

TOWARDS A COORDINATED INTERNATIONAL RADIO NAVIGATIONAL WARNINGS SYSTEM

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After the tragic accident to the German MS *Brandenburg* on 12 January 1971 in the Straits of Dover the question arose how to improve existing arrangements for promulgation of navigational warnings to ships at sea by wireless telegraphy/telephony.

Preparatory work

At the 10th International Hydrographic Conference in Monaco in April 1972, the Deutsches Hydrographisches Institut (DHI) submitted several proposals for the improvement of the existing Navigational Warning systems, while the German Federal Ministry of Transport filed similar proposals with IMCO. The I.H. Conference gave general support to the proposal of the German delegation for the establishment of an effective world-wide coordinated radio navigational warning service. Since this complex problem required coordination with IMCO, and probably action on the part of the International Telecommunication Union (ITU) as well, it was strongly recommended that a joint Commission comprising representatives of IMCO and IHO be established as soon as possible to deal with the problem. The Maritime Safety Committee of IMCO at its 26th Meeting in the Autumn of 1972 agreed to this proposal, and in May 1973 an "Ad Hoc Joint IHO/IMCO Committee on Radio Navigational Warnings" met for the first time in Monaco.

LONG RANGE WARNINGS WORLDWIDE

The delegates in Monaco drafted guidelines for a world-wide coordinated system on short-wave radio, and proposed the following definitions :

- Area (NAVAREA)** : A geographical sea area established for the purpose of coordinating the transmission of radio navigational warnings.
- Sub-area** : A subdivision of an Area in which a number of countries have established a coordinated system for the transmission of coastal warnings.
- Region** : The part of an Area or Sub-area in which one country has accepted responsibility for the transmission of coastal warnings.
- Area Coordinator** : The authority charged with collating and issuing warnings to cover the whole of the Area.
- National Coordinator** : The authority charged with collating and issuing coastal warnings from the network of national coast radio stations. He should immediately send all relevant information to the Area Coordinator.
- NAVAREA Warning** : Long-range warning broadcasts issued by the Area Coordinator for his Area and broadcast by a powerful station or stations to cover the whole of that Area and parts of adjacent Areas.
- Coastal Warning** : A warning promulgated by a National Coordinating Authority through the national coast radio stations to cover a region or a portion of the Area.
- Local Warning** : A warning to cover the area within the limits of jurisdiction of a harbour or port authority and which may not need promulgation outside these limits. Such warnings may be issued by those authorities.

The 1973 Meeting also proposed to establish fifteen major geographical sea areas for the purpose of coordinating radio navigational warnings on a world-wide basis. Within each area, one country having a well established hydrographic service would be designated as Area Coordinator for handling warning messages. Long-range radio facilities would of course also be required. Finally, this meeting recommended the establishment of regional commissions, where necessary, to coordinate medium-range navigational warning services for such areas as the Baltic Sea and adjacent waters.

After the first meeting of the Ad Hoc Joint IHO/IMCO Commission it was decided to continue its work on the part of the IHO through the medium of an "IHO Commission on Promulgation of Radio Navigational Warnings" and on the part of IMCO by its Sub-Committee on Radio-

communications. The IHO Commission met for the first time in Monaco in December 1974 where delegations of 19 countries contained both representatives of hydrographic offices and national communications experts. Here, and at the 15th Session of the IMCO Sub-Committee on Radiocommunications (London, September 1975), the major sea areas were increased to 16 NAVAREAs (fig. 1). The following States were ready to accept responsibility for the NAVAREAs :

I	: United Kingdom	IX	: Pakistan
II	: France (*)	X	: Australia
III	: Spain and Turkey both candidates	XI	: Undecided
IV	: U.S.A.	XII	: U.S.A.
V	: Brazil	XIII	: U.S.S.R.
VI	: Argentina	XIV	: New Zealand
VII	: South Africa	XV	: Chile
VIII	: India	XVI	: Peru

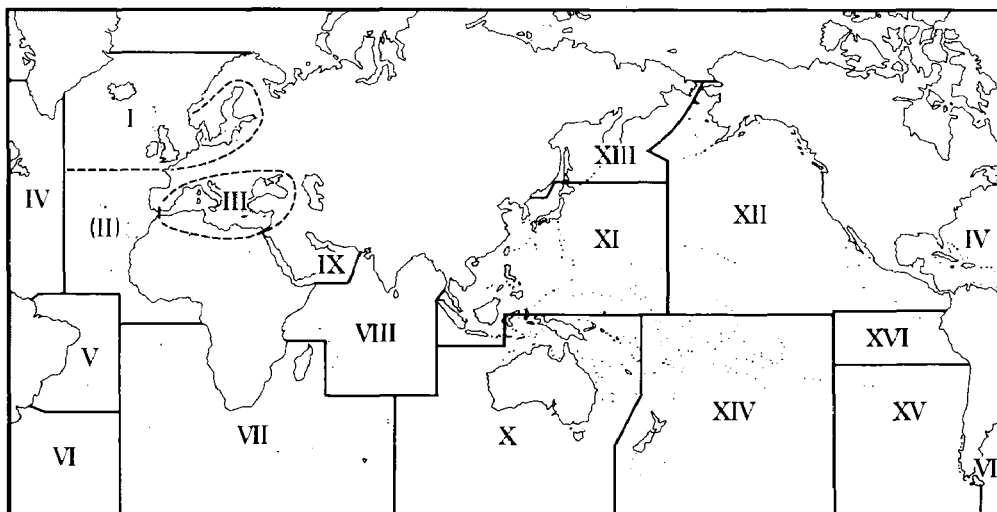


FIG. 1. — NAVAREA boundaries.

It was decided that the radio range of Area Warning transmissions should be sufficient to cover the whole NAVAREA, plus a further 700 nautical miles beyond its limits (equivalent to 24 hours' steaming by a fast vessel). Warnings should be promulgated in English and could additionally be repeated in one of the official United Nations languages. It was recommended that the broadcast times should correspond with those of meteorological warning messages.

(*) The acceptance of France is still subject to approval by the French authorities.

Content of Messages

Within this system only such warning messages should normally be promulgated as are important for ocean-going mariners. This includes, in particular, failures of important aids to navigation, as well as information which may affect changes to planned navigational routes.

The following list of messages considered suitable for transmission as warnings in this system is not exhaustive and should only be regarded as a guideline. It furthermore presupposes that sufficiently precise information about the items has not previously been disseminated in Notices to Mariners :

- Casualties to lights, fog signals and buoys affecting main shipping lanes;
- The presence of dangerous wrecks in or near main shipping lanes and, if relevant, their marking;
- Establishment of major new aids to navigation or significant changes to existing ones when such establishment or change might be misleading to shipping;
- The presence of large unwieldy tows in congested waters;
- Drifting mines;
- Areas where search and rescue (SAR) and anti-pollution operations are being carried out (for avoidance of such areas);
- The presence of newly discovered rocks, shoals, reefs and wrecks likely to constitute a danger to shipping and, if relevant, their marking;
- Unexpected alteration or suspension of established routes;
- Cable or pipe-laying activities or other underwater operations constituting potential dangers in or near shipping lanes;
- Establishment of off-shore structures in or near shipping lanes;
- Significant malfunctioning of radio navigation services;
- Information concerning special operations which might affect the safety of shipping, sometimes over wide areas, e.g. naval exercises, missile-firings, space missions, nuclear tests, etc. This should be initially promulgated by the Area Coordinator concerned not less than five days in advance of the scheduled event, wherever possible. The messages should be repeated as considered necessary until the event is completed.

As Navigational Warnings are already disseminated in each Area on MF wireless telegraphy and/or HF radiotelephony by the various coastal radio stations of the countries concerned, these states should in future now pass their important local warnings to the Area Coordinator with the request to transmit them on short wave as Area Warnings. However, it will be for the Area Coordinator (or Sub-Area Coordinator, if any) to decide which of these warnings to broadcast.

Those countries accepting responsibility for the broadcasting of navigational warnings for an Area were asked to furnish IMCO with details of the transmitting facilities to be used, including proposed broadcasting schedules, for examination by the Sub-Committee on Radiocommunications.

As of 1 January 1977, the status of implementation of the Draft Plan is as follows :

<i>NAVAREA</i>	<i>Coordinator</i>	<i>Date started or due to start</i>
IX	Pakistan	1 Jan. 1976
V	Brazil	21 Jun. 1976
XIV	New Zealand	1 Aug. 1976
XV	Chile	Date unknown
I	U.K.	1 Jan. 1977
IV	U.S.A.	1 Jan. 1977
XII	U.S.A.	1 Jan. 1977

SPECIAL AREAS

North Sea and English Channel

To coordinate the existing warning systems (100-200 n.m.) in the North Sea and the English Channel, Working Groups met in February 1974 in London and in June 1974 in the Hague. Since the majority of ships navigating in this area are fitted with RT, the Working Groups endeavoured initially to work out a schedule using the existing frequencies, whereby each coast station would transmit RT navigational warnings at 4-hour intervals (fig. 2). The respective continental shelf zones of the countries concerned were envisaged as areas of responsibility.

In figure 2, the coast radio stations indicated broadcast navigational warnings for their respective areas on the frequencies shown after their names, following prior announcement on 2182 kHz. The table gives the broadcast time schedules. Warnings are given in English, followed by repetition in the national language. If there are no warnings for transmission, this is announced on the working frequency. Important warnings are preceded by the international safety signal "Sécurité".

If there are especially important warnings to be disseminated, e.g. warnings vital for the safety of human life, their transmission should be preceded by the navigational warning signal (2200 Hz Tone) or the safety signal (TTT/Sécurité). A filter arrangement allows the alarm tone to be heard on a loudspeaker installed on the bridge of a ship.

The transmission schedule for the North Sea and the English Channel came into force on 1 April 1975.

Baltic Sea and adjacent waters

At a regional conference held in Stockholm in November 1974, a similar scheme using the same time schedule as the North Sea was worked out, thus again giving a 4-hour rhythm. The Baltic transmission schedule came into force on 15 January 1976 (fig. 3). The Sub-Area Coordinator is Sweden.

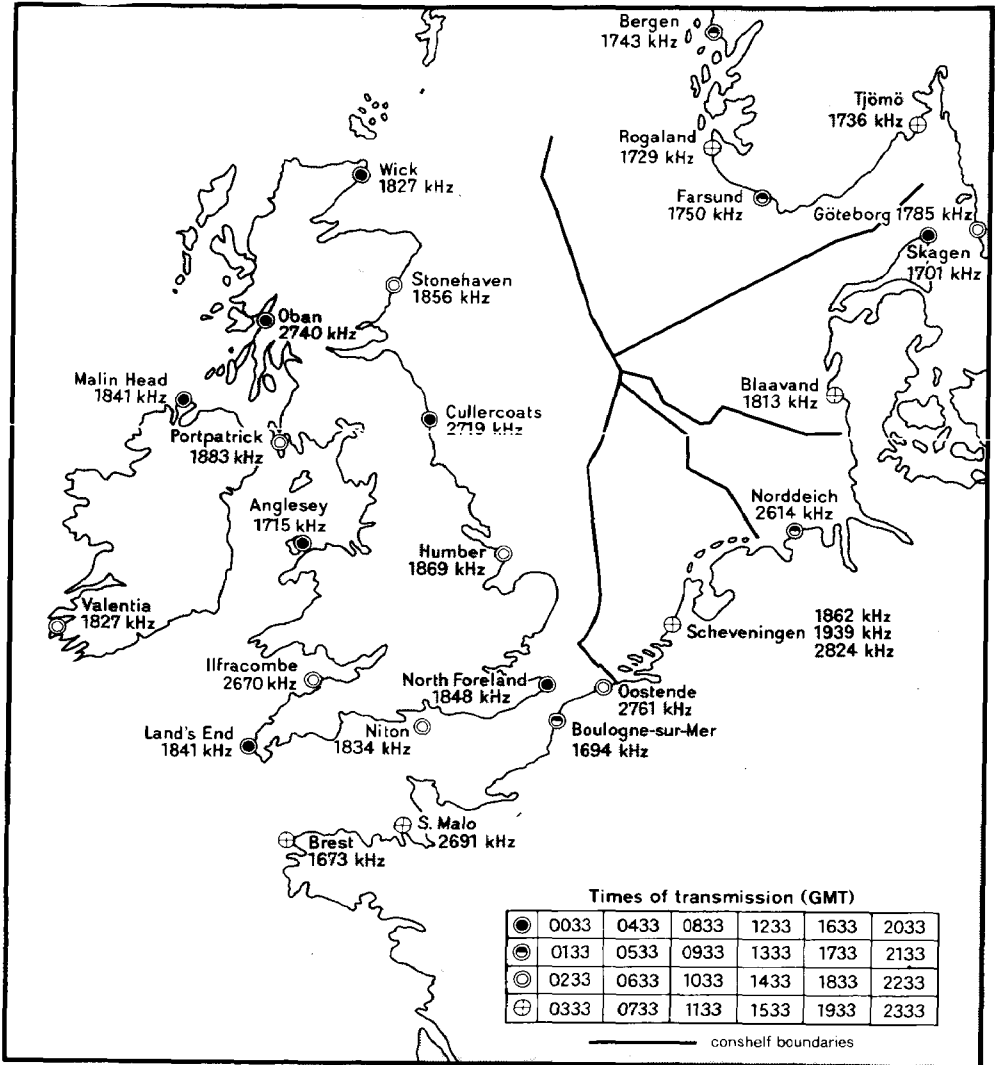


Fig. 2. -- The coordinated radio navigational warning service in the North Sea and Channel, showing transmission times (GMT) for the four groups of Coast Radio Stations, and boundaries of the Regions.

Mediterranean and Black Seas

A Working Group comprising representatives from littoral states of the Mediterranean and Black Seas has met twice in the International Hydrographic Bureau in Monte-Carlo to work out a suitable radio warning network for this area (NAVAREA III).

As a result of the second meeting and of comments received from seventeen of the twenty-one countries which border the area, Spain has been requested to implement the plan for establishing a radio navigational warning system and to assume the function of Coordinator for Area III.

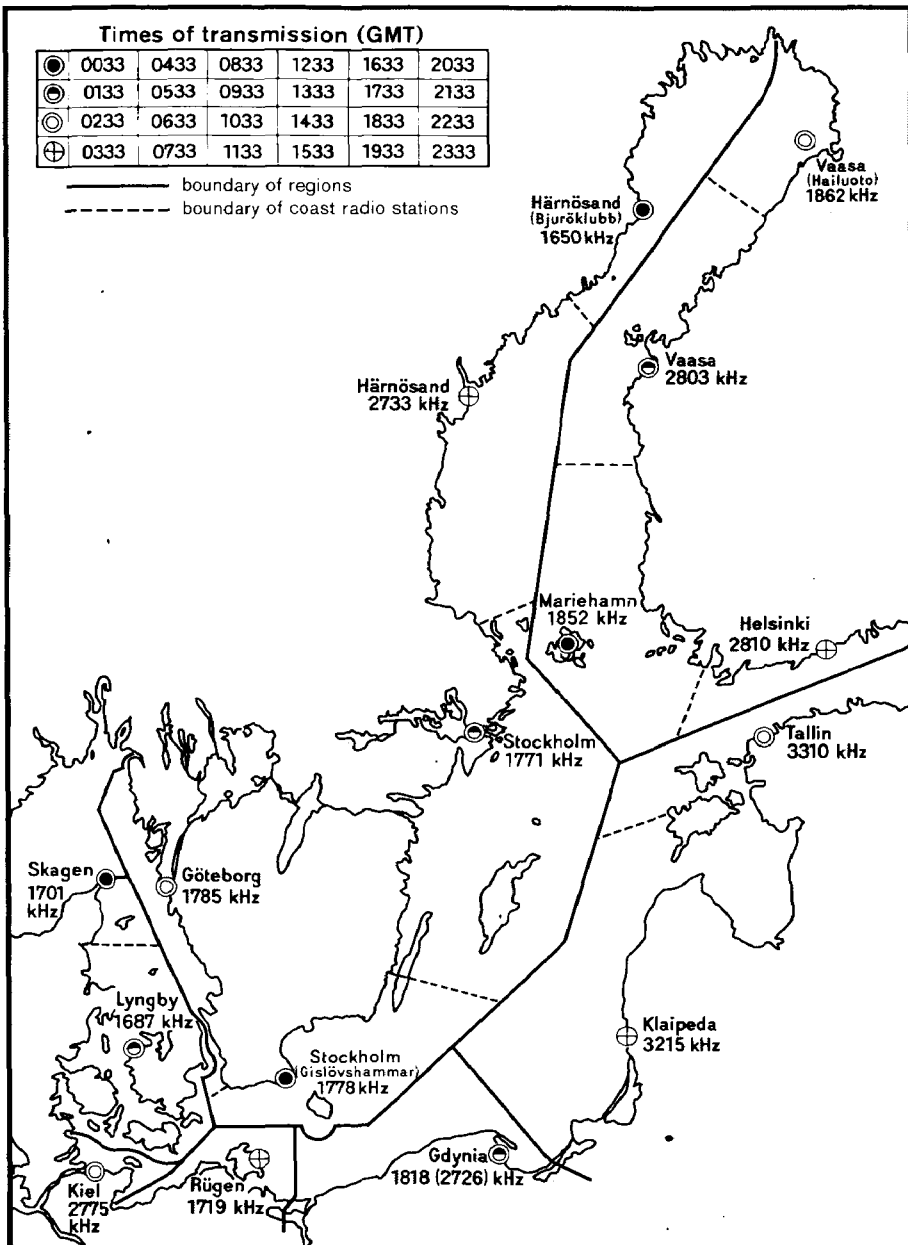


FIG. 3. — Regional boundaries in the Baltic system, with area responsibilities of individual Coast Radio Stations. The Table gives the coordinated transmission times of the four groups, in GMT.

FUTURE PROSPECTS

It is expected that, encouraged by the IHO and by IMCO, existing radio navigational warning services in other regions can be coordinated by

cooperative effort, using as an example the schedules adopted for the North Sea and Baltic.

At some future date the coordination of MF telegraphy warnings must be considered. The promulgation of local warnings by short-range telephony in the respective national language is also under consideration. In many countries this is already done on VHF circuits.

In the formulation of all these agreements account has been taken of facilities now available such as radio-teleprinter and radio-facsimile, which could in future be used for the promulgation of navigational warnings, as soon as other conditions are met.

Sweden is conducting trials with a system whereby navigational warnings and weather forecasts are transmitted by direct-printing which will be received by ships equipped with an inexpensive single or restricted channel receiver with a decoder operating in the forward error correction mode. The results are awaited with much interest.