

IMCO 73 ANTI-POLLUTION REGULATIONS

IMPLICATIONS FOR THE ROYAL NAVY

BY

LIEUTENANT G. CARR, M.SC., C.ENG., M.I.MAR.E., R.N.

Introduction

In 1973, the Assembly of the Inter-Governmental Maritime Consultative Organization* (IMCO) convened an international conference on marine pollution. The result, sometimes known as MARPOL 73, is a document that lays down proposed regulations for the prevention of pollution throughout the world by shipping. Warships and auxiliaries will be exempt from the regulations (as they are exempt from current U.K. national regulations), but are bound to comply as far as is 'reasonable and practicable' using measures 'not impairing operational capabilities'.

Those MEOs who have already practised fast talking after the inadvertent discharge of oily water in Devonport or sewage in Japan will be aware of the existing (and in some cases more stringent) national regulations in force in advance of MARPOL 73. It will therefore be realized that there is a need for R.N. ships to be suitably equipped if diplomatic incidents or cancelled foreign visits are to be avoided. Equally, it will be realized that resources allocated to, say, sewage plants are resources lost to weapon systems.

The Naval Staff are tasked with the difficult problem of deciding where the compromise solution lies. It is the aim of this article to acquaint engineer officers of the stringent requirements laid down by MARPOL 73 and current Ship Department policy towards the prevention of pollution by R.N. ships.

MARPOL 73

The Final Act of MARPOL 73 is broken down into five annexes:

- Annex I Oil pollution.
- Annex II Noxious liquid substances in bulk.
- Annex III Pollution from packages, freight containers, etc.
- Annex IV Sewage.
- Annex V Garbage.

Of the above, only Annexes I, IV, and V affect the R.N., Annex I being the most important (as well as being the most topical) because it is likely to come into effect fairly soon. The regulations contained in Annexes IV and V (so-called 'optional annexes') will come into force subsequently, but probably not in this decade.

Annex I—Oil Pollution

The sections of Annex I that can be applied to warships limit the oil concentrations of oily-water mixtures (i.e. bilge water and ballast water from water-compensated fuel system (WCFS)-fitted ships) as follows:

- (a) *More than 12 nautical miles from land:* less than 100 ppm.
- (b) *Less than 12 nautical miles from land:* less than 15 ppm.

*This organization will be known as the International Maritime Organization from 22 May 1982.

- (c) In 'Special Areas': no discharge of oily water permitted, but an amendment proposing a limit of 15 ppm is under consideration.

These limitations are subject to the vessel being under way and operating approved oil monitoring/separating equipment.

Annex IV—Sewage

A ship will be permitted to discharge raw sewage only if she is under way and more than 12 nautical miles from land. Between 4 and 12 nautical miles from land, the discharge of sewage will only be allowed if it has been comminuted and disinfected. Within 4 nautical miles of land, the sewage must be either retained onboard or treated in an IMCO-approved sewage plant before discharge.

Annex V—Garbage

The disposal of all plastics (including nylon hawsers, etc.) will be prohibited. Dunnage and floatable gash will only be allowed to be disposed at more than 25 nautical miles from land. Dumping of food waste (including the slurry from GDUs) and general gash (e.g. paper, rags, glass, cans, etc.) will not be permitted within 12 nautical miles from land, but will be allowed as close as 3 nautical miles if it has been comminuted to less than a given size. In 'Special Areas' only the disposal of food waste will be permitted and then only beyond 12 nautical miles from land. FIGS. 1 and 2 show typical examples of restricted areas for garbage and sewage disposal as will be allowable in U.K. waters.

Special Areas

'Special areas' may be loosely defined as:

The Mediterranean Sea	The Red Sea
The Baltic Sea	The Gulf Area
The Black Sea	

TABLE I shows a summary of the proposed regulations in simplified form.

TABLE I—Summary of IMCO regulations for prevention of pollution at sea

Discharges	Distance from Land (Nautical miles)							
	Outside Special Areas					Special Areas		
	< 3	3–4	4–12	12–25	> 25	< 4	4–12	> 12
Solids								
Food waste (unprocessed)	No	No	No	Yes	Yes	No	No	Yes
Food waste (ground)	No	Yes	Yes	Yes	Yes	No	No	Yes
Garbage (sinkable)	No	No	No	Yes	Yes	No	No	No
Garbage (ground/shredded)	No	Yes	Yes	Yes	Yes	No	No	No
Garbage(floatable) and Dunnage	No	No	No	No	Yes	No	No	No
Liquids								
Raw sewage	No	No	No	Yes	Yes	No	No	Yes
Comminuted and disinfected sewage	No	No	Yes	Yes	Yes	No	Yes	Yes
Waste water	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Oily-water mixtures (including WCFS ballast water)	Yes*	Yes*	Yes*	Yes†	Yes†	No‡	No‡	No‡

* if less than 15 ppm

† if less than 100 ppm

‡ amendment to less than 15 ppm under consideration

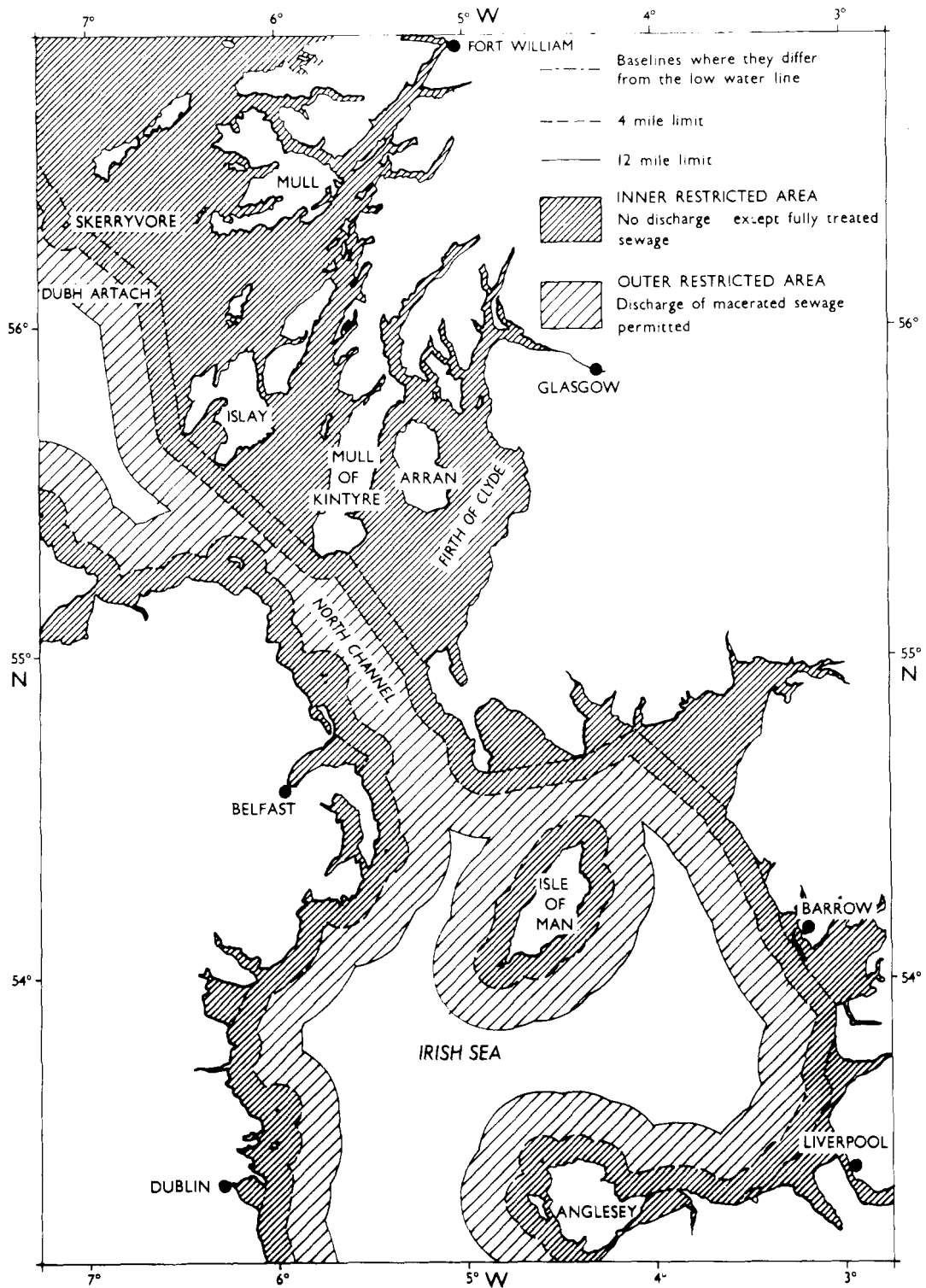


FIG. 1—TYPICAL EXAMPLE OF RESTRICTED AREA: SEWAGE DISPOSAL

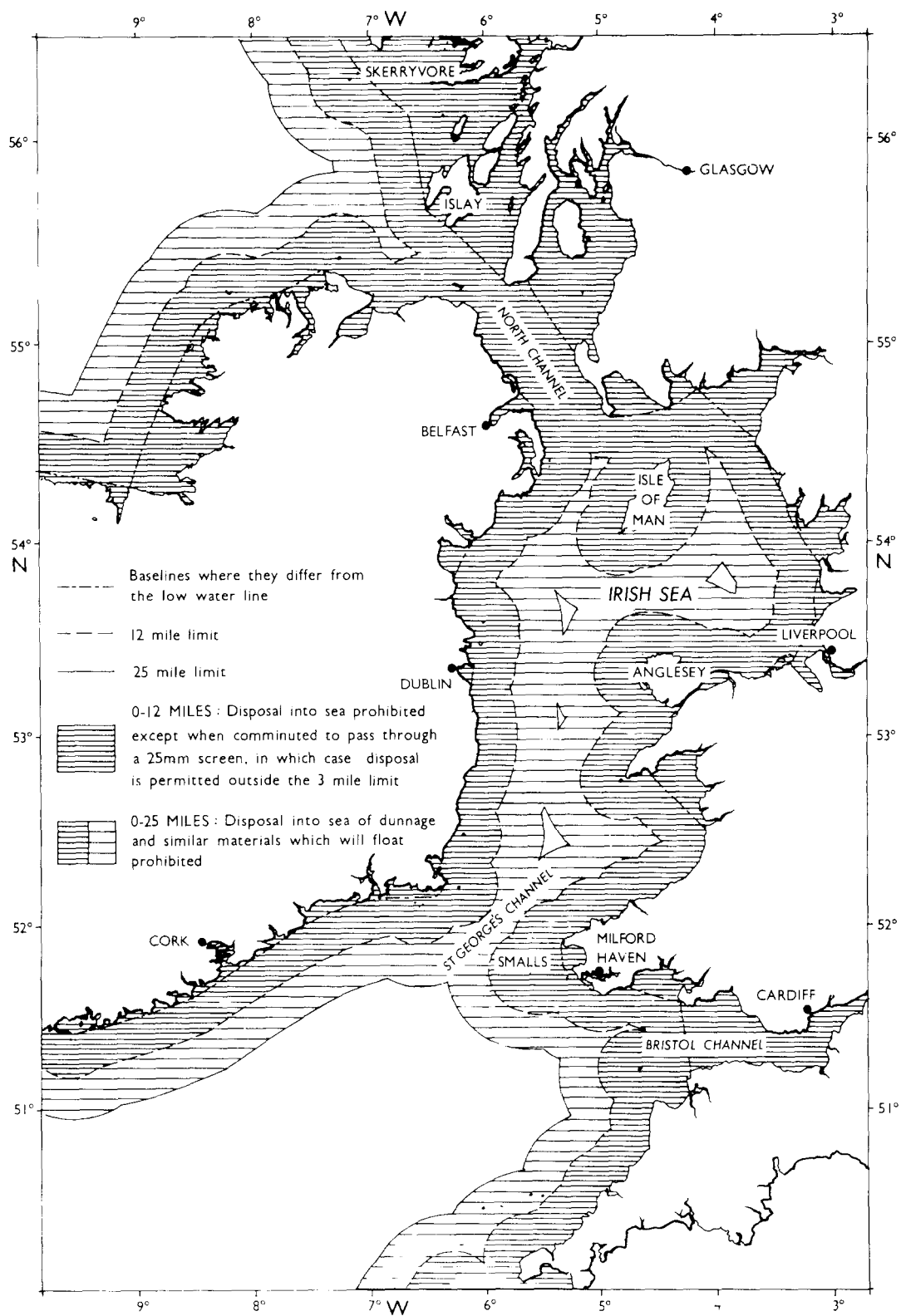


FIG. 2—TYPICAL EXAMPLE OF RESTRICTED AREA: GARBAGE DISPOSAL

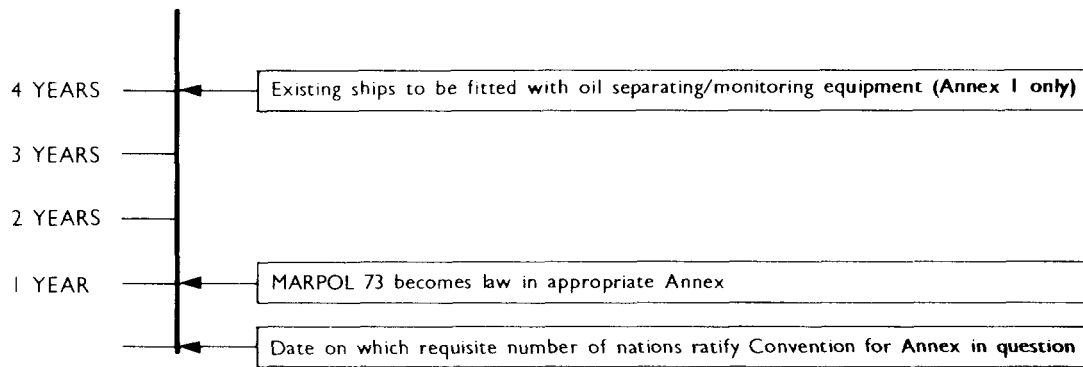


FIG. 3—TIME SCHEDULE FOR IMCO REGULATIONS BECOMING LAW

Time Schedule for Becoming Law

The regulations for Annex I (Oil Pollution) will come into force twelve months after the date on which 'not less than fifteen states, the combined merchant fleets of which constitute not less than 50 per cent. of the gross tonnage of the world's merchant shipping', have ratified the Convention. At the current rate of ratification by nations, it is estimated that this criterion will be met early in 1982 with the regulations therefore coming into force early in 1983.

The criterion for entry into force of the Optional Annexes (Sewage and Garbage) is the same as for Annex I, but these annexes must be ratified separately and are of a lower priority. It is estimated that these sections will not come into force until the late 1980s or early 1990s.

For existing ships, the requirement to be fitted with approved oily-water monitoring devices and separating equipment will apply three years after the regulations come into force.

FIG. 3 summarizes the time schedule for MARPOL 73 becoming law.

Design Policy

Oil Pollution

Probably most MEOs have been guilty of breaking the current regulations by accidentally discharging oily water when pumping bilges at sea, and most have probably been responsible for causing minor oil spillages in port where national regulations are easily enforced. WCFS-fitted ships are a particular problem. Evidence of a pollution incident is based on the sighting of a 'sheen', but this is rather subjective since tests in the USN[†] have indicated that a 'sheen' can be produced at oil concentrations as low as 4 ppm given the right conditions. Continuing trials in some WCFS-fitted ships have so far suggested that the concentration of oil in ballast water increases as the 'chain' is filled but is, on average, below 15 ppm. Ideally, WCFS will be avoided in new design ships but this may not be possible for stability reasons. Methods of discharging ballast water into lighters when fuelling existing WCFS-fitted ships in harbour are under consideration and experience gained in this area will be useful for the future. All new construction ships are fitted with oily-water separators approved by IMCO and these will limit oil contamination of overboard discharges from bilges to 15 ppm. Procurement of smaller oily-water separators capable of being fitted by ships' staff is being considered for existing ships that are likely to be in service beyond 1990.

[†]'Relationship between National and International Regulations on Oily Mixture Discharges'—DTN SRDC Report MAT 77-4 dated January 1977.

Sewage

All new ships are fitted with either a sewage plant or holding system but the biological type of plant currently in service has proved to be unsatisfactory. These plants need to be 'fed' by a constant supply of sewage to operate correctly and this requirement has been found to be incompatible with the operating cycle of R.N. ships. A high degree of surveillance is also required. Solid-separation type plants (SSTPs) are under trial in H.M. ships *Hecla* and *Eastbourne*. SSTPs macerate and separate the solid elements of sewage and treat the associated liquid before discharging the latter overboard as an acceptable effluent. The sludge may be retained onboard for up to six days. It must then be discharged, either at sea outside the 4 nautical mile limit or into shore sewers or barges via facilities which countries signatory to IMCO are required to provide. Retrofit of sewage plants is under consideration, due regard being given to the remaining life of existing ships.

Garbage

GDU's for food waste have been fitted in R.N. ships for some time and WASCONs (for pulpable waste such as cardboard) are fitted in all new ships of reasonable size. Shredders for dealing with bottles, cans, etc. are fitted in new ships where endurance requirements and complement make this economically worthwhile. Incinerators fitted in H.M. ships *Hermes* and *Bristol* and in Type 22 frigates are capable of dealing only with a limited range of solid waste. Trials are continuing at AMTE (NAMD), Haslar, on more sophisticated equipment capable of dealing with all manner of waste, including waste oil and sewage. Because of the rapidly rising cost of fossil fuels, this latter capability may be advantageous in the future! Incinerators are fitted in all new ships of frigate size and above.

Conclusions

Although all warships and auxiliaries will be exempt from MARPOL 73, it is the policy of H.M. Government that ships of the Royal Navy and the Royal Fleet Auxiliary will comply as far as operational circumstances permit; a large proportion of a warship's life is spent in support of the diplomatic arm and, in consequence, it would be unwise to take blatant advantage of the exclusion clause for warships in the laws on pollution. All new ships will be capable of meeting the requirements of MARPOL 73 'as far as is practicable' and, if nothing else, the provision of approved pollution prevention equipment should put an end to those embarrassing denials of oil sheens caused by 'the next ship upstream'.