - MARPOL, annex II, discharge requirements (cont.)		
Substances	Discharge requirements	
	In special areas	In other sea areas
<ul style="list-style-type: none"> <li>• Category B (cont.)</li> <li>• Category C</li> <li>• Category D</li> </ul>	<p>(c) the procedure and arrangements for the discharge have been approved and the concentration of the substance in the wake astern of the ship does not exceed 1 ppm;</p> <p>(d) the discharge is made below the waterline taking into account the location of the seawater intakes; and</p> <p>(e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 m.</p> <p>Discharge allowed only when:</p> <p>(a) the ship is proceeding <i>en route</i> at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;</p> <p>(b) the procedures and arrangements for the discharge have been approved and the concentration of the substance in the wake astern of the ship does not exceed:</p> <p style="text-align: center;">1 ppm;   10 ppm;</p> <p>(c) the maximum quantity of cargo discharged from each tank does not exceed:</p> <p style="text-align: center;">1 m<sup>3</sup> or 1/3,000 of the tank capacity, whichever is the greater;   3 m<sup>3</sup> or 1/1,000 of the tank capacity, whichever is the greater;</p> <p>(d) the discharge is made below the waterline taking into account the location of the seawater intakes; and</p> <p>(e) the discharge is made at a distance of not less than 12 nautical miles from the nearest land and in a depth of water of not less than 25 m.</p> <p>Discharge allowed only when:</p> <p>(a) the ship is proceeding <i>en route</i> at a speed of at least 7 knots in the case of self-propelled ships or at least 4 knots in the case of ships which are not self-propelled;</p> <p>(b) such mixtures are of a concentration not greater than one part of the substance in ten parts of water; and</p> <p>(c) the discharge is made at a distance of not less than 12 nautical miles from the nearest land.</p>	<p>(b) identical to requirement (c) for special areas;</p> <p>(c) the maximum quantity of cargo discharged from each tank does not exceed 1 m<sup>3</sup> or 1/3,000 of the tank capacity, whichever is the greater;</p>

Table 6 - MARPOL, annex V, discharge requirements		
Substances	Discharge requirements	
	In special areas	In other sea areas
<p><i>Garbage</i></p> <ul style="list-style-type: none"> <li>• Plastics, including but not limited to synthetic ropes, synthetic fishing nets and plastic garbage bags</li> <li>• Dunnage, lining and packing materials which will float</li> <li>• Food wastes</li> </ul>	<p>Discharges prohibited</p> <p>Discharges prohibited</p> <p>As far as practicable from land but in any case discharge prohibited less than 12 nautical miles from the nearest land*</p>	<p>Discharges prohibited</p> <p>Discharges prohibited less than 25 nautical miles from the nearest land</p> <p>No discharges allowed less than 12 nautical miles from the nearest land</p>

\* For the Wider Caribbean Sea area 12 miles should read 3 miles.

Table 6 - MARPOL, annex V, discharge requirements (cont.)

Substances	Discharge requirements	
	In special areas	In other sea areas
<p><i>Garbage (cont.)</i></p> <ul style="list-style-type: none"> <li>● All other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse</li> <li>● Comminuted food wastes capable of passing through a screen with openings no greater than 25 mm</li> <li>● Comminuted other garbage capable of passing through a screen with openings no greater than 25 mm</li> </ul> <p>(Mixtures of garbage or garbage mixed with other discharges having different disposal or discharge requirements shall be treated in accordance with the most stringent requirements.)</p>	<p>Discharges prohibited</p> <p>As far as practicable from land but in any case discharges prohibited less than 12 nautical miles from the nearest land</p> <p>Discharges prohibited</p>	<p>Discharges prohibited less than 12 nautical miles from the nearest land</p> <p>As far as practicable from land but in any case discharges prohibited less than 3 nautical miles from the nearest land</p> <p>As far as practicable from land but in any case discharges prohibited less than 3 nautical miles from the nearest land</p>

### 2.3 Procedures for the designation of a special area

2.3.1 A proposal to designate a given sea area as a special area should be submitted to IMO for consideration by its Marine Environment Protection Committee (MEPC). The submission date for the proposal should be at least three months before a session of the MEPC.

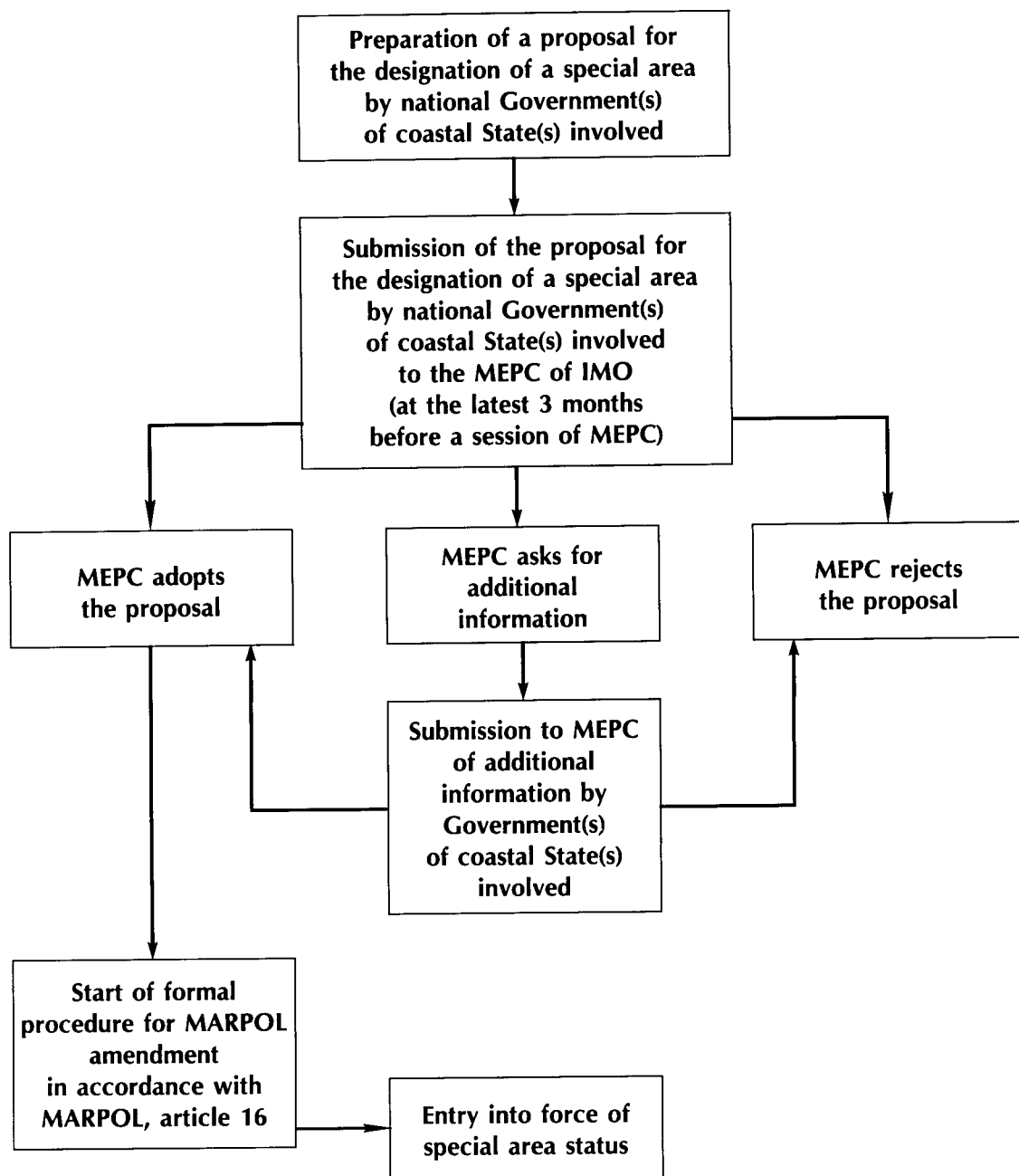
2.3.2 A proposal to designate an area as a special area should contain a draft amendment to MARPOL 73/78 providing the formal basis for the designation of an area as a special area, together with a background document addressing:

- .1 the definition of the area which is proposed as a special area, including an indication of its precise geographical location. It is essential also to include a reference chart;
- .2 an indication of the type of special area proposed. Proposals can be made with respect to annexes I, II and V of MARPOL 73/78, but proposals for designation of a given area as a special area should be evaluated and submitted separately for each annex;
- .3 a general description of the area including such issues as its oceanography, ecological characteristics, social and economic value, scientific and cultural significance, environmental pressures (including those of ship-generated pollution) and measures already taken to protect the environment of the proposed area. This general description may be supported by annexes containing additional information on the area, or references to documentation;
- .4 a review of the criteria for the designation of a special area showing that the area in question satisfies those criteria. Section 2.4 of this chapter lists the criteria which should be satisfied. Special mention is given on the availability of adequate reception facilities in the proposed area.

Examples of submissions by Governments of such background information are given in appendix A.

2.3.3 The formal amendment procedure applicable to proposals for the designation of special areas is set out in article 16 of the International Convention for the Prevention of Pollution from Ships, 1973.

Table 7 - Procedures for the designation of a special area





## **2.4 Criteria for the designation of a special area**

**2.4.1** The criteria which must be satisfied in order for an area to be given special area status are grouped into the following categories:

- oceanographic conditions,
- ecological conditions, and
- vessel traffic characteristics.

Generally, one of the conditions in each category should be satisfied. However, it may be necessary to take additional conditions into account.

### *Oceanographic conditions*

**2.4.2** Conditions which would cause the concentration or retention of harmful substances in the waters or sediments of the area, including:

- .1 particular circulation patterns (e.g. convergence zones and gyres) or temperature and salinity stratification;
- .2 long residence time caused by low flushing rates;
- .3 extreme ice state; and
- .4 adverse wind conditions.

### *Ecological conditions*

**2.4.3** Conditions indicating that protection of the area from harmful substances is needed to preserve:

- .1 depleted, threatened or endangered marine species;
- .2 areas of high natural productivity (such as fronts, upwelling areas, gyres);
- .3 spawning, breeding and nursery areas for important marine species and areas representing migratory routes for sea-birds and marine mammals;
- .4 rare or fragile ecosystems (such as coral reefs, mangroves, seagrass beds and wetlands); and
- .5 critical habitats for marine resources including fish stocks and/or areas of critical importance for the support of large marine ecosystems.

### *Vessel traffic characteristics*

**2.4.4** The sea area is used by ships to an extent that the discharge of harmful substances by ships when operating in accordance with the requirements of MARPOL 73/78 for areas other than special areas would be unacceptable in the light of the existing oceanographic and ecological conditions in the area.

### *Implementation*

**2.4.5** The requirements of a special area designation can only become effective when adequate reception facilities are provided for ships in accordance with MARPOL 73/78.

### *Other considerations*

**2.4.6** The threat to amenities posed by the discharge of harmful substances from ships operating in accordance with the MARPOL 73/78 requirements for areas other than special areas may strengthen the argument for designating an area as a special area.

**2.4.7** The extent to which the condition of a sea area is influenced by non-maritime sources of pollution such as pollution from land-based sources, dumping of wastes and dredged materials,

as well as atmospheric deposition should be taken into account. Proposals would be strengthened if measures are being, or will be, taken to prevent, reduce and control pollution of the marine environment by these sources of pollution.

**2.4.8** Consideration should be given to the extent to which a management regime is used in managing the area. Proposals for designation of a special area would be strengthened if measures are being taken to manage the area's resources.

#### *Examples*

**2.4.9** Examples of existing special areas and of texts of documents submitted to IMO to support proposals for the adoption of special areas are given in appendix A to these Guidelines.

## **CHAPTER 3 – PARTICULARLY SENSITIVE SEA AREAS**

### **3.1 Protective measures under IMO regulations – General**

**3.1.1** The MEPC began its study of the question of particularly sensitive sea areas in response to a resolution of the International Conference on Tanker Safety and Pollution Prevention of 1978.

**3.1.2** A particularly sensitive sea area is defined as an area which needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to environmental damage by maritime activities. In order for the area to be identified as a particularly sensitive sea area, it must meet one of the criteria listed in section 3.3.

**3.1.3** In the context of these Guidelines, special protective measures are limited to actions within the purview of IMO and include the following options:

- .1 to designate an area as a special area under annexes I, II or V of MARPOL 73/78 or to apply certain discharge restrictions to vessels operating in a particularly sensitive sea area. Procedures and criteria for the designation of a special area are contained in chapter 2 of these Guidelines;
- .2 to adopt routeing measures near or in the area, under the SOLAS Convention (chapter V, regulation 8) and in accordance with the General Provisions on Ship's Routeing. For this purpose a particularly sensitive sea area may be designated as an area to be avoided or it may be protected by other ships' routeing measures. Procedures and criteria for the adoption of routeing measures are contained in sections 3.4 to 3.7 of these Guidelines;
- .3 to develop and adopt other measures aimed at protecting specific sea areas against environmental damage from ships, such as compulsory pilotage schemes or vessel traffic management systems. Procedures and criteria for the adoption of such measures are contained in section 3.8 of these Guidelines.

**3.1.4** The above options are shown in summary form in table 8.

**3.1.5** In some circumstances, a proposed particularly sensitive sea area may include a buffer zone, in other words, an area contiguous to the site-specific feature (core area) for which specific protection from shipping is sought. However, the need for such a buffer zone should be justified in terms of how it would contribute to the adequate protection of the core area.

Table 8 – Protective measures for particularly sensitive sea areas

All the following measures may be used in connection with the management of particularly sensitive sea areas (PSAs); the table provides a synopsis of the measures available to IMO as codified in existing IMO provisions.

	MARPOL – special areas	Areas to be avoided and other routing measures	Vessel traffic service (VTS)
<i>Application</i>	Strict discharge and equipment requirements for ships (e.g. oil tankers, ships greater/smaller than 400 grt, installation of oil discharge monitoring and control system/ oil filtering equipment	SOLAS regulation V/8 provides that IMO can adopt areas to be avoided and other routing measures in international waters. These measures can indirectly assist protection of the marine environment by preventing casualties and may be applied to different classes of ships in accordance with the General Provisions on Ships' Routing.	A VTS is intended to improve safety and efficiency of traffic and protection of the environment
<i>Concept of regulation</i>	The regime of special areas has been designed for the purpose of environmental protection. To minimize pollution two main methods of protection have been established: <ul style="list-style-type: none"> <li>• discharge control and</li> <li>• shipboard operational controls.</li> </ul>	All routing measures are intended to provide safety of navigation. If collision and grounding are avoided, the environment will be protected by preventing accidental or intentional discharges. Navigational measures can be used as a method of indirect discharge control. This effect can be enhanced by establishing buffer zones.	VTS is especially useful, in conjunction with ship reporting systems, to identify ships carrying environmentally sensitive cargoes and to control their safe passage through PSAs by means of providing information, navigation assistance and controlling traffic
(a) Discharge control	The nature and amount of discharged material are regulated	Routing and other measures ensure the source of potential pollution is controlled within or kept out of a particularly sensitive sea area	
(b) Shipboard operational/ traffic controls	Depending on ship's type and discharge material/ amount, some shipboard operational controls have to be applied in the case of discharges: <ul style="list-style-type: none"> <li>• minimum distance from coast</li> <li>• speed limits</li> <li>• minimum water depth.</li> </ul>	The General Provisions on Ships' Routing prescribe measures which can assist in environmental protection, including: <ul style="list-style-type: none"> <li>• traffic separation schemes and associated inshore traffic zones*</li> <li>• two-way routes</li> <li>• recommended tracks</li> <li>• areas to be avoided*</li> <li>• roundabouts</li> <li>• precautionary areas</li> <li>• deep-water routes.*</li> </ul> Other navigational measures: <ul style="list-style-type: none"> <li>• established directions of traffic flow</li> <li>• recommended directions of traffic flow.</li> </ul>	The Guidelines for VTS include: <ul style="list-style-type: none"> <li>• data collection</li> <li>• data evaluation</li> <li>• information service</li> <li>• navigational assistance service</li> <li>• traffic organization service</li> <li>• support of related activities* (e.g. compulsory pilotage).</li> </ul>
<i>Technical support of ship-related measures</i>	Reception facilities have to be established by national authorities in order to support discharge control measures	Routing measures are included on related navigational charts	VTS provides information to ships on traffic within its coverage area and with problems related to navigation. Details of VTS are included in nautical publications.
<i>Jurisdiction</i>	MARPOL is compulsory and is applicable in international waters as well as in national waters including EEZ, territorial sea and internal waters	With the exception of traffic separation schemes, where behaviour of ships therein is regulated by the 1972 Collision Regulations, all other routing measures are recommendatory. Use of VTS is also recommendatory in international waters.	

\* Measures which have already been used for environmental protection purposes.

## **3.2 Procedures for the identification of a particularly sensitive sea area**

**3.2.1** A proposal to IMO for the identification of a particularly sensitive sea area will normally consist of two parts:

- .1 information why a given area should be considered as a particularly sensitive sea area and identifying the type of protection that area needs against damage from maritime activities; and
- .2 a proposal for the adoption of the required protective measures.

**3.2.2** This section of the Guidelines will only address the elements which should be contained in the first part.

**3.2.3** The information should include the following elements:

- .1 the definition of the area which is proposed as a particularly sensitive sea area, including its precise geographical location. It is essential also to include a reference chart;
- .2 a general description of the area addressing such issues as its oceanography, ecological characteristics, social and economic value, scientific and cultural significance, environmental pressures (including those of ship-generated pollution and other types of potential ship-generated damage) and measures which have already been taken to protect the environment of the proposed area. This general description may be supplemented by annexes containing additional information or references to documentation containing such information;
- .3 a review of the criteria for the identification of a particularly sensitive sea area, showing that the area in question satisfies these criteria. Section 3.3 below lists the criteria which should be satisfied;
- .4 an evaluation of the kind of protective measures which should be taken within the framework of IMO to protect the area against damage caused by ships;
- .5 a description of existing or proposed protective and management measures taken for the area.

**3.2.4** In cases where a particularly sensitive sea area is within the jurisdiction of more than one State agreement should be reached between those States before a proposal is submitted.

**3.2.5** A proposal for the identification of a particularly sensitive sea area should be submitted to the MEPC at least three months before a session of the MEPC. The MEPC will then decide whether the proposed area is to be identified as a particularly sensitive sea area.

## **3.3 Criteria for the identification of a particularly sensitive sea area**

**3.3.1** The following criteria apply to the identification of particularly sensitive sea areas only with respect to the adoption of measures to protect such areas against damage from shipping.

**3.3.2** These criteria do not therefore apply to the identification of such areas for the purpose of establishing whether they should be protected from dumping activities, since that is implicitly covered by annex III of the London Dumping Convention (the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972) and by the Guidelines for the Implementation of annex III of that Convention, adopted by the Contracting Parties to the London Dumping Convention (resolutions LDC.17(8) and LDC.32(11)).

**3.3.3** The criteria relate to particularly sensitive sea areas within and beyond the limits of the territorial sea. They can be used by IMO to identify particularly sensitive sea areas beyond the territorial sea with a view to bringing about the development of international protective measures regarding pollution and other damage caused by ships. These criteria can also be used by national Administrations to identify particularly sensitive sea areas within their territorial waters.

**3.3.4** In order to be identified as a particularly sensitive sea area, the area should meet at least one of the criteria listed below:

**3.3.5** *Ecological criteria*

**.1** Uniqueness

An ecosystem can be unique or rare. An area is unique if it is “the only one of its kind”. Habitats of endangered species that occur only in one area are an example. A unique ecosystem may extend beyond country borders, assuming regional or international significance.

**.2** Dependency

Ecological processes of such areas are highly dependent on biotically structured systems (e.g. coral reefs, kelp forests, mangrove forests, seagrass beds). Such biotically structured ecosystems often have high diversity, which is dependent on the structuring organisms. Dependency also embraces areas representing the migratory routes of marine fish, reptiles, birds and mammals.

**.3** Representativeness

These areas have highly representative ecological processes, or community or habitat types or other natural characteristics. Representativeness is the degree to which an area represents a habitat type, ecological process, biological community, physiographic feature or other natural characteristic.

**.4** Diversity

These areas have a high variety of species or include highly varied ecosystems, habitats, communities, and species. However, this criterion may not apply to some simplified ecosystems, such as pioneer or climax communities, or areas subject to disruptive forces, such as shores exposed to high energy wave action.

**.5** Productivity

The area has a high natural biological productivity. Production is the net result of biological processes which result in an increase in biomass in areas of high natural productivity such as oceanic fronts, upwelling areas and some gyres.

**.6** Naturalness

The area has a high degree of naturalness, as a result of the lack of human-induced disturbance or degradation.

**.7** Integrity

The area is a biologically functional unit, an effective, self-sustaining ecological entity. The more ecologically self-contained the area is the more likely it is that its values can be effectively protected.

**.8** Vulnerability

The area is highly susceptible to degradation by natural events or the activities of people. Biotic communities associated with coastal habitats may have a low tolerance to changes in environmental conditions, or they may exist close to the limits of their tolerance (defined by water temperature, salinity, turbidity or depth). They may suffer such natural stresses as storms or prolonged emersion that determine the extent of their development. Additional stress (such as domestic or industrial pollution, excessive reduction in salinity, and increases in turbidity from watershed mismanagement) may determine whether there is total, partial, or no recovery from natural stress, or the area is totally destroyed. Certain oceanographic and meteorological factors could cause an area to be vulnerable or increase its vulnerability, for example by causing the concentration or retention of harmful substances in the waters or in the sediment of the area, or by otherwise exposing the area to harmful substances. These conditions include circulation patterns such as convergence

zones, oceanic fronts and gyres, long residence times caused by low flushing rates, the occurrence of seasonal or permanent density stratification which can result in oxygen depletion in the bottom layer, as well as adverse ice states and wind conditions. An area already subject to environmental stresses owing to human activities or natural phenomena (e.g. natural oil seepage) may be in need of special protection from further stress, including stress arising from maritime activities.

### **3.3.6** *Social, cultural and economic criteria*

#### **.1** Economic benefit

The area is of particular importance to utilization of living marine resources.

#### **.2** Recreation

The area has special significance for recreation and tourism.

#### **.3** Human dependency

The area is of particular importance for the support of traditional subsistence and/or cultural needs of the local human population.

### **3.3.7** *Scientific and educational criteria*

#### **.1** Research

The area has high scientific interest.

#### **.2** Baseline and monitoring studies

The area provides suitable baseline conditions with regard to biota or environmental characteristics.

#### **.3** Education

The area offers opportunity to demonstrate particular natural phenomena.

#### **.4** Historical value

The area has historical and/or archaeological significance.

### *Other considerations*

**3.3.8** In identifying an area as a particularly sensitive sea area and considering what special protective measures should be taken, consideration should be given to the degree to which actions already under way may indicate the need for further special protective measures and to the beneficial effects that such measures will have, in view of the environmental stresses from other sources.

**3.3.9** In many cases a particularly sensitive sea area may be identified within a special area. It should be noted that the criteria given in this section with respect to the identification of particularly sensitive sea areas and the criteria given in chapter 2 with respect to the designation of special areas are not mutually exclusive.

## **3.4** **Use of ships' routeing measures for environmental protection**

### *General*

**3.4.1** In accordance with regulation V/8(b) and (c) of SOLAS 1974, IMO is recognized as the only international body for establishing and recommending measures on an international level concerning routeing and areas to be avoided by ships or certain classes of ships. The selection and development of routeing measures, however, is primarily the responsibility of the Governments concerned.

**3.4.2** The purpose of ships' routeing is to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea-room, the existence of obstructions to navigation, limited depths or unfavourable

meteorological conditions. The precise objectives of any routing measures will depend upon the particular hazardous circumstances which it is intended to alleviate. However, any measure resulting in increased safety of navigation also protects the environment.

**3.4.3** It is essential that, in preparing proposals to establish such ships' routing measures, the General Provisions on Ships' Routing (resolution A.572(14), as amended), are complied with.

#### *Types of routing measures*

**3.4.4** Routing measures are especially important for the protection of the environment in specific sea areas and have in practice been used to provide additional protection for such areas. Available routing measures include: areas to be avoided, traffic separation schemes (which may or may not include an inshore traffic zone), precautionary areas and deep-water routes. These are defined as follows:

- .1 An *area to be avoided* is defined as "an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ships".
- .2 A *traffic separation scheme* is defined as "a routing measure aimed at separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes".
- .3 An *inshore traffic zone* is defined as "a designated area between the landward boundary of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of rule 10(d), as amended, of the International Regulations for Preventing Collisions at Sea (Collision Regulations), 1972".
- .4 A *precautionary area* is defined as "an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended".
- .5 A *deep-water route* is defined as "a route within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart".

As the definitions in Ships' Routing may be amended from time to time, it is necessary when considering these Guidelines that the correct definitions are used.

#### *Areas to be avoided*

**3.4.5** The protection given to specific areas through adoption as an area to be avoided is simple and straightforward. It closes an area for ships or certain classes of ships. If ships do not enter an area the risk of a casualty and consequential environmental damage is, of course, non-existent or very low, depending on the compliance of ships and proper implementation by the coastal State or States involved.

**3.4.6** The classes of ships which should avoid the areas should be considered in each particular case.

**3.4.7** Areas to be avoided should not be regarded as prohibited areas unless specifically so stated.

#### *Other ships' routing measures*

**3.4.8** The protection given to specific areas through the establishment of ships' routing measures will be due to the increased safety of navigation in the area.

**3.4.9** Methods for ships' routing include: (a) the separation of opposing streams of traffic by separation zones, or lines where zones are not possible; (b) the separation of opposing streams of traffic by natural obstructions and geographically defined objects; (c) the separation of through and local traffic by providing inshore traffic zones; (d) the sectoral division of adjacent traffic separation schemes at approaches or focal points; (e) the routing of traffic at focal points and route junctions where traffic separation schemes meet; and (f) other routing measures such as deep-water routes and recommended directions of traffic flow, two-way routes and recommended routes and tracks.

**3.4.10** The conduct of vessels within or near traffic separation schemes is prescribed in rule 10 of COLREG 1972, as amended in 1981, 1987 and 1989.

### **3.5 Procedures for the adoption of ships' routeing measures for environmental reasons**

**3.5.1** The selection and development of an area to be avoided, or other ships' routeing measures, are primarily the responsibility of the Governments concerned.

**3.5.2** A Government proposing an area to be avoided, any other ships' routeing measures, or an amendment to existing ships' routeing measures, any part of which lies beyond its territorial sea, should consult IMO with a view to the adoption or amendment of such a measure by the Organization for international use.

**3.5.3** Governments establishing traffic separation schemes, no parts of which lie beyond their territorial sea, are requested to design them in accordance with the criteria set out by IMO for such schemes and submit them to the Organization for adoption.

**3.5.4** Governments considering the establishment of an area to be avoided or other ships' routeing measures or the amendment of existing ones should consult at an early stage with: (a) mariners using the area; (b) authorities responsible for aids to navigation and for hydrographic surveys and nautical publications; (c) port authorities and (d) organizations concerned with fishing, offshore exploration or exploitation and environmental protection, as appropriate.

**3.5.5** The most direct route for adoption of an area to be avoided or other ships' routeing measures is to submit a proposal to the Sub-Committee on Safety of Navigation (NAV):

- .1 NAV will consider if the advice of the MEPC on whether or not the proposed area meets the criteria for a particularly sensitive sea area is necessary, in which case the MEPC will be asked to provide such advice to the MSC.
- .2 Although NAV may seek the advice of the MEPC on the environmental case for adopting the area to be avoided or other ships' routeing measures, it is NAV that will decide on the acceptability of the navigational aspects of the proposal. It will then submit a recommendation to the MSC for adoption, subject to the advice of the MEPC.
- .3 The MSC, taking into account any advice from the MEPC, will then consider and, if acceptable, adopt the area to be avoided or other ships' routeing measures.
- .4 Apart from traffic separation schemes, areas to be avoided and other ships' routeing measures adopted by the MSC have to be submitted to the Assembly of IMO for confirmation.

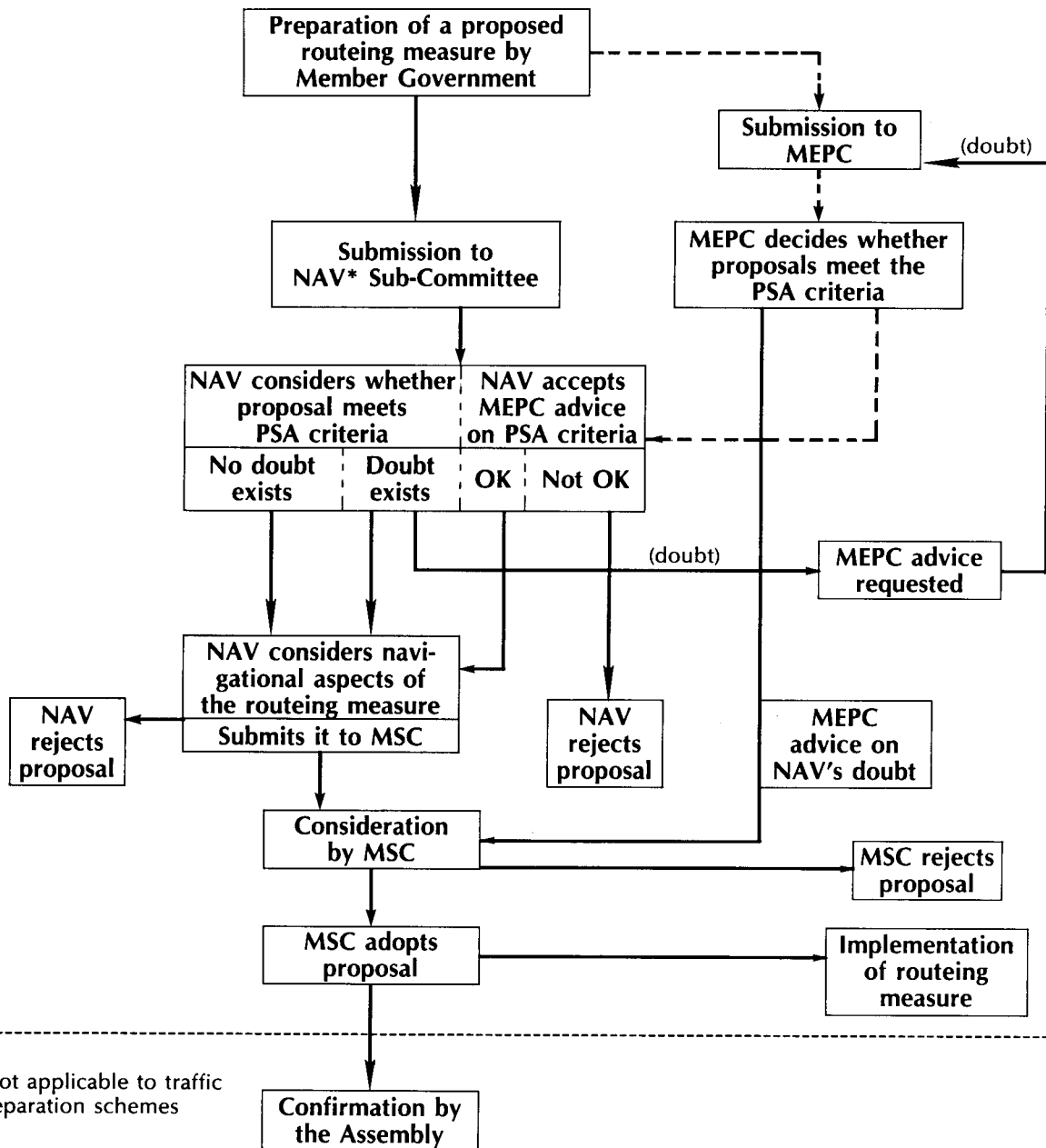
This procedure has been summarized in table 9.

**3.5.6** In an exceptional case when a proposal is very urgent and cannot be considered by NAV without unduly delaying its implementation, it may be submitted directly to the MSC. The MSC may then take direct action with regard to the proposed traffic separation scheme without first referring it to NAV.

**3.5.7** In certain circumstances a proposal might be submitted first to the MEPC to determine whether the proposed area can be identified as a particularly sensitive sea area. The MEPC's decision will be conveyed to NAV to consider what protection could be afforded to the area and to take the necessary action for the adoption.



Table 9 - Procedures for adoption of routing measures for environmental reasons



Not applicable to traffic separation schemes

Note: If the Assembly did not confirm the adoption of a routing measure other than a traffic separation scheme the matter would be referred back to the MSC or MEPC or both for reconsideration and action, as appropriate.

\* Exceptionally MSC for proposed traffic separation schemes.

**3.5.8** A proposal for the adoption of an area to be avoided or other routing measures should be in conformity with the General Provisions on Ships' Routing and should set out on a formal basis the details of what scheme is envisaged, together with background information addressing:

- .1 the definition of the area to be avoided or other routing measure, including its precise geographical location. (It is essential also to include a reference chart.);
- .2 a general description of the area (see also paragraph 3.2.3.2);
- .3 an indication of the environmental damage ships cause or might cause to the area;
- .4 a review of the criteria for a particularly sensitive sea area (see paragraph 3.2.3.3 and section 3.3), showing that the area in question satisfies these criteria;
- .5 a statement as to the compliance of the proposed area to be avoided or other routing measure with the requirements of General Provisions on Ships' Routing;
- .6 in the case of designation of areas to be avoided, an indication of the type of vessel which should avoid the area.

### **3.6 Criteria for the adoption of an area to be avoided**

**3.6.1** Whenever the designation of an area as an area to be avoided is considered to be the most appropriate option for the protection of a particularly sensitive sea area, the area should satisfy the criteria for identification as a particularly sensitive sea area (see sections 3.1 to 3.3 of these Guidelines) and should meet the requirements of the General Provisions on Ships' Routing (section 5 of the General Provisions) associated with the designation of an area to be avoided.

**3.6.2** When establishing an area to be avoided by all ships or certain classes of ship, the necessity for creating such areas should be well demonstrated and the reasons stated. In general, these areas should be established only in places where inadequate survey or insufficient provision of aids to navigation may lead to danger of stranding, or where local knowledge is considered essential for safe passage, or where there is the possibility that unacceptable damage to the environment could result from a casualty, or where there might be a hazard to a vital aid to navigation. These areas shall not be regarded as prohibited areas unless specifically so stated; the classes of ships which should avoid the areas should be considered in each particular case.

**3.6.3** Where necessary, provision should be made for adequate aids to navigation and vessel traffic services to assist ships in avoiding the area.

### **3.7 Criteria for the adoption of other ships' routing measures**

Whenever the adoption of a ships' routing measure other than an area to be avoided is considered to be the most appropriate option for the protection of a particularly sensitive sea area, the area should satisfy the criteria for identification as a particularly sensitive sea area (see sections 3.1 to 3.3 of these Guidelines) and should meet the requirements of the General Provisions on Ships' Routing (section 5 of the General Provisions) associated with the ships' routing measures which will be proposed.

### **3.8 Other IMO measures**

#### *General*

**3.8.1** There are some other IMO options for providing additional protection against environmental damage that might be caused by ships. Some of these have been used in the past, some are still in the course of being developed further.

**3.8.2** The IMO position is that a proliferation of diverse local and regional regulations should be avoided. IMO is the only recognized body for introducing measures affecting international shipping in international waters. Governments wishing to establish measures which affect navigation in any waters beyond their territorial sea should therefore submit them to IMO for adoption.

### *Protective measures*

**3.8.3** Measures taken in the past include special measures to further limit operational discharges in and near the Great Barrier Reef and measures aimed at increasing safety of navigation. This last category includes such measures as voluntary or compulsory pilotage and measures which are in the course of being developed, e.g. vessel traffic services. Other measures which could be considered include special construction requirements, speed restrictions, prohibition of cargo transfer and control of ballast water discharges for ships operating in sensitive sea areas.

**3.8.4** Vessel traffic services (VTS) have been defined as “any service implemented by a competent authority, designed to improve safety and efficiency of traffic and the protection of the marine environment. It may range from the provision of simple information messages to extensive management of traffic within a port or waterway”. The reasons for establishing a VTS may include the need to assist navigation and the ability to take early action in case of accidents. A VTS is particularly appropriate in areas of environmental sensitivity.

**3.8.5** In areas where traffic is heavy and navigation is difficult IMO has recommended the use, in international waters or straits, of pilotage services to improve safety in general, and in particular for ships carrying noxious liquid substances which could constitute a potential danger of pollution.

### *Procedures for the adoption of other IMO measures*

**3.8.6** In general, proposals for the adoption of IMO measures for the protection of particularly sensitive sea areas other than the designation of special areas (see chapter 2) and areas to be avoided (see chapter 3, sections 3.4 to 3.6) or the establishment of ships’ routeing measures (see chapter 3, section 3.7) should be submitted either to the MEPC or to the MSC. These Committees can decide, on the basis of the proposal and the proposed measures, whether other committees or sub-committees should be involved in the decision with respect to that proposal.

**3.8.7** Where appropriate, the final decision will be taken by the IMO Assembly after consideration by the appropriate committees.

**3.8.8** Normally, IMO does not adopt a VTS. However, Governments establishing a VTS should ensure that it complies with resolution A.578(14) and that such services are operated in accordance with international law and do not prejudice the right of innocent passage through such areas. They should also ensure that ships outside territorial seas are able to use the service provided on a voluntary basis.

**3.8.9** The only general criteria for the adoption of measures to protect particularly sensitive sea areas – other than the adoption of special areas or the establishment of areas to be avoided or other ships’ routeing measures – are contained in IMO Assembly resolution A.578(14) which gives guidelines which should be used for the establishment of vessel traffic services.

## Appendix A

### Existing special areas

Most of the existing special areas were declared at the time when MARPOL 1973 was conceived and adopted. The Gulf of Aden (annex I), the North Sea (annex V), the Antarctic (annexes I and V) and the Wider Caribbean (annex V) special areas were designated after 1973 as amendments to MARPOL 73/78.

## ANNEX I SPECIAL AREAS

The following sea areas have been designated as special areas under MARPOL, annex I:

- (a) The Mediterranean Sea area
- (b) The Baltic Sea area
- (c) The Black Sea area
- (d) The Red Sea area
- (e) The Gulfs area
- (f) The Gulf of Aden
- (g) The Antarctic area

### Example 1: The Baltic Sea

During the International Conference on Marine Pollution, 1973, which resulted in the adoption of the MARPOL Convention, the Baltic Sea was considered and designated as a special area in accordance with annexes I, II and V. As regards the designation of the Baltic Sea as an annex I special area, the draft text prepared for adoption during the Conference mentioned the Baltic Sea as a proposed annex I special area. No detailed provisions were contained in the draft Convention: for example it did not define the Baltic Sea area (as opposed to the Baltic Sea). However, it was noted in the draft that the coastal States concerned were carrying out preparatory work on further proposals with respect to the Baltic Sea.

The following paragraphs provide original texts from the most relevant documents submitted by the Baltic coastal States to support the designation of the Baltic Sea area as an annex I special area.

*Document MP/CONF/8/7*

*(submitted by the Government of Finland, 3 July 1973)*

This document included several proposals for amendments to the draft Convention. One of these was a proposal for a definition of the Baltic Sea which is reproduced below.

- (a) For the purpose of this Annex the Baltic Sea area means the Baltic Sea proper with the Gulf of Bothnia, the Gulf of Finland and the entrance to the Baltic Sea bounded by the parallel of latitude of the Skaw in the Skagerrak.

This proposed definition was adopted with a small amendment.

*Document MP/CONF/8/7/Add.1*

*(submitted by the Government of Finland, 3 July 1973)*

This document was prepared by an *ad hoc* working group established during a meeting of governmental experts from Denmark, Finland, the German Democratic Republic, the Federal Republic of Germany, Poland and the USSR which was held in Helsinki from 28 May to 1 June 1973 in preparation for the Baltic Sea Conference on the Marine Environment. It was submitted by the Government of Finland on behalf of other Governments concerned.

#### A NOTE ON THE CHARACTERISTICS OF THE BALTIC SEA

The largest brackish water area in the world, the Baltic Sea, is separated from the North Sea by very shallow sills. The excess of fresh water is contributed by some 200 rivers discharging annually some 450 cubic kilometres of waters, i.e. 1/50 of the total water volume of the Baltic Sea, while precipitation and evaporation balance each other. On the other hand, the inflow of saline water, the amount of which is usually estimated to be about equal to the amount of the fresh water discharge, penetrates into the deep basins of the Baltic proper to a less regular extent. A number of meteorological and hydrographical processes which today are still poorly understood, regulate the inflow of the saline water masses. The mixing of the fresh and saline water results in brackish water, the salinity of the surface water of the Baltic Sea being only 1/5 of that of the oceans.

The Baltic Sea area is divided in four different parts, i.e. the Belt Sea, the Western Baltic consisting of the Kiel Bight and the Arkona Basin, the Bornholm Sea, the Central Baltic, consisting of the Gdansk Deep, the Western and Eastern Gotland Basins, the Northern Baltic and the Gulf of Finland. While the areas mentioned above are often considered as one hydrographic unit, the Bothnian Sea and the Bothnian Bay are separate basins.

The average depth of the Baltic Sea is only some 55 m. However, the basins mentioned above are morphologically separated by relatively shallow sills. The entrances of the Baltic are narrow and the maximum sill depth in the Danish Sounds is only some 18 m. The maximum depth in the basins ranges from 50 to 250 m, with the exception of the narrow Landsort Deep (455 m).

The hydrographical and hydrochemical conditions in the deep water of the different basins are markedly affected by the sill between them. Thus, each basin has to a certain extent its own hydrographical regime.

In the Baltic Sea proper a less saline water layer extends from the surface to a depth of about 50–70 m. At this depth there is a sharp salinity discontinuity layer which exists the whole year around. In addition, one or more thermoclines develop during the summer period in the surface water and less marked haloclines often appear above and below the major discontinuity layer.

The multi-layer structure of the Baltic Sea is an important factor resulting in several special features of this Sea. The vertical exchange of matter is highly prevented by the great vertical stability caused by the multi-layer structure. These properties also result in a depletion of oxygen, especially below the halocline, and in accumulation of degradation products from natural and man induced organic material. During recent decades the oxygen content of the Baltic deep water has decreased apart from interruptions in this trend. Occasionally the oxygen content of the deepest water has been reduced to zero within recent decades, together with the development of hydrogen sulphide. This anaerobic zone might rise up to about 125 m.

Certain evidence has been given that these changes are caused by natural long-term fluctuations of the climatic conditions. However, it is generally assumed that the whole process is accelerated and intensified by man.

The fauna and flora are unique, and include, in addition to some true brackish water organisms, marine and fresh water organisms living under considerable ecological stress.

The relatively low nutrient contents of the Baltic Sea surface water, the climate and the bottom topography result in peculiarities of the hydrography. Together with these exceptional properties, the stress condition of the organisms make the Baltic Sea sensitive to even small changes in its natural state.

The relatively dense population in the countries surrounding the Baltic Sea, the high and still increasing industrialisation of the coastal zones especially, special meteorological conditions which favour the fallout of airborne pollutants, together with the hydrological conditions as outlined above, result in an accumulation of persistent pollutants, in the food chain, to a greater extent than in the open oceans.

There are reasons to believe that the cold climate, resulting in low average water temperatures, together with the ice cover appearing regularly over large parts of the Northern Baltic region during winter time, decrease the natural degradation processes of many harmful substances. In addition, the activity of the micro-flora is furthermore reduced by the oxygen depletion and the developing anaerobic conditions in the deep water. The numerous islands which extend to the centre of the Baltic Sea region are from an ecological and social, as well as scientific aspect, a remarkable environmental asset.

A list of reference documents was attached to this document.

*Document MP/CONF/8/7*

*(submitted by the Government of Finland, 3 July 1973)*

In addition to giving a number of proposed amendments to the draft Convention, this document also listed the special circumstances indicating that the Baltic Sea area satisfied the conditions for designation as a special area.

- (1) The Baltic Sea is an enclosed water body with extremely slow and irregular exchanges of deep water with the ocean waters.
- (2) The water in the Baltic Sea is cold, which markedly slows down chemical and biological degradation of certain pollutants.
- (3) Aeration of the deep water in the Baltic Sea is very slow because of marked stratification of water masses. This also slows down degradation of certain pollutants.
- (4) The stagnation of the deep water in the different basins of the Baltic Sea proper causes accumulation among other substances, especially of persistent pollutants. These pollutants are reintroduced into the surface layers during eventual turnover periods.
- (5) The concentration of certain pollutants in organisms of the Baltic Sea are much (in certain cases ten times) higher than in the true environment of the seas.
- (6) Organisms in the Baltic Sea area of either true marine or true fresh water origin. Living in the brackish water of the Baltic Sea constitutes in itself an environmental stress upon which all other stresses are added. Environmental pollutants even in low concentrations could be such additional stresses.
- (7) It is very difficult to carry out oil combat operations in complex archipelagos such as in Finland and Sweden. The main part of the stretch of coast in these countries is involved.

### **Example 2: The Gulfs area**

The Gulfs area was not included as an annex I special area in the original draft text for the International Convention for the Prevention of Pollution from Ships (document MP/CONF/4). During the Conference proposals were put forward to designate the Gulfs area as an annex I special area. A number of documents were submitted during the Conference to support that proposal.

*Document MP/CONF/C.2/WP.28*

*(submitted by the Government of Iran, 17 October 1973)*

This document (as well as some other documents) included a general description of the Gulfs area, a proposal to designate this area as an annex I special area and a definition of the area proposed as a special area.

#### **PROPOSAL FOR AN ADDITIONAL SPECIAL AREA**

The Persian Gulf is about 900 km in length and has an area of nearly 200,000 sq. km. It is connected to oceanic waters by the U-shaped Strait of Hormuz which is, at the narrowest part, about 50 km wide.

The Gulf is shallow; over the Pearl Banks, which lie off the flat shores of the Arabian States and cover nearly one third of the total area, the depth does not exceed 15 fathoms (27 m) while off the mountainous shores of Iran depths of the order of 40 fathoms (73 m) are usual. In a few places to the eastward of the Qatar Peninsula depths of 50 to 60 fathoms (91 to 109 m) occur.

The range of tides within the Gulf is very variable and depends to a large extent upon the declination of the moon; in general it can be said that it seldom exceeds 1.75 m at any place under ordinary circumstances but may increase to 3.0 m under extreme meteorological conditions at the eastern end.

Fresh water is received from the rivers Karun, Tigris and Euphrates which discharge together into the head of the Gulf. There are also several small rivers on the Iranian coast, but their flow is inconsiderable. There are no streams of any consequence on the coasts of the Arabian States.

The evidence that the predominant flow of water through the Strait of Hormuz is westwards for most of the year and the fact that the water near the head of the Gulf is much more saline than the water of the ocean both show that the fresh water inflow is insufficient to counterbalance the losses by evaporation and that there is no purging of the Gulf except at times when the rivers are in flood and the flow through the Strait of Hormuz becomes dominantly eastwards.

The waters of the Persian Gulf are rich in marine life; fish and crustacea abound and the fishing industry provides the essential protein for the numerous inhabitants of the surrounding States as well as the famous 'Gulf Shrimp' for export. The pearl fishing industry, though no longer so great in volume as in former years, is still of considerable economic importance to the area.

Fishing is also of great economic importance in the Gulf of Oman, where it is at times seriously hindered by the presence of large oil slicks along the shores.

The transport of oil is by far the largest item of sea traffic in the Gulf. The oilwells in the surrounding countries and in the sea-bed produced, in December 1972, a daily total of 19.5 million barrels (2.9 million tons) of crude oil. About one tenth of this enormous quantity was either consumed locally or exported elsewhere by pipeline and the remaining 90% (either in the form of crude oil or refined products) required the services of 25 to 30 large tankers daily, the average cargo of each exceeding 100,000 tons. This traffic, which has continued to expand, comprises more than one half of the world's total production of crude oil.

The entire sea-bed of the Gulf lies at a depth of less than 100 fathoms and is therefore considered to form part of the Continental Shelf. The various coastal States have accordingly granted licences for the exploration and exploitation of its resources and, as a result, a large number of oilwells have been drilled over much of its area. From the 300-400 wells now in operation the crude oil is conveyed first to an 'operations platform' and thence to a terminal, situated either on land or at sea, for export. About one tenth of the total production of crude oil in the Gulf comes from these seawells; some of the oilfields have been proved to extend across the boundaries of the jurisdiction of neighbouring or facing States.

In order to safeguard the ecology of the whole area, it is desirable to designate the Persian Gulf, together with so much of the Gulf of Oman as lies westward of longitude 60°00' East, as a special area in which, in accordance with regulations 9(1)(a)(iii) and 9(1)(a)(iv) (of the draft Convention), no ship, other than those of very small gross tonnage, may discharge any oil or oily mixture. The term 'ship' includes all platforms used in connection with exploitation of the resources of the sea-bed.

Before defining the provisions to be applied to this special area in accordance with regulation 12(1)(c) (of the draft Convention) it is necessary to consider what it is desired to achieve in the Mediterranean and for which regulation 12(2) (of the draft Convention) has been formulated, and how these aims may differ from what is desired to safeguard the Persian Gulf.

In the Mediterranean there are crude oil and refined products loading terminals in five coastal States (Turkey, Syria, Lebanon, Israel and Libya) and there are reception terminals in all other States around the seaboard. Some of the crude oil is loaded into large tankers for trans-ocean delivery but part of it and nearly all of the black oil products are destined for other Mediterranean ports and are carried there by smaller tankers, many of which are engaged on a shuttle service across the Mediterranean and in consequence seldom have the opportunity, while on the return journey to the loading terminals, effectively to operate retention-on-board routines. It is therefore of importance that adequate reception and disposal facilities should be provided at loading terminals to prevent the discharge of tank washings, residues and dirty ballast into the Mediterranean. At present there are not any submarine oilwells in this area.

In the Persian Gulf the situation is entirely different and other provisions are required. At the crude oil loading terminals, which may be at ports, on sea-islands or many miles offshore, nearly all of the incoming tankers have come from distant ports, cleaned their tanks en route, transferred the residues to slop tanks and discharge only clean ballast while loading; there is therefore no need to provide reception facilities for them. There will, however, always be a number of tankers returning from ports in the Indian Ocean which may not have completed tank cleaning before arrival and it is proposed that reception facilities on a scale sufficient for the requirements of this part only of the trade should be provided at selected terminals in ports but not at any of the sea-islands or offshore terminals. Reception and disposal facilities will also be required at all product loading terminals to enable tankers, which have previously carried black oils, to discharge all dirty

ballast and residues ashore before loading with white oil products. At the numerous platforms used in connection with the extraction of oil from the sea-bed the operators should be required to provide, maintain and operate reception and disposal facilities adequate for the prevention of the discharge from their installations of any oil or oily mixtures into the sea.

The document then continued with the proposed amendments to ensure designation of the Gulfs area as an annex I special area. The definition of the Gulfs area which was finally included in the MARPOL Convention was slightly different from the definition proposed in the document. The requirements with respect to discharges and the availability of reception facilities, however, were, in the end, the same for all annex I special areas, including the Mediterranean Sea and the Gulfs area.

## **ANNEX II SPECIAL AREAS**

The following sea areas have been designated as special areas under MARPOL, annex II.

- (a) The Baltic Sea area
- (b) The Black Sea area

## **ANNEX V SPECIAL AREAS**

The following sea areas have been designated as special areas under MARPOL, annex V.

- (a) The Mediterranean Sea area
- (b) The Baltic Sea area
- (c) The Black Sea area
- (d) The Red Sea area
- (e) The Gulfs area
- (f) The North Sea area
- (g) The Antarctic area
- (h) The Wider Caribbean area

## **Appendix B**

### **Existing areas to be avoided and other ships' routing measures**

No areas to be avoided have so far been adopted after consideration of a proposal based on these Guidelines.

IMO has established 16 areas to be avoided in accordance with its General Provisions on Ships' Routing. Several of these have been established specifically in order to provide additional environmental protection to the areas involved:

- .1 *In the Region of the Rochebonne Shelf (France)*  
In order to avoid the risk of pollution due to an accident in the area, all tankers carrying oil should avoid the area.
- .2 *In the region of Cape Terpeniya (Sakhalin, Russian Federation)*  
The area should be avoided by ships of more than 1,000 tons gross tonnage carrying oil or hazardous cargoes, for reasons of conservation of unique wildlife in the area, and of inadequate survey.



- .3 *In the region of Nantucket Shoals (USA)*  
Because of the great danger of stranding and for reasons of environmental protection, all vessels carrying cargoes of oil or hazardous materials and all other vessels of more than 1,000 gross tons should avoid the area. In 1976, the oil tanker *Argo Merchant* ran aground in this area.
- .4 *In the region of the Northwest Hawaiian Islands (USA)*  
In order to avoid the risk of pollution due to an accident in the area which was designated as a wildlife refuge, all vessels of more than 1,000 gross tons carrying cargoes of oil or hazardous materials should avoid the area.
- .5 *In the region of the Great Barrier Reef (Australia)*  
In order to avoid the risk of pollution and damage to the environment in the Capricornia Section of the Great Barrier Reef Marine Park, all ships in excess of 500 tons gross tonnage should avoid the area. IMO has also adopted a number of other protective measures for the Great Barrier Reef region (see appendix C in these Guidelines).
- .6 *In the region of the Bermuda Islands (Bermuda)*  
Because of the great danger of stranding on the extensive reefs fringing Bermuda to the west, north and north-east of the islands, and for reasons of environmental protection, all vessels carrying cargoes of oil or hazardous materials and all other vessels of more than 1,000 gross tons, whether or not bound for Bermuda ports, should avoid the area.
- .7 *Between the Smalls Lighthouse and Grassholme Island (United Kingdom)*  
In order to avoid the risk of pollution due to a stranding in this area, which is in the close vicinity of important breeding grounds for sea-bird populations, all tankers, gas carriers and chemical carriers carrying noxious liquid substances, and all other vessels of 500 gross tons or over should avoid the area.
- .8 *In the region of the Aldabra Islands (Seychelles)*  
In order to avoid risk of pollution and damage to the environment in this area of unique wildlife, all vessels of more than 500 gross tons carrying cargoes of oil or hazardous materials should avoid the area.
- .9 *In the region of Mahé Island (Seychelles)*  
In order to avoid risk of pollution and damage to the environment, all vessels of more than 200 gross tons, whether or not bound for ports in Seychelles, should avoid the area.

These areas to be avoided illustrate the various ways in which this concept can be used to protect the environment of specific areas. The proposals which lead to these decisions have been supported by information submitted to the appropriate committees of IMO. Two examples may provide some further insight in the procedures as these have been in practice: the area to be avoided in the region of the North-West Hawaiian Islands and the one in the region of the Bermuda Islands.

#### **Example 1: The region of the North-West Hawaiian Islands**

The proposal for the establishment of an area to be avoided in the region of the North-West Hawaiian Islands was first submitted to IMO through its Sub-Committee on Safety of Navigation in 1978 in document NAV XXI/4/6 of 14 June 1978.

*Document NAV XXI/4/6*

*(submitted by the Government of the United States of America, 14 June 1978)*

1. The United States proposes the establishment of an area to be avoided by ships of more than 1,000 gross tons carrying oil or hazardous cargoes. The proposed area is in the Central Pacific and surrounds that portion of the Hawaiian Archipelago which was

established by the United States as a wildlife refuge in 1909. This area should be avoided by the specified class of ships in order to conserve the unique and endangered wildlife found there.

2. The Hawaiian Islands National Wildlife Refuge consists of a string of small islands, reefs and atolls stretching out between 161° and 176° west longitude. The largest island in the group has an area of 71 hectares and a maximum elevation of 277 m. Because of the extreme fragility of the Refuge ecosystem, entry to the Refuge is limited to U.S. Fish and Wildlife Service scientists and Coast Guard personnel. General public use of the area is prohibited.

3. The substantial wildlife community supported by the Refuge would be severely threatened by an oil spill in the adjacent waters. A number of species endemic to the Refuge could be devastated or even destroyed by a marine casualty. There have been a number of such major marine casualties in the area of the Refuge recently, but because of favourable weather conditions, none resulted in environmental damage to the Refuge.

Proposed area to be avoided co-ordinates: (a) 24°30'.0 N, 161°00'.0 W, (b) 30°05'.0 N, 176°52'.0 W, (c) 26°00'.0 N, 176°52'.0 W, (d) 22°49'.0 N, 166°33'.0 W, (e) 22°05'.0 N, 161°00'.0 W.

Major marine casualties: (I) *Irenes Challenge*, broke up 1/17/77, (II) *Rose S*, sunk 2/14/77, (III) *Crown Pearl*, sunk 2/23/77, (IV) *Hawaiian Patriot*, exploded/sunk 2/24/77.

A map with the co-ordinates of the proposed area to be avoided was included in the document.

Although this proposal was submitted before the present criteria for the identification of particularly sensitive sea areas were developed, it is clear from the supporting arguments presented in the document concerning, for example, the fragility of the ecosystem, the presence of endangered species, the area's scientific interest, other measures for protection already taken, and potential damage by ships that the area would have qualified as a particularly sensitive sea area under the present Guidelines.

The proposed size of the area to be avoided met with strong opposition during deliberations in the Maritime Safety Committee (MSC XLII/13, paragraph 1.3) and a revised proposal was prepared for discussion in the Sub-Committee on Safety of Navigation in which the size of the proposed area to be avoided was reduced and a new geographical definition of the area was proposed in a further new document (MSC XLIII/16/1). This second document also included additional information about the area, further addressing such issues as oceanographic conditions, endangered species and shipping characteristics in the vicinity of the area.

*Document MSC XLIII/16/1*

*(submitted by the Government of the United States of America, 20 August 1980)*

Excerpts from the annex:

4 A number of animals inhabiting the Refuge are classified by the United States as endangered species. These include the Hawaiian monk seal, whose principal breeding areas are the islets and islands of the Refuge, the Nihoa millerbird, the Nihoa finch, the Laysan finch, and the Laysan teal. The Laysan teal, endemic to Laysan Island, is probably the rarest species of duck in the world. Only several hundred exist. The Nihoa millerbird (estimated population 600) and the Nihoa finch (estimated population 3,500) are both endemic to Nihoa. Three other species of land birds found only on Laysan Islands became extinct there as a result of man's activities during the early 1900s. Almost 50 species of insects are endemic to the Refuge. The islands are important breeding grounds for the green sea turtle, as well as for hundreds of thousands of marine birds (albatross, terns, petrels, shearwaters, and other species).

5 The proposed area to be avoided is described by areas of radius 50 nautical miles centered upon the following geographical co-ordinates: (1) Pearl and Hermes Reef, 27°50'N, 175°50'W, (2) Lisianski Island, 26°00'N, 173°55'W, (3) Laysan Island, 25°45'N, 171°45'W, (4) Maro Reef, 25°25'N, 170°35'W, (5) Gardner Pinnacles, 25°00'N, 168°00'W, (6) French Frigate Shoals, 23°45'N, 166°15'W, (7) Necker Island, 23°35'N, 164°40'W, (8) Nihoa, 23°05'N, 161°55'W.

The prevailing weather and currents in this area are such that an oil spill would travel approximately 50 miles in 24 hours. In that time most of the more dangerous volatile fractions would have evaporated. The area is thus designed to provide minimum protection from the most toxic substances likely to be released in a marine casualty.

6 The proposed area should be avoided by ships of more than 1,000 gross tons carrying cargoes of oil or hazardous materials, as this class of vessel poses the most serious threat to the unique wildlife in the area.

7 The adoption of the proposed area to be avoided would cause little disruption to vessel traffic. The trans-Pacific trade routes pass well north of the area. The great circle from Panama to the San Bernardino, Makassar, and Malacca Straits passes closest, about 100–300 miles north of Midway Island. The tanker route from the Straits to Honolulu clears the Refuge to the south by 40–100 miles. The rhumb line from Honolulu to Yokohama passes well south of the chain. The great circle from Honolulu to Japan and Korea runs roughly parallel to the island chain, about 50 miles to the north, initially clearing the eastern end of the Refuge by 25–50 miles. The great bulk of traffic using this route would not be in the class designated to avoid the area and therefore would not be inconvenienced. Affected vessels transiting between the northern and southern sides of the island chain would have a number of passages open for their use. Any detours that may be required for the designated class would be very small and fully justified by the risks imposed by the nature of their cargoes.

A map giving the amended proposal for the boundaries of the proposed area to be avoided was annexed to the document.

The revised proposal was adopted by the Maritime Safety Committee at its forty-third session in 1980 and finally approved in resolution A.475(XII) by the IMO Assembly at its twelfth session in 1981.

## **Example 2: Bermuda Islands**

The proposal for the establishment of an area to be avoided in the region of the Bermuda Islands was submitted to IMO through its Sub-Committee on Safety of Navigation in 1984.

The proposal was included in a document which addressed such issues as past shipping casualties in the area and a geographical definition of the proposed area to be avoided (document NAV 29/3/2/Rev.1). A brief discussion at the twenty-ninth session of the Sub-Committee, during which doubts were expressed about certain aspects of the proposal, resulted in a revised submission of the proposal at the Sub-Committee's thirtieth session (document NAV 30/3/2). This document primarily discussed issues related to the hazards of navigation in the area. A second document (NAV 30/INF.9) was submitted which provided substantial information about the ecology and about the social, economic and scientific importance of the area.

### *Document NAV 30/3/2*

*(submitted by the Government of the United Kingdom, 1 October 1984)*

#### PROPOSED AREA TO BE AVOIDED IN THE REGION OF THE BERMUDA ISLANDS

1 At its twenty-ninth session, the Sub-Committee on Safety of Navigation considered a submission by the United Kingdom (NAV/29/3/2/Rev.1) proposing the adoption by the Organization of an area to be avoided covering the reef areas to the west and north of the Bermuda Islands and extending some 10 miles from the reef edges.

2 During the Sub-Committee's discussion a number of delegates expressed doubts about some aspects of the proposals. Furthermore, due to the late circulation of that document, which replaced an earlier submission, delegations had not had time to consider the proposals in detail before the meeting. Consideration of the submission was therefore deferred to the Sub-Committee's thirtieth session, the United Kingdom having indicated that it would give careful consideration to the points raised in the discussion before re-submitting the proposals.

3 Accordingly the United Kingdom has prepared a revised proposal, attached as an annex to this paper. The limits of the proposed area are unchanged from the previous submission except for a small alteration to the longitude of position No.7. However, the recommendation is now addressed to all vessels of certain specified classes, including those bound for ports in Bermuda. This form of recommendation is preceded by that for the area to be avoided in the region of the Nantucket Shoals, previously adopted by the Organization, where similar considerations applied.

4 It will be remembered that in its earlier submission the United Kingdom quoted the recent case of the *Tifoso* grounding, the main reason for this being that it was the Board of Inquiry into that casualty which recommended the establishment of a "prohibited area" off the Bermuda reefs. Certain delegates made the point that as the *Tifoso* was bound for Bermuda at the time of the incident, she would not have been subject in any case to the provisions of an area to be avoided as then proposed by the United Kingdom.

5 The United Kingdom has since been advised of two other fairly recent groundings on Bermuda Great Reef, by the *Lamaria* in 1977 and by the *Mary Boeing* in 1978. In the latter case also the vessel was bound for Bermuda, having diverted there to re-stow cargo. It seems clear therefore that if the proposed measure is to be fully effective, it must be applied to vessels regardless of whether they are passing the islands or are bound for Bermuda ports. The proposal has therefore been amended accordingly.

6 During the last twenty-five years there have been a total of eight recorded cases of sizeable vessels running aground on Bermuda Great Reef. However, apart from the three casualties already mentioned, details of the circumstances of these earlier incidents are not available. Nevertheless, they do underline the serious navigational hazards presented by the Bermuda reefs and the need to take every possible measure to avoid further incidents occurring.

#### *Extent of the proposed area*

7 The United Kingdom has given careful consideration to the suggestions that an area of smaller extent could be adopted, but submits that the area limits should remain broadly as originally proposed in NAV 29/3/2/Rev.1. An examination of the latest hydrographic data shows that within the proposed area to be avoided the charts are based on lead-line surveys of the last century, with sounding lines at 5 miles spacing. In these circumstances the charted 100 fathom depth contour must be regarded as the danger line for large vessels. The limits of the area to be avoided are set at between 6 and 8 miles from this depth contour; the United Kingdom considers that this is a prudent and reasonable distance off and that the limits could not safely be brought appreciably closer in towards the reef.

#### *Aids to navigation*

8 A further suggestion made during the Sub-Committee's discussions was that the aids to navigation should be improved in the reef area, so that vessels could safely approach it. Alternatively, it was suggested that the limits of the area should be reduced, so that vessels could make landfalls using the three existing 12 mile lights placed along the reef.

9 The existing lights are provided for the use of local fishing vessels and yachts. They are unwatched and cannot be considered as entirely reliable. The United Kingdom is against any reduction in the size of the area to be avoided for the reasons already given but also considers that it would be most unwise to give any encouragement to vessels to attempt a landfall in the vicinity of Bermuda Great Reef, either using the existing lights or by providing improved aids in the area. The principal object of the proposal is to encourage shipping to keep well away from these reefs and indeed only to approach Bermuda island from the south-east.

#### *Charted notes*

10 Finally, some delegates at the Sub-Committee's twenty-ninth session suggested that the placing of appropriate notes on the charts and in sailing directions was all that was necessary.

11 The British Admiralty charts of Bermuda already carry a warning note about the dangerous reefs, as also does the small scale British Admiralty ocean chart of the north-west Atlantic.

However, chart notes are not always read, whereas the magenta limits of an area to be avoided, shown on the body of the chart, draw immediate attention to its existence. It is perhaps worthy of mention that in the case of the two last reported groundings, the *Mary Boeing* and *Tifoso*, neither vessel carried detailed charts of the Bermuda islands.

#### *Conclusion*

12 For all reasons set out above, the United Kingdom is strongly of the opinion that the proposed recommendatory area to be avoided should be adopted by the Organization without further delay. The measure would be implemented six months after the date of adoption.

Annex [to document NAV 30/3/2]

#### DESCRIPTION OF THE AREA TO BE AVOIDED IN THE REGION OF THE BERMUDA ISLANDS

*Reference chart: BA chart 360; Edition dated 15 April 1983*

Because of the great danger of stranding on the extensive reefs fringing Bermuda to the west, north and north-east of the islands, and for reasons of environmental protection, all vessels carrying cargoes of oil or hazardous materials and all other vessels of more than 1,000 gross tons, whether or not bound for Bermuda ports, should avoid the area outside the reefs bounded by the lines connecting the following geographical positions: (a) Gibb's Hill Lighthouse, 32°15.1'N, 64°50.0'W, (b) 32°08'N, 64°53'W, (c) 32°12'N, 65°10'W, (d) 32°24'N, 65°10'W, (e) 32°39'N, 64°53'W, (f) 32°39'N, 64°38'W, (g) 32°32'N, 64°29'W, (h) St. David's Lighthouse, 32°21.8'N, 64°39.0'W.

*Note:* Mariners are warned to navigate with extreme care in the approaches to the Bermuda islands due to the extensive and dangerous fringing reefs. The only safe approach to the islands is from the south-east, preferably in daylight. The outer navigational aids may be unreliable.

#### *Document NAV 30/INF.8*

*(submitted by the Government of the United Kingdom, 14 November 1984)*

1 To assist the Sub-Committee on Safety of Navigation in its consideration of the United Kingdom submission NAV 30/3/2 proposing an area to be avoided covering the reef areas to the north and west of the Bermuda Islands, attention is drawn to two further groundings that have occurred in this area since the submission was made.

2 On 15 September 1984 the MV *Sealuck*, a bulk carrier of 28,119 gross tons, loaded with 41,944 metric tons of grain, grounded on the reefs north of Bermuda whilst on a voyage from Houston, Texas, to Novorossiysk, USSR. The vessel was on a rhumb line course from Florida Straits to the north of Bermuda thence to the Azores. The grounding occurred in daylight in fine weather and good visibility, and the indications are that the master approached Bermuda unaware of the existence of the reefs north of the island.

3 The second grounding was on 1 October 1984 involving the 113,531 gross tons VLCC *Aguila Azteca* loaded with 196,000 tons of heavy crude oil bound from Coatzacoalcos, Mexico to Rotterdam. The vessel was on a rhumb line course from Florida Straits to the English Channel and the grounding took place in daylight in fine weather and good visibility. Once again the inquiry showed that the master and his navigating officer approached Bermuda unaware of the reefs to the north of the island.

4 These two incidents, which could have had extensive and devastating effects on the environment, ecology and economy of these Islands further strengthen the arguments put forward in the United Kingdom submission on the need to establish an area to be avoided around these reefs to warn mariners to keep clear of the area.

#### *Document NAV 30/INF.9*

*(submitted by Friends of the Earth International, 16 November 1984)*

#### *Excerpt:*

The Bermuda Islands are located in the central north-west Atlantic Ocean on an isolated submerged volcanic peak. The Gulf Stream passes 200-300 miles to the north-west of the island. Warm water eddies from the Gulf Stream continually influence the island and provide

an ameliorating effect on the local climate. Seawater temperature varies between 18–30°C, moderate enough to have permitted the development of extensive coral reefs around Bermuda. This is the only reef ecosystem to exist at such high latitude (32°N).

The carbonate islands form a narrow chain (56 km<sup>2</sup>) on the south-east edge of the shallow Bermuda Platform (775 km<sup>2</sup>), on the peak of the seamount. The island chain encloses a variety of inshore basins. A large shallow reef and lagoon system extends to the north of the island for up to 11 km. On the south shore of the island the shallow reefs are found within 1 km of the shore due to the steep slope of the volcano.

The marine flora and fauna are derived from the Caribbean but are considered depauperate by comparison. For example, only 22 species of the 72 Caribbean reef-building corals are known from Bermuda.

Bermuda has two classes of reefs, (a) coral/algal reefs and (b) algal/vermetid reefs. The coral/algal reefs are the most extensive and may be divided into five major zones:

1. The North Terrace has reefs which have developed as a solid terrace, seaward of the shallow platform. It extends from 10–18 m water depth and is up to 1 km wide. Hard coral coverage is very high (40–60%). Many of these corals are massive hemispheres, greater than 1 m in diameter. Soft corals are common in this zone. The North Terrace is the most densely populated and productive of the Bermudian system.
2. The North Rim reefs are located on the north, east and western margins of the Bermuda platform. Hard coral coverage in this zone ranges from 25–35%, soft corals are very numerous and often large (up to 1 m in height) and fleshy and calcareous algae and many invertebrate species are abundant.
3. The South Terrace reefs are found seaward of the algal/vermetid reefs along the south shore of the island. These reefs are characterized by a network of connected pillars, arches and over-hanging lips, creating a complex system of channels and caves throughout the reef.
4. The South Rim reefs are found shoreward of the algal/vermetid reefs of the south shore. The reefs are both small in extent and relief. Hard coral coverage varies from 20–35%, soft corals are not so common in this zone. Algal and invertebrate populations in this zone are reduced.
5. The Lagoon Reefs occur as isolated reefs of varying size that rise up from the lagoon floor at 18 m to about 2 m below sea level.

Bermuda's reefs support commercial fisheries of finfish and lobster. Fisheries statistics from 1983 indicate the value of the industry was about \$US3.5 million. Additional, recreational fishing by local inhabitants is a very popular pastime but no monetary value can be placed on this usage. The spectacular natural beauty of Bermuda's reefs is a popular tourist attraction. Commercial scuba diving and snorkeling operations earn \$US300,000–400,000 per year while glass bottom boat operators take in about \$US700,000 in revenue each year.

The rough economic value of Bermuda's reef appears to be about \$US 4.5 million, and the recreational value to residents cannot be properly assessed.

The proposal was adopted by the Sub-Committee on Safety of Navigation, and its subsequent adoption by the Maritime Safety Committee was later confirmed by the IMO Assembly at its fourteenth session in 1985 (resolution A.573(14)).

## Appendix C

### Other existing IMO measures

The Great Barrier Reef has long been recognized as an area of particular environmental significance and a number of measures have been taken to protect this area, or parts of it, from damage caused by ships.

In 1971, the IMO Assembly adopted resolution A.232(VII) to amend the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (as amended in 1969). The term *nearest land* in this Convention was amended for the north-eastern coast of Australia to mean the eastern boundary of the Great Barrier Reef instead of the north-eastern coast (the normal baseline) of mainland Australia. The objective of the amendment was to maintain and preserve the Great Barrier Reef in its natural state free from pollution in any form particularly that caused by discharges from ships of oil or oily mixtures even in limited quantities. In MARPOL 73/78 the same principle was applied in all relevant annexes with a view to providing additional protection to the Great Barrier Reef. The map which appears below (taken from document MEPC 30/19/14/Add.1) illustrates the importance of this decision for the Great Barrier Reef.

In the Capricornia section of the Reef an area to be avoided has been established (see also appendix B to these Guidelines).

In 1985, a proposal was submitted to the Sub-Committee on Safety of Navigation to recommend the use of pilotage services during navigation through the Torres Strait at the north of the Great Barrier Reef, the northern part of the Inner Passage of the Great Barrier Reef and the major entrances to the reef (document NAV 31/3/3). The main objective of the proposal was to provide the maximum possible level of protection for this highly sensitive area. The proposal was supported by a brief description of the area and the present state of protection of the area. The proposal was adopted by IMO in November 1987 as Assembly resolution A.619(15).

In 1990, a proposal was submitted to the MEPC to:

- (1) identify the Great Barrier Reef as a particularly sensitive sea area; and
- (2) establish a compulsory pilotage scheme for merchant ships navigating the inner route in parts of the Great Barrier Reef.

These proposals were contained in documents MEPC 30/19/4 and MEPC 30/INF.12.

#### *Document MEPC 30/19/4*

*(submitted by the Government of Australia)*

##### *Introduction*

The Australian Government seeks the support of the International Maritime Organization, through the Marine Environment Protection Committee, for the identification of the Great Barrier Reef as a "particularly sensitive area".

It is an environmental asset of international importance, worthy of maximum protection. To maximize this protection, consistent with international law, the Australian Government seeks IMO endorsement of a proposal to impose compulsory pilotage for all ships over 70 metres in length, bound to or from an Australian port, navigating the inner route of the Great Barrier Reef, between latitude 10 degrees 40 minutes south and latitude 16 degrees 40 minutes south, to minimize the probability of a ship sourced pollution incident from navigational error.

##### *The Great Barrier Reef (GBR)*

The Great Barrier Reef is an area of unique biological diversity, and the whole of the region, including the islands, has been placed on the World Heritage List (see MEPC 30/19/1 for further details). It is a region requiring the highest possible level of environmental protection. This protection is, in part, provided by Australian domestic legislation. However, further measures are necessary to counter risks posed by ships transiting the waters of the reef.

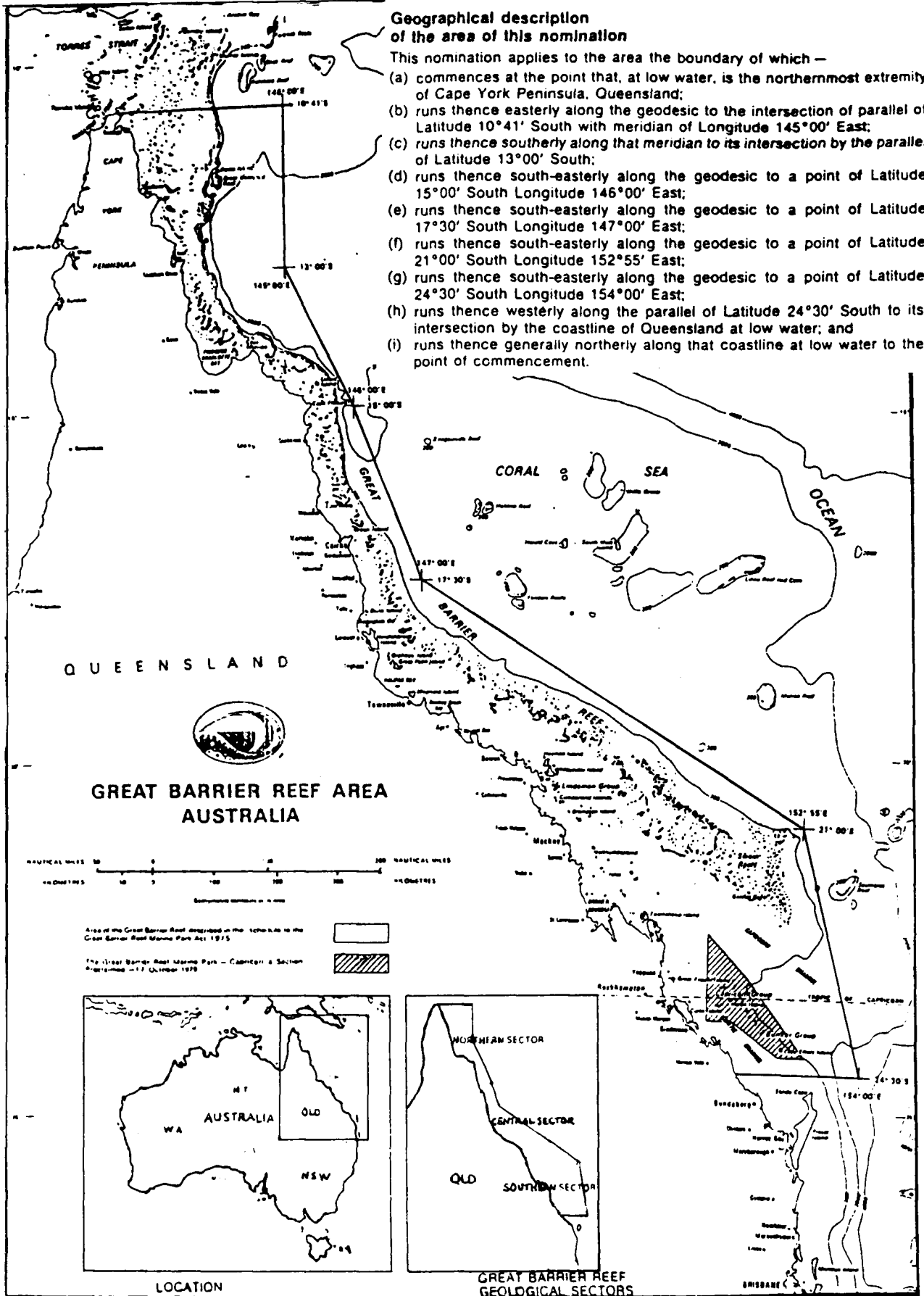
The maritime area of the GBR consists of internal waters within the territorial sea baselines, waters of the three-mile territorial sea and waters of the Australian fishing zone. The greater part of the inner route through the Great Barrier Reef is within the Australian internal waters as created by baselines proclaimed in 1983, with other smaller areas, lying within the territorial sea. Australia recognizes that within both the internal waters and the territorial sea all vessels enjoy the right of innocent passage.

**SCHEDULE 1**

**Geographical description of the area of this nomination**

This nomination applies to the area the boundary of which —

- (a) commences at the point that, at low water, is the northernmost extremity of Cape York Peninsula, Queensland;
- (b) runs thence easterly along the geodesic to the intersection of parallel of Latitude 10°41' South with meridian of Longitude 145°00' East;
- (c) runs thence southerly along that meridian to its intersection by the parallel of Latitude 13°00' South;
- (d) runs thence south-easterly along the geodesic to a point of Latitude 15°00' South Longitude 146°00' East;
- (e) runs thence south-easterly along the geodesic to a point of Latitude 17°30' South Longitude 147°00' East;
- (f) runs thence south-easterly along the geodesic to a point of Latitude 21°00' South Longitude 152°55' East;
- (g) runs thence south-easterly along the geodesic to a point of Latitude 24°30' South Longitude 154°00' East;
- (h) runs thence westerly along the parallel of Latitude 24°30' South to its intersection by the coastline of Queensland at low water; and
- (i) runs thence generally northerly along that coastline at low water to the point of commencement.





### *Volume of traffic*

Some 2,000 ships per year use the inner route of the Great Barrier Reef, averaging 6 ships per day. The present route, covered by resolution A.619(15), is some 500 miles in length and offers passage in relatively calm but intricate and narrow waters. Within the route there are also areas of intense fishing activity which reach a peak in the trawling season from April to October. Between October and April the area is subject to heavy rain which reduced visibility and the effectiveness of some navigation aids.

The maximum draught recommended for the passage is 12.2 metres. At this draught, passage timing and speed is subject to tidal conditions. In 1980 some 26 ships transited the inner route and the Torres Strait with draughts deeper than 11.5 metres, while by 1989 this figure had increased to 260.

Various options for reducing the risk to the Great Barrier Reef have been examined. Thus, the possibility of traffic separation schemes was considered. The width of the inner route varies, and given the restraints caused by draught restrictions it is not practical to introduce a general separation of traffic. Such schemes are generally applied only to limited sectors of shipping routes, not to entire regions. The problem is not one which could be completely solved by separating shipping within the Great Barrier Reef, as the primary problem is the inherent risk of navigating in a hazardous and environmentally sensitive area, not the separation of traffic within that region. There exist no reasonable alternative routes or lanes to the current inner route which would increase safety of navigation.

### *Casualties*

Since 1983 Australia has adopted a policy of publishing all preliminary and formal investigation in casualty occurring in its waters. Of the twenty-six reports published since August 1983, around the 12,000 miles of Australian coast, twelve have occurred in the Great Barrier Reef area. In addition, a number of significant incidents have been referred to flag States for appropriate action. Since 1985 nine incidents of groundings have occurred and four incidents of collisions between relatively large trading ships and fishing vessels (attachment).

While there has been no major pollution incident since 1970, it should be noted that at least two of the incidents of grounding resulted in limited pollution. In all the incidents favourable sea conditions prevented major oil pollution. Given Australian and overseas experience, Australia is anxious to minimize the possibility of such an incident and has demonstrated its commitment to conserving this unique and essential area in order to minimize the risk wherever possible.

### *Voluntary pilotage*

IMO resolution A.619(15) recommends that all ships of 100 metres in length and over, all oil tankers, chemical carriers and gas carriers irrespective of size should engage the services of the Queensland Coast and Torres Strait Pilot Service when navigating the Torres Strait, the Great North East Channel, the Inner Route and Hydrographers' Passage.

Australia acknowledges the partial success of this scheme. Before the recommendation was adopted by the Assembly some 75% of vessels engaged a pilot. The level of compliance has now risen to approximately 90% of vessels and has stabilized at this level. This leaves a significant number, some 200 per year, which currently ignore resolution A.619(15).

These vessels include tankers and large container ships carrying significant volumes of bunker oil.

In February of this year Australia intensively lobbied the Governments of those countries whose ships are not currently availing themselves of the voluntary system, urging them to ensure that ships operating under their flag comply with IMO resolution A.619(15). Despite these efforts there has not been a noticeable increase in compliance. As a consequence the risk of an accident remains unacceptably high.

### *Compulsory pilotage*

In the light of these circumstances, Australia now proposes a scheme of compulsory pilotage for merchant ships navigating the inner route of the Great Barrier Reef between the northern boundary of the Great Barrier Reef Marine Park and 16 degrees 40 minutes S.

The Great Barrier Reef is an area with specific restraints on navigation relating to the depth of water, width of channel and certain limitations in weather conditions, where safety of navigation and protection of the unique environment of the Great Barrier Reef would be enhanced by the carriage of a qualified pilot.

In view of the history of shipping incidents overseas and the eleven incidents that have occurred within the Great Barrier Reef since 1985, the Australian Government cannot justify delaying the implementation of practical measures to protect an area so vital to Australia's national interest and that of the international community as a whole.

Australia proposes introducing compulsory pilotage for the inner route of the Great Barrier Reef and Hydrographers' Passage under existing domestic legislation, the Great Barrier Reef Marine Park Act, which regulates activities in the Park, and is specific to the area of the Great Barrier Reef Marine Park.

Australia seeks MEPC endorsement of this proposal. A draft recommendation to give effect to this proposal is contained in document MEPC 30/19/4/Add.1.

Attachment [to document MEPC 30/19/4]

CASUALTIES TO SHIPS WITHIN AREA COVERED BY IMO RESOLUTION A.619(15):  
TORRES STRAIT AND INNER GBR

*Groundings*

08/85	MARITIME GARDENIA*	Alert Patches
07/86	MOBIL ENDEAVOUR	Alert Patches
09/86	ALAM INDAH	Chapman Is. Reef
04/87	RUCA CHALLENGE (1)*	Piper Reef
05/87	RIVER EMBLEY	Alert Patches
12/87	LEICHHARDT (2)	Endeavour Strait
08/88	PACIFIC ACE (1)	Waterwitch Reef
06/89	ADELE (1)	Heath Reef
04/90	CARAKAJAYANIAGA III-3(1)	South Warden Reef

*Collisions*

06/85	RIVER BOYNE/F.V. BABIRUSA	Barrow Island
07/85	IRON CUMBERLAND/F.V. SALTFIORD	Princess Charlotte Bay
01/89	SPARTAN II/F.V. Unknown	Eel Reef
08/90	PIONEER TWEEN/F.V. ELIZABETH J	Unison Reef

(1) Ships between 70 m and 100 m in length

(2) Ships less than 70 m

\* Oil pollution resulted

Additional information was given in document MEPC 30/INF.12 in which Australia provided (a) a general introduction to the Great Barrier Reef, (b) the geographical description of the area involved, and (c) a discussion of how the Great Barrier Reef satisfies the various criteria for identification of the Great Barrier as a particularly sensitive sea area.

This was the first proposal submitted to the MEPC using the criteria contained in these Guidelines.

At its thirtieth session the MEPC decided to recognize the Great Barrier Reef region as a particularly sensitive area by resolution MEPC.44(30).

The MEPC, by resolution MEPC.45(30), recommended use of pilotage. Australia informed the Committee that national legislation was being prepared to make the pilotage compulsory and that it was expected to take effect in mid-1991.