

RADIO NAVIGATIONAL AIDS



**PUB. 117
2002**

**IMPORTANT
THIS PUBLICATION SHOULD
BE CORRECTED EACH WEEK
FROM THE
NOTICE TO MARINERS**



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NATIONAL IMAGERY AND MAPPING AGENCY
Bethesda, Maryland

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THE PRUDENT MARINER

a. Warning On Use Of Floating Aids To Navigation and on Aids to Navigation in General, to Fix a Navigational Position.

The aids to navigation depicted on charts comprise a system consisting of fixed and floating aids with varying degrees of reliability. Therefore, prudent mariners will not rely solely on any single aid to navigation, particularly a floating aid. An aid to navigation also refers to any device or structure external to a craft, designed to assist in determination of position. This includes celestial, terrestrial, and electronic means, such as Global Positioning System (GPS) and Differential GPS (DGPS). Here, too, the prudent mariner will not rely solely on any single aid to navigation.

The buoy symbol is used to indicate the approximate position of the buoy body and the sinker which secures the buoy to the seabed. The approximate position is used because of practical limitations in positioning and maintaining buoys and their sinkers in precise geographical locations. These limitations include, but are not limited to, inherent imprecisions in position fixing methods, prevailing atmospheric and sea conditions, the slope of and the material making up the seabed, the fact that buoys are moored to sinkers by varying lengths of chain, and the fact that buoy and/or sinker positions are not under continuous surveillance but are normally checked only during periodic maintenance visits which often occur more than a year apart. The position of the buoy body can be expected to shift inside and outside the charting symbol due to the forces of nature. The mariner is also cautioned that buoys are liable to be carried away, shifted, capsized, sunk, etc. Lighted buoys may be extinguished or sound signals may not function as the result of ice or other natural causes, collisions, or other accidents. Many of these factors also apply to articulated lights.

For the foregoing reasons, a prudent mariner must not rely completely upon the position or operation of floating aids to navigation, but will also utilize bearings from fixed objects and aids to navigation on shore. Further, a vessel attempting to pass close aboard always risks collision with a yawing buoy or with the obstruction the buoy marks.

b. Use of Foreign Charts.

1. In the interest of safe navigation, caution should be exercised in the use of foreign charts not maintained through U.S. Notice to Mariners.

2. Foreign produced charts are occasionally mentioned in NIMA Sailing Directions when such charts may be of a better scale than U.S. produced charts. Mariners are advised that if or when such foreign charts are used for navigation it is their responsibility to maintain those charts from the Notice to Mariners of the foreign country producing the charts.

3. The mariner is warned that the buoyage systems, shapes, colors, and light rhythms used by other countries often have a different significance than the U.S. system.

4. Mariners are further warned about plotting positions, especially satellite-derived positions such as from GPS, onto foreign charts where the datum is unknown or the conversion from WGS-84 is unknown.

c. Chart Notes Regarding Different Datums.

Particular caution should be exercised during a passage when transferring the navigational plot to an adjacent chart upon a different geodetic datum or when transferring positions from one chart to another chart of the same area which is based upon a different datum. The transfer of positions should be done by bearings and distances from common features.

Notes on charts should be read with care, as they give important information not graphically presented. Notes in connection with the chart title include the horizontal geodetic datum which serves as a reference for the values of the latitude and longitude of any point or object on the chart. The latitudes and longitudes of the same points or objects on a second chart of the same area which is based upon a different datum will differ from those of the first chart. The difference may be navigationally significant. Additionally, datum changes between chart editions could significantly affect the positions of navigational aids found in the List of Lights and other NIMA publications.

Positions obtained from satellite navigation systems, such as from GPS, are normally referred to the World Geodetic System 1984 (WGS-84) Datum. The differences between GPS satellite-derived positions and positions on some foreign charts cannot be determined: mariners are warned that these differences MAY BE SIGNIFICANT TO NAVIGATION and are therefore advised to use alternative sources of positional information, particularly when closing the shore or navigating in the vicinity of dangers.

(NIMA/MISC)

PREFACE

The 2002 edition of Pub. 117, Radio Navigational Aids, is a list of selected worldwide stations which provide electronic services to the mariner. This edition cancels all previous editions of Pub. 117. The listing is divided into chapters according to the nature of the service performed by the stations. The first numeral (hundreds digit) of section numbers of text and the first numeral (thousands digit) of station numbers correspond to the chapter number.

Radiobeacons, the only category of radio navigational aids not listed in this book, are grouped geographically and carried in the NIMA Lists of Lights, Pub. 110 - 116, and USCG Light Lists.

References to publications produced or sold by NIMA will be followed by the stock number in parentheses.

Times quoted herein are, unless otherwise stated, in Coordinated Universal Time (UTC) and hours are reckoned from 0000 to 2359.

All bearings are true and are measured in degrees clockwise from 000° (true north) to 359°. The sectors of radio direction finder stations are given as looking from the station to seaward in accordance with international practice; it should be noted that this is the reverse of the method used in the light lists for expressing the sectors of lights.

Distances are reckoned in nautical miles unless otherwise stated.

When the term "plain language" is used in the description of the services rendered by a station, it signifies that the service is in the language of the country controlling the station, unless stated to be otherwise.

The hertz is the unit for the operating frequencies of communications-electronics equipment. Frequencies will normally be expressed as follows:

- (1) In kilohertz (kHz) up to and including 300 kHz.
- (2) In megahertz (MHz) up to and including 300 MHz.
- (3) In gigahertz (GHz) up to and including 300 GHz.

Note: In practice, kilohertz may be used up to 30,000 kHz.

Nothing in the manner of presentation or arrangement of information in this publication implies endorsement or acceptance by NIMA in matters affecting the status and boundaries of states and territories.

This edition contains information available to the National Imagery and Mapping Agency up to 5 October 2002, including Notice to Mariners No. 40 of 2002. Corrections which have accumulated since that date will be in Section II of the Notice to Mariners which announces the issuance of this publication. Subsequent corrections are included weekly in Section II. All of these corrections should be applied in the appropriate places and their insertion noted in the "Record of Corrections" on the next page.

Mariners and other users are requested to forward new or corrective information useful in the correction of this publication to:

MARITIME SAFETY INFORMATION DIVISION
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4600 SANGAMORE ROAD
BETHESDA MD 20816-5003

CAUTION

Plans for air defense of the United States may require temporary suspension of the operations of certain electronic aids to navigation with little or no advance notice.

RECORD OF CORRECTIONS
PUBLISHED IN WEEKLY NOTICE TO MARINERS

NOTICE TO MARINERS

YEAR 20__				YEAR 20__			
1.....	14.....	27.....	40.....	1.....	14.....	27.....	40.....
2.....	15.....	28.....	41.....	2.....	15.....	28.....	41.....
3.....	16.....	29.....	42.....	3.....	16.....	29.....	42.....
4.....	17.....	30.....	43.....	4.....	17.....	30.....	43.....
5.....	18.....	31.....	44.....	5.....	18.....	31.....	44.....
6.....	19.....	32.....	45.....	6.....	19.....	32.....	45.....
7.....	20.....	33.....	46.....	7.....	20.....	33.....	46.....
8.....	21.....	34.....	47.....	8.....	21.....	34.....	47.....
9.....	22.....	35.....	48.....	9.....	22.....	35.....	48.....
10.....	23.....	36.....	49.....	10.....	23.....	36.....	49.....
11.....	24.....	37.....	50.....	11.....	24.....	37.....	50.....
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**THE NATIONAL IMAGERY AND MAPPING AGENCY
MARITIME SAFETY INFORMATION WEBSITE**

The National Imagery and Mapping Agency (NIMA) Maritime Safety Information Website provides worldwide remote query access to extensive menus of maritime safety information 24 hours a day.

Databases made available for access, query and download include Chart Corrections, Publication Corrections, NIMA Hydrographic Catalog Corrections, Chart and Publication Reference Data (current edition number, dates, title, scale), NIMA List of Lights, USCG Light Lists, WorldWide Navigational Warning Service (WWNWS) Broadcast Warnings, Maritime Administration (MARAD) Advisories, Department of State Special Warnings, Mobile Offshore Drilling Units (MODUs), Anti-Shipping Activity Messages (ASAMs), World Port Index, and Radio Navigational Aids. Publications that are also made available as PDF files include the U.S. Notice to Mariners, U.S. Chart No. 1, The American Practical Navigator (Bowditch), International Code of Signals, Radio Navigational Aids, World Port Index, Distances Between Ports, Sight Reduction Tables for Marine and Air Navigation, and the Radar Navigation and Maneuvering Board Manual.

The Maritime Safety Information Website can be accessed via the NIMA Homepage (www.nima.mil) or directly at <http://pollux.nss.nima.mil>. Any questions concerning the Maritime Safety Information Website should be directed to:

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Fax: (1) 301-227-4211
E-mail: webmaster_nss@nima.mil

TABLE OF SYMBOLS

LEGEND

Example: A 1 A
 (1) (2) (3)

(1) Type of modulation of the main carrier:

A Double sideband
 F Frequency modulation
 G Phase modulation
 H Single sideband (full carrier)
 J Single sideband (suppressed carrier)
 N Emission of unmodulated carrier
 R Single sideband (reduced or variable level carrier)

(2) Nature of signal(s) modulating the main carrier:

0 No modulating signal
 1 Single channel containing quantized/digital information without modulating subcarrier, excluding time division multiplex
 2 Single channel containing quantized/digital information with modulating subcarrier, excluding time division multiplex
 3 Single channel containing analog information
 9 Multiple channels, separately containing quantized/digital information and analog information

(3) Type of information to be transmitted. "Information" does not include information of a constant, unvarying nature, such as provided by standard frequency emissions, continuous wave and pulse radars, etc.:

A Telegraphy (aural reception)
 B Telegraphy (automatic reception)
 C Facsimile
 D Data transmission, telemetry, telecommand
 Note: With 6 kHz, EDW operation in the bands below 30 MHz allocated exclusively for maritime mobile service (FC, MO)
 E Telephony (including sound broadcasting)
 N No information transmitted
 W Telegraphy and telephony

AMPLITUDE MODULATION

A1A Continuous wave telegraphy
A2A Telegraphy by on/off keying of tone-modulated carrier
A3E Telephony
A3C Facsimile
A9W Composite emission of telegraphy and telephony
G1D Data transmission
G3E Telephony
H2A Telegraphy by on/off keying of tone-modulated carrier
H2B Selective calling using sequential single frequency code
H3E Telephony
J3E Telephony
N0N Unmodulated continuous wave emission
R3E Telephony

FREQUENCY (or PHASE) MODULATION:

F1B	Narrow band direct printing (NBDP); Telex
F2A	Telegraphy by on/off keying of tone-modulated carrier
F3C	Facsimile
F3E	Telephony

Pulse Modulation:

kHz = kilohertz

MHz = megahertz

GHz = gigahertz

TERMS AND ABBREVIATIONS

AOR-E	Atlantic Ocean Region-East
AOR-W	Atlantic Ocean Region-West
CES	Coast Earth Station
DSC	Digital Selective Calling
EPIRB	Emergency position-indicating radio beacon
GEOLUT	Local user terminal in a GEOSAR system
GEOSAR	Geostationary satellite system for SAR
HF	High Frequency
IOR	Indian Ocean Region
LEOLUT	Local user terminal in a LEOSAR system
LEOSAR	Low Earth Orbit satellite system for SAR
LUT	COSPAS-SARSAT Local User Terminal
MCC	COSPAS-SARSAT Mission Control Center
MF	Medium Frequency
MRCC	Maritime Rescue Co-ordination Center
MRSC	Maritime Rescue Sub-Center
NBDP	Narrow band direct printing
NCS	Network Coordinating Station
N.I.	No Information
NM	Nautical Miles
POR	Pacific Ocean Region
RCC	Rescue Coordination Center
R _x	Receiver
SAR	Search and rescue
T _x	Transmitter
UTC	Coordinated Universal Time

CHAPTER 1

RADIO DIRECTION FINDER AND RADAR STATIONS

PART I RADIO DIRECTION FINDER STATIONS

100A. General

Radio bearings may be employed for fixing a ship's position in the same manner as other lines of position if due regard is given to the facts that they, like other lines of position, may not be absolutely accurate, and that the bearings are portions of great circles, not rhumb lines.

Radio bearings are obtained using radio direction finder sets installed on either shore stations or ships, and also by certain special radiobeacons.

Radio direction finder (RDF) stations are equipped with apparatus for determining the direction of radio signals transmitted by ships and other stations.

SECTOR OF CALIBRATION: The sector of calibration of a direction finder station is the sector around the receiving coil in which the deviation of radio bearings is known. In this book, the sectors are measured clockwise from 000° (true north) to 359° and are given from the station to seaward. Bearings which do not fall within the sector of calibration of the station should be considered unreliable.

100B. Accuracy of Bearings Furnished by Direction Finding Stations

The bearings obtained by RDF stations and reported to ships are corrected for all determinable errors except the difference between a great circle and a rhumb line (See sec. 100F.) and are normally accurate within 2° for distances under 150 miles. However, this error may be increased by various circumstances, some of which are:

STRENGTH OF SIGNALS: The most accurate bearings result from ships whose signals are steady, clear, and strong. If the signals are too weak, accurate bearings cannot be obtained.

TRANSMITTER ADJUSTMENT: The transmitter of the ship requesting bearings should be tuned carefully to the frequency of the station. If the tuning is off, it will be difficult for the station to obtain bearings sufficiently accurate for navigational purposes.

COASTAL REFRACTION (LAND EFFECT): Bearings which cut an intervening coastline at an oblique angle, or cross high intervening land, may produce errors of 4° to 5°. RDF stations normally know the sectors in which such refraction may be expected. Such sectors may not be included in the published sectors of calibration or may be marked "sectors of uncertain calibration."

SUNRISE, SUNSET, OR NIGHT EFFECTS: Bearings obtained from about half an hour before sunset to about half an hour after sunrise are occasionally unreliable because of the polarization error introduced. Changes in the intensity of the signals received occur at sunset and sunrise.

CAUTION: When RDF stations use such words as doubtful, approximate, second-class, or the equivalents in foreign languages, the bearings reported must be treated with suspicion as considerable error may exist.

DANGER FROM RECIPROCAL BEARINGS: When a single station furnishes a bearing, there is a possibility of an error of approximately 180°, as the operator at the station cannot always determine on which side of the station the ship lies. Certain direction finder stations, particularly those on islands or extended capes, are equipped to furnish two corrected true bearings for any observation. Such bearings may differ by approximately 180° and whichever bearing is suitable should be used.

CAUTION: Mariners receiving bearings which are evidently the approximate reciprocal of the correct bearings should never attempt to correct these bearings by applying a correction of 180°, as such a correction would not include the proper correction for deviation at the direction finder station. An error as large as 30° may be introduced by an arbitrary correction of 180°. Ships receiving bearings requiring an approximate 180° correction should request both bearings from the direction finder station.

100C. Obligations of Administrations Operating Direction Finding Stations

The obligations of RDF station operators are given in Article 35 of the manual for use by the Maritime Mobile Satellite Services of the International Telecommunications Union (1992). They include the following:

- Effective and regular service should be maintained, but no responsibility is accepted for these services.
- Serviced stations shall be advised of doubtful or unreliable observations.
- RDF station operators shall make daily notification of any temporary modifications or irregularities in service. Permanent modifications shall be published as soon as possible in the relevant notices to mariners.
- All RDF stations shall be able to take bearings on 410 kHz and 500 kHz.
- When RDF service is provided in authorized bands between 1605 kHz and 2850 kHz, RDF stations

RADIO DIRECTION FINDER AND RADAR STATIONS

providing that service should be able to take bearings on 2182 kHz.

- When RDF service is provided in the bands between 156 MHz and 174 MHz, the RDF station should be able to take bearings on VHF 156.8 MHz and VHF digital selective calling frequency 156.525 MHz.

100D. Procedure to Obtain Radio Direction Finder Bearings and Positions

TO OBTAIN A BEARING: The vessel should call the RDF station or the RDF control station on the designated watch frequency. Depending on the type of information wanted, the vessel should transmit the appropriate service abbreviation(s):

- QTE: What is the true bearing from you (or designated vessel)?
- QTH: Follows the above abbreviation when the request is made to a mobile RDF station.

The vessel should also indicate the frequency it will use to enable its bearing to be taken.

The RDF station called should request the vessel to transmit for the bearing by means of the service abbreviation QTG (Will you send two dashes of ten seconds each (or carrier) followed by your call sign (repeated __ times) on __ kHz (or MHz)?).

After shifting, if necessary, to the new transmitting frequency, the vessel should transmit as instructed by the RDF station.

The RDF station should determine the direction, sense (if possible), and classification of the bearing and transmit to the vessel in the following order:

- QTE.
- Three digits indicating true bearing in degrees from the RDF station.
- Class of bearing.
- Time of observation.

- If the RDF station is mobile, its own position preceded by QTH.

When the vessel has received this information, it should repeat it back, if considered necessary for confirmation. The RDF station should confirm or correct the information. When the RDF station is sure the information has been correctly received, it will transmit AR (end of transmission). The vessel will respond with AR.

Unless otherwise indicated, the vessel may assume that the sense of the bearing was indicated. If not, the RDF station should indicate this or report the bearing and its reciprocal.

CLASSIFICATION OF BEARINGS: To estimate the accuracy and determine the corresponding class of a bearing:

- An operator should generally, and particularly in the maritime mobile RDF service on frequencies below 3000 kHz, give the observational characteristics of bearings shown in the table below.
- The RDF station, when facilities and time permit, may take into account the probability of error in the bearing. A bearing is considered as belonging to a particular class if there is a probability of less than 1 in 20 that the bearing error would exceed the numerical values specified for that class in the table below. This probability should be determined from an analysis of the five components that make up the total variance of the bearing (instrumental, site, propagation, random sampling and observational components).

TO OBTAIN A POSITION (DETERMINED BY TWO OR MORE RDF STATIONS ORGANIZED AS A GROUP): The vessel should call the RDF control station and transmit QTF (Will you give me my position according to the bearings taken by the RDF stations you control?).

The control station shall reply and, when the RDF stations are ready, request that the vessel transmit using the service abbreviation QTG.

Classification of Bearings

Class	Bearing Error (Degrees)	Observational Characteristics					
		Signal Strength	Bearing Indication	Fading	Interference	Bearing Swing (Degrees)	Duration of Observation
A	±2°	very good or good	definite (sharp null)	negligible	negligible	less than 3°	adequate
B	±5°	fairly good	blurred	slight	slight	more than 3° less than 5°	short
C	±10°	weak	severely blurred	severe	strong	more than 5° less than 10°	very short
D	more than ±10°	scarcely perceptible	ill-defined	very severe	very strong	more than 10°	inadequate

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When the position has been determined, the control station should transmit to the vessel:

- QTF.
- The position in latitude and longitude, or in relation to a known geographic point.
- Class of position.
- Time of observation.

According to its estimate of the accuracy of the observations, the control station shall classify the position in one of the four following classes:

- Class A - positions which the operator may reasonably expect to be accurate to within 5 nautical miles.
- Class B - positions which the operator may reasonably expect to be accurate to within 20 nautical miles.
- Class C - positions which the operator may reasonably expect to be accurate to within 50 nautical miles.
- Class D - positions which the operator may not expect to be accurate to within 50 nautical miles.

For frequencies above 3000 kHz, where the distance limits specified in the preceding subparagraph may not be appropriate, the control station may classify the position in accordance with current International Telecommunications Union-Radiocommunications Sector (ITU-R) recommendations.

TO OBTAIN SIMULTANEOUS BEARINGS FROM TWO OR MORE RDF STATIONS ORGANIZED AS A GROUP: On a request for bearings, the control station of a group of RDF stations shall proceed as indicated above. It then should transmit the bearings observed by each station of the group, each bearing being preceded by the call sign of the station which observed it.

100E. Plotting Radio Bearings

A fix by radio bearings is defined as follows:

- Three or more bearings taken simultaneously.
- Two bearings and a sounding.
- Two bearings and an LOP from a celestial body.
- Two bearings and a synchronized air or submarine signal.
- Two bearings on the same station and the measure of distance run (solve as if doubling the angle on the bow) between bearings.

Radio bearings are great circle azimuths (the bearing is the angle between the meridian of the ship or station taking the bearing and the great circle, not the rhumb line). They can be plotted directly upon gnomonic charts, but they cannot be plotted on a Mercator chart without first being corrected as described in sec. 100F.

WEIGHT TO BE GIVEN TO RADIO BEARINGS: Before using a radio bearing for navigational purposes, the mariner should consider the conditions under which it was taken and should compare the conditions with those given in sec. 100B on accuracy.

Land-based marine radiobeacon signals received by ships may only provide a bearing accuracy relative to vessel heading of $\pm 3^\circ$ - 10° . This is not satisfactory for navigation in restricted channels or harbors.

TRANSMITTERS AND RECEIVERS: Bearings reported by a direction finding station ashore must be

plotted from the geographical position of the receiving antenna of the station. Bearings taken by a ship on a shore station must be plotted from the geographical position of the station's transmitting antenna.

CAUTION: These two positions are not the same for all stations.

SHIP'S PROBABLE POSITION: As radio bearings are not absolutely accurate, lines should be drawn on both sides of each radio bearing at an angular distance from the bearing equal to the estimated probable error. In the case of intersecting radio bearings, the ship's most probable position is the area enclosed by these outer lines.

In figure 1 the broken lines are radio bearings obtained on a ship by three radio stations. The solid lines are drawn at angles of 2° from the bearings (it is assumed that all the bearings are probably accurate within 2°). The black triangle in the illustration lies within the 2° error of all three bearings and is the most probable position of the ship. However, with the possibility that one of the bearings may be off by more than 2° , the areas shaded with parallel lines give other possible positions. If one of the bearings is suspected to be less accurate, the outer lines should be offset from this bearing the same number of degrees as the estimated error, and the area or areas partially enclosed by these lines should be given less weight than the other areas.

In figure 2, a ship on course 000° obtains bearings of 031° and 065° on a radio station. The lines drawn as long dashes show the bearings and the continuous lines are their limits of accuracy. It is assumed that the bearings are both accurate within 2° . The lines AB drawn with dashes and dots are equal to the distance run between bearings. The distance run is fitted to the lines showing the limits of accuracy of the bearings. This can be done easily by means of parallel rulers and dividers. The shaded quadrilateral shows the ship's probable position at the time of the second bearings, if both bearings are accurate within 2° .

Information on various kinds of land-based radiobeacons, their accuracy, and use may be found in the NIMA Lists of Lights (LLPUB110 - 116), Coast Guard Light Lists (COMDTM165021 - 165027), and "The American Practical Navigator" (Bowditch) (NVPUB9).

100F. Radio Bearing Conversion

The table on pg. 1-7 may be used to convert radio or great circle bearings into Mercator bearings for plotting on a Mercator chart. The table should be used when the distance between the ship and station is over 50 miles. The arguments used to find the correction are the middle latitude (Lm) and the difference of longitude (DLo) between the position of the radio station and the dead reckoning (DR) position of the vessel.

EXAMPLE: A vessel in DR position $56^\circ 04'N$, $142^\circ 43'W$ takes a bearing on the radiobeacon at Cape Spencer Light Station at $58^\circ 12.0'N$, $136^\circ 38.3'W$. The bearing observed is 057.5° . Find the Mercator bearing.

Lm (to nearest whole degree) = 57°

DLo (to nearest half degree) = 6°

With Lm 57° and the DLo 6° enter the conversion table and extract the correction 2.5° . The receiver (ship) is in N

RADIO DIRECTION FINDER AND RADAR STATIONS

latitude; the transmitter (radiobeacon) is eastward. Following the rule given at the bottom of the table, the correction is to be added:

Great circle bearing	057.5°
Correction	+2.5°
Mercator bearing	060.0°

To plot the bearing, add 180° to Mercator bearing, giving 240°, the rhumb line bearing of the ship from the radiobeacon.

EXAMPLE: A vessel in DR position 42°20'N, 66°14'W requests a bearing from a direction finder station at 42°08'N, 70°42'W. The bearing given is 081°. Find the Mercator bearing.

Lm (to nearest whole degree) = 42°

DLo (to nearest half degree) = 4.5°

With Lm 42° and DLo 4.5°, enter the conversion table and extract the correction 1.5°. The receiver (RDF station)

is in N latitude; the transmitter (ship) is eastward. Following the rule given at the bottom of the table, the correction is to be added:

Great circle bearing	081.0°
Correction	+1.5°
Mercator bearing	082.5°

100G. Direction Finding Station List

The station list starting on pg. 1-8 shows the names, positions, and characteristics of radio direction finding stations. The frequencies used are broken down as follows:

A—Frequency on which station (or control station) keeps watch.

B—Frequency for transmission of signals on which bearings are observed.

C—Frequency on which results are transmitted.

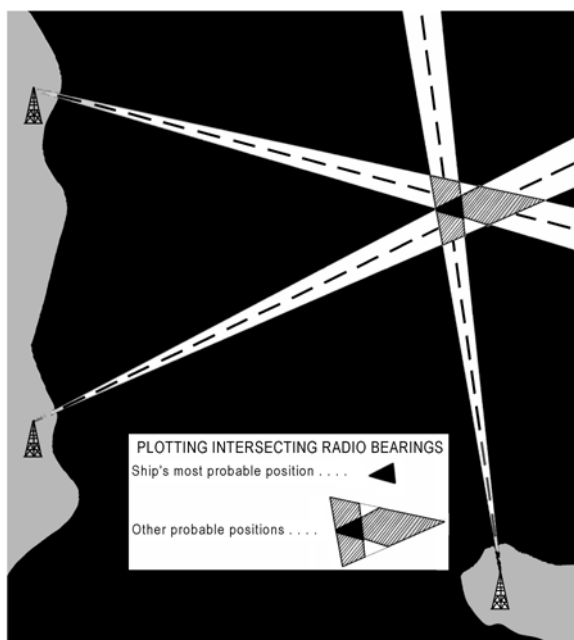


Figure 1.

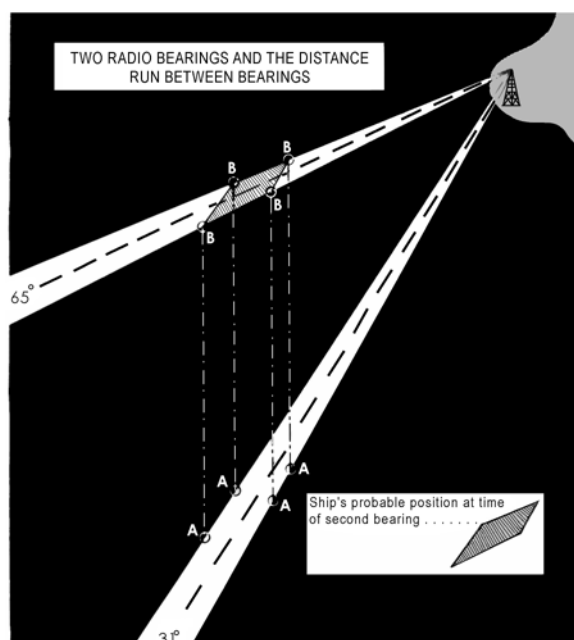


Figure 2.

RADIO DIRECTION FINDER AND RADAR STATIONS

Mid Lat.	Radio Bearing Conversion Table <i>Correction to be applied to radio bearing to convert to Mercator bearing</i> Difference of Longitude															Mid Lat.
	0.5°	1°	1.5°	2°	2.5°	3°	3.5°	4°	4.5°	5°	5.5°	6°	6.5°	7°	7.5°	
	°	°	°	°	°	°	°	°	°	°	°	°	°	°	°	
4					0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	4
5		0.1	0.1	0.1	.1	.1	.2	.2	.2	.2	.2	.3	.3	.3	.3	5
6		.1	.1	.1	.1	.2	.2	.2	.2	.3	.3	.3	.3	.4	.4	6
7		.1	.1	.1	.2	.2	.2	.3	.3	.3	.3	.4	.4	.4	.5	7
8		.1	.1	.1	.2	.2	.2	.3	.3	.4	.4	.4	.5	.5	.5	8
9		.1	.1	.1	.2	.2	.2	.3	.3	.4	.4	.5	.5	.6	.6	9
10		.1	.1	.1	.2	.2	.3	.4	.4	.4	.5	.5	.6	.6	.6	10
11		.1	.1	.2	.2	.3	.3	.4	.4	.5	.5	.6	.6	.7	.7	11
12	0.1	.1	.1	.2	.3	.3	.4	.4	.5	.5	.6	.6	.7	.7	.8	12
13	.1	.1	.2	.2	.3	.3	.4	.4	.5	.6	.6	.7	.7	.8	.8	13
14	.1	.1	.2	.2	.3	.4	.4	.5	.6	.6	.7	.7	.8	.8	.9	14
15	.1	.1	.2	.3	.3	.4	.4	.5	.6	.6	.7	.8	.8	.9	1.0	15
16	.1	.1	.2	.3	.4	.4	.5	.6	.6	.7	.8	.8	.9	1.0	1.0	16
17	.1	.2	.2	.3	.4	.4	.5	.6	.6	.7	.8	.9	1.0	1.0	1.1	17
18	.1	.2	.2	.3	.4	.5	.5	.6	.7	.8	.8	.9	1.0	1.1	1.2	18
19	.1	.2	.2	.3	.4	.5	.6	.6	.7	.8	.9	1.0	1.1	1.1	1.2	19
20	.1	.2	.2	.3	.4	.5	.6	.7	.8	.8	.9	1.0	1.1	1.2	1.3	20
21	.1	.2	.3	.4	.5	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.2	1.4	21
22	.1	.2	.3	.4	.5	.6	.6	.8	.8	.9	1.0	1.1	1.2	1.3	1.4	22
23	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.3	1.4	1.5	23
24	.1	.2	.3	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.3	1.4	1.5	24
25	.1	.2	.3	.4	.5	.6	.7	.8	1.0	1.1	1.2	1.3	1.4	1.5	1.6	25
26	.1	.2	.3	.4	.6	.6	.8	.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	26
27	.1	.2	.3	.4	.6	.7	.8	.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	27
28	.1	.2	.4	.5	.6	.7	.8	.9	1.1	1.2	1.3	1.4	1.5	1.6	1.8	28
29	.1	.2	.4	.5	.6	.7	.8	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	29
30	.1	.2	.4	.5	.6	.8	.9	1.0	1.1	1.2	1.4	1.5	1.6	1.8	1.9	30
31	.1	.2	.4	.5	.6	.8	.9	1.0	1.2	1.3	1.4	1.6	1.7	1.8	1.9	31
32	.1	.3	.4	.5	.7	.8	.9	1.1	1.2	1.3	1.4	1.6	1.7	1.8	2.0	32
33	.1	.3	.4	.6	.7	.8	1.0	1.1	1.2	1.4	1.5	1.6	1.8	1.9	2.0	33
34	.1	.3	.4	.6	.7	.8	1.0	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	34
35	.1	.3	.4	.6	.7	.9	1.0	1.2	1.3	1.4	1.6	1.7	1.9	2.0	2.2	35
36	.1	.3	.4	.6	.7	.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.2	36
37	.2	.3	.4	.6	.8	.9	1.1	1.2	1.4	1.5	1.6	1.8	2.0	2.1	2.2	37
38	.2	.3	.5	.6	.8	.9	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.2	2.3	38
39	.2	.3	.5	.6	.8	1.0	1.1	1.2	1.4	1.6	1.7	1.9	2.1	2.2	2.4	39
40	.2	.3	.5	.6	.8	1.0	1.1	1.3	1.4	1.6	1.8	1.9	2.1	2.2	2.4	40
41	.2	.3	.5	.6	.8	1.0	1.2	1.3	1.5	1.6	1.8	2.0	2.1	2.3	2.5	41
42	.2	.3	.5	.7	.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	42
43	.2	.3	.5	.7	.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.2	2.4	2.6	43
44	.2	.4	.5	.7	.9	1.1	1.2	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.6	44
45	.2	.4	.5	.7	.9	1.1	1.2	1.4	1.6	1.8	2.0	2.1	2.3	2.5	2.6	45
46	.2	.4	.5	.7	.9	1.1	1.3	1.4	1.6	1.8	2.0	2.2	2.3	2.5	2.7	46
47	.2	.4	.6	.7	.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	47
48	.2	.4	.6	.8	.9	1.1	1.3	1.5	1.7	1.8	2.1	2.2	2.4	2.6	2.8	48
49	.2	.4	.6	.8	1.0	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.6	2.8	49
50	.2	.4	.6	.8	1.0	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	50
51	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	2.0	2.1	2.3	2.5	2.7	2.9	51
52	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	52
53	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	53
54	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	54
55	.2	.4	.6	.8	1.0	1.2	1.4	1.6	1.8	2.1	2.2	2.4	2.7	2.9	3.1	55
56	.2	.4	.6	.8	1.0	1.2	1.4	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	56
57	.2	.4	.6	.8	1.1	1.2	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.2	57
58	.2	.4	.6	.8	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	2.8	3.0	3.2	58
59	.2	.4	.6	.8	1.1	1.3	1.5	1.7	1.9	2.2	2.4	2.6	2.8	3.0	3.2	59
60	.2	.4	.6	.9	1.1	1.3	1.5	1.7	2.0	2.2	2.4	2.6	2.8	3.0	3.2	60
	0.5°	1°	1.5°	2°	2.5°	3°	3.5°	4°	4.5°	5°	5.5°	6°	6.5°	7°	7.5°	
Receiver (latitude)	Transmitter (direction from receiver)			Correction Sign			Receiver (latitude)			Transmitter (direction from receiver)			Correction Sign			
North	Eastward			+			South			Eastward			—			
North	Westward			—			South			Westward			+			

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
CANADA							
The VHF direction finding stations of Canada are for emergency use only. All stations are remotely controlled by a Marine Communications and Traffic Services Center (MCTS). The following details of operation are common to all of these stations:							
A. Ch.16. B. Ch.16 (distress only). C. Ch.16 (distress only).							
1001 Cap-aux-Meules.	RDF		47 23 14 N 61 51 40 W				MCTS Riviere-au-Renard (VCG).
1001.1 Cap des Rosiers. 2-4326	RDF		48 51 40 N 64 12 53 W				MCTS Riviere-au-Renard (VCG).
1001.15 Cap Est. 2-4326	RDF		48 22 55 N 70 41 25 W				MCTS Quebec (VCC).
1001.2 Carleton. 2-4326	RDF		48 08 00 N 66 07 20 W				MCTS Riviere-au-Renard (VCG).
1001.25 Forillon. 2-4326	RDF		48 50 02 N 64 15 30 W				MCTS Riviere-au-Renard (VCG).
1001.3 Fortune Head. 2-4326	RDF		47 03 54 N 55 51 04 W				MCTS Placentia (VCP).
1001.35 Grosses-Roches. 2-4326	RDF		48 54 51 N 67 06 38 W				MCTS Les Escoumins (VCF).
1001.4 Harrington Harbor. 2-4326	RDF		50 30 00 N 59 29 17 W				MCTS Riviere-au-Renard (VCG).
Seasonal operation: April 1-December 31.							
1001.45 Havre St.-Pierre. 2-4326	RDF		50 16 15 N 63 40 44 W				MCTS Riviere-au-Renard (VCG).
1001.5 La Romaine. 2-4326	RDF		50 12 57 N 60 41 13 W				MCTS Riviere-au-Renard (VCG).
Seasonal operation: April 1-December 31.							
1001.55 La Verniere.	RDF		47 21 26 N 61 55 36 W				MCTS Riviere-au-Renard (VCG).
1001.6 Lac D'aigle (Sept 2-4326 Iles).	RDF		50 17 21 N 66 18 43 W				MCTS Les Escoumins (VCF).
1001.65 Lauzon. 2-4326	RDF		46 48 45 N 71 09 33 W				MCTS Quebec (VCC).
1001.7 Les Escoumins.	RDF		48 19 03 N 69 25 13 W				MCTS Les Escoumins (VCF).
1001.75 Mont Belair. 2-4326	RDF		46 49 22 N 71 29 45 W				MCTS Quebec (VCC).
1001.8 Mont Joli. 2-4326	RDF		48 36 30 N 68 13 45 W				MCTS Les Escoumins (VCF).
1001.85 Mont-Louis. 2-4326	RDF		49 12 48 N 65 46 27 W				MCTS Les Escoumins (VCF).
1001.9 Montmagny. 2-4326	RDF		46 55 42 N 70 30 45 W				MCTS Quebec (VCC).
1001.95 Natashquan. 2-4326	RDF		50 08 40 N 61 48 00 W				MCTS Riviere-au-Renard (VCG).
1002 Newport. 2-4326	RDF		48 13 37 N 64 47 33 W				MCTS Riviere-au-Renard (VCG).
1002.1 Pointe Heath. 2-4326	RDF		49 05 05 N 61 42 09 W				MCTS Riviere-au-Renard (VCG).
1002.15 Riviere-au-Renard. 2-4326	RDF		49 00 29 N 64 24 00 W				MCTS Riviere-au-Renard (VCG).

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx		(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1002.2 Riviere du Loup. <i>2-4326</i>		RDF	47 45 26 N 69 36 14 W					MCTS Quebec (VCC).
1002.25 Sacre Coeur. <i>2-4326</i>		RDF	48 12 45 N 69 52 15 W					MCTS Quebec (VCC).
1002.3 Trois-Rivieres. <i>2-4326</i>		RDF	46 23 50 N 72 27 17 W					MCTS Quebec (VCC).
1002.35 Twillingate. <i>2-4326</i>		RDF	49 41 16 N 54 48 03 W					MCTS St. Anthony (VCM).
1002.36 Banks.		RDF	44 28 30 N 80 20 56 W					MCTS Thunder Bay (VBA).
1002.37 Brougham.		RDF	43 55 13 N 79 06 51 W					MCTS Prescott (VBR).
1002.38 Cape Croker.		RDF	44 57 30 N 80 57 53 W					MCTS Thunder Bay (VBA).
1002.4 Cobourg.		RDF	44 04 02 N 78 12 38 W					MCTS Prescott (VBR).
1002.45 Pointe au Baril.		RDF	45 33 50 N 80 19 18 W					MCTS Thunder Bay (VBA).
1002.5 Tobermory.		RDF	45 09 42 N 81 29 22 W					MCTS Thunder Bay (VBA).
1002.55 Trafalgar.		RDF	43 29 41 N 79 43 47 W					MCTS Prescott (VBR).
Seasonal operation: April 1-December 31.								
1002.6 Barry Inlet. <i>2-3510</i>		RDF	52 34 30 N 131 45 13 W					MCTS Prince Rupert (VAJ).
1002.65 Calvert Island. <i>2-3510</i>		RDF	51 35 21 N 128 00 43 W					MCTS Prince Rupert (VAJ).
1002.7 Cumshewa. <i>2-3510</i>		RDF	53 09 33 N 131 59 47 W					MCTS Prince Rupert (VAJ).
1002.75 Dundas Island. <i>2-3510</i>		RDF	54 31 16 N 130 54 55 W					MCTS Prince Rupert (VAJ).
1002.8 Klemtu. <i>2-3510</i>		RDF	52 34 45 N 128 33 45 W					MCTS Prince Rupert (VAJ).
1002.85 Mount Gil. <i>2-3510</i>		RDF	53 15 46 N 129 11 42 W					MCTS Prince Rupert (VAJ).
1002.9 Mount Hays. <i>2-3510</i>		RDF	54 17 12 N 130 18 49 W					MCTS Prince Rupert (VAJ).
1002.95 Naden Harbor. <i>2-3510</i>		RDF	53 57 18 N 132 56 30 W					MCTS Prince Rupert (VAJ).
1003 Van Inlet. <i>2-3510</i>		RDF	53 15 08 N 132 32 31 W					MCTS Prince Rupert (VAJ).
NORWAY								
1005 Rogaland (LGQ). <i>2-0727</i>		RDF	58 48 44 N 5 40 16 E	58 56 48 N 5 42 16 E	A. 500 kHz, A1A, A2A; 2182kHz, A3E. B. 255-535 kHz band, A1A, A2A. 1600-3200 kHz band, A3E. C. 516 kHz, A1A, A2A, 1.0kW; 1729 kHz, A3E, 0.5kW.			CALIBRATED SECTOR: 100-009°.
1006 Lista Lt. (LGZ). <i>2-0722</i>		RDF	58 07 03 N 6 34 14 E				Call Farsund Radio (LGZ).	
1007 Hillersoy (LGL). <i>2-0752</i>		RDF	61 16 45 N 4 37 26 E				Call Floro Radio (LGL).	

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position RxTx		(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
SWEDEN								
1015 2-0665	Goteborg (SAG).	RDF	57 24 55 N 11 56 15 E	57 27 55 N 11 56 05 E	A. 500 kHz, A2A; 2037, 2182 kHz, A3E. B. 410, 500 kHz, A2A; 1605-3800 kHz band, A3E. Pref. freq.: 2182 kHz. C. 450, 500 kHz, A2A, 2.0 kW; 1785, 2182 kHz, A3E, 2.0 kW.		Ship's call sign is transmitted for 50 sec., followed by 10 sec. dash.	CALIBRATED SECTOR: 159-345°. CHARGES: 3.5 gold francs.
DENMARK								
1020 2-0311	Blavand (OXB).	RDF	55 33 36 N 8 05 55 E	55 33 14 N 8 06 58 E	A. 500 kHz, A2A; 2076, 2182 kHz, J3E, H3E. B. 410, 500* kHz, A2A; 2076, 2182* kHz, H3E. C. 429, 500* kHz, A1A, A2A, 0.9 kW; 1813, 2182* kHz, J3E, H3E, 0.5 kW.			CHARGES: 1 Special Drawing Right (SDR) per bearing.
*NOTE: In case of distress only.								
1021 2-0327	Skagen (OXP).	RDF	57 44 12 N 10 36 52 E	57 44 04 N 10 34 23 E	A. 500 kHz, A2A; 1988, 2182 kHz, J3E, H3E. B. 410, 500* kHz, A1A, A2A; 1988, 2182* kHz, H3E. C. 464, 500* kHz, A1A, A2A, 0.25 kW; 1701, 2182* kHz, J3E, H3E, 0.25 kW.			CHARGES: 1 SDR per bearing.
*NOTE: In case of distress only.								
1022 2-0357	Lyngby, Reerso (OXZ).	RDF	55 30 57 N 11 04 55 E	55 50 20 N 11 25 26 E	A. 500 kHz, A2A; 2069, 2182 kHz, J3E, H3E. B. 410, 500* kHz, A1A, A2A; 2069, 2182* kHz, H3E. C. 487, 500* kHz, A1A, A2A, 0.75 kW; 1687, 2182* kHz, J3E, H3E, 1.5 kW.			CHARGES: 1 SDR per bearing.
*NOTE: In case of distress only.								
1023 2-0391	Ronne (OYE).	RDF	55 06 07 N 14 42 21 E	55 02 33 N 15 06 57 E	A. 1995, 2182 kHz, J3E, H3E. B. 1995, 2182 kHz, J3E, H3E. C. 2182*, 2586 kHz, J3E, H3E, 0.07 kW.			CHARGES: 1 SDR per bearing.
*NOTE: In case of distress only.								
UNITED KINGDOM								
The VHF direction finding stations of the United Kingdom are for emergency use only. Except for Guernsey and Jersey, all are remotely controlled by a HM Coast Guard Maritime Rescue Coordination Center or Sub-Center (MRCC/MRSC). The following details of operation are common to all of these stations:								
					A. Ch.16. B. Ch.16 (distress only). Ch.67. Ch.82 (Jersey only). C. Ch.16 (distress only). Ch.67. Ch.82 (Jersey only).			
1055 2-0001	Barra.	RDF	57 00 48 N 7 30 25 W					MRSC Stornoway.
1060 2-0001	Bawdsey.	RDF	51 59 36 N 1 25 00 E					MRSC Thames.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1065 Berry Head. <i>2-0001</i>		RDF	50 23 58 N 3 29 03 W				MRSC Brixham.
1066 Boniface. <i>2-0001</i>		RDF	50 36 13 N 1 12 02 W				MRSC Solent.
1070 Compass Head. <i>2-0001</i>		RDF	59 52 03 N 1 16 18 W				MRSC Shetland.
1072 Crosslaw. <i>2-0001</i>		RDF	55 54 30 N 2 12 12 W				MRSC Forth.
1073 Cullercoats. <i>2-0001</i>		RDF	55 04 00 N 1 28 00 W				MRSC Humber.
1075 Dunnet Head. <i>2-0001</i>		RDF	58 40 18 N 3 22 31 W				MRCC Aberdeen.
1080 Easington. <i>2-0001</i>		RDF	53 39 08 N 0 05 57 E				MRSC Humber.
1082 East Prawle. <i>2-0001</i>		RDF	50 13 06 N 3 42 30 W				MRSC Brixham.
1086 Fairlight. <i>2-0001</i>		RDF	50 52 11 N 0 38 44 E				MRCC Dover.
1087 Fife Ness. <i>2-0001</i>		RDF	56 16 47 N 2 35 15 W				MRSC Forth.
1088 Flamborough. <i>2-0001</i>		RDF	54 07 05 N 0 05 07 W				MRSC Humber.
1089 Great Ormes Head. <i>2-0001</i>		RDF	53 19 59 N 3 51 07 W				MRSC Holyhead.
1090 Grove Point. <i>2-0001</i>		RDF	50 32 56 N 2 25 12 W				MRSC Portland.
1090.5 Guernsey. <i>2-0155</i>		RDF	49 26 16 N 2 35 46 W				
1091 Hartland. <i>2-0001</i>		RDF	51 01 12 N 4 31 19 W				MRCC Swansea.
1091.2 Hartlepool. <i>2-0001</i>		RDF	54 41 47 N 1 10 28 W				MRSC Humber.
1092 Hengistbury Head. <i>2-0001</i>		RDF	50 42 57 N 1 45 38 W				MRSC Portland.
1093 Inverbervie. <i>2-0001</i>		RDF	56 51 06 N 2 15 39 W				MRSC Forth.
1093.5 Jersey. <i>2-0155</i>		RDF	49 10 51 N 2 14 18 W				
1094 Kilchiaran. <i>2-0001</i>		RDF	55 45 54 N 6 27 11 W				MRCC Clyde.
1094.1 Lands End. <i>2-0001</i>		RDF	50 08 08 N 5 38 11 W				MRCC Falmouth.
1094.2 Langdon Battery. <i>2-0001</i>		RDF	51 07 56 N 1 20 41 E				MRCC Dover.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1094.5 Law Hill. <i>2-0001</i>		RDF	55 41 46 N 4 50 28 W				MRCC Clyde.
1095 Lizard. <i>2-0001</i>		RDF	49 57 36 N 5 12 04 W				MRCC Falmouth.
1095.5 Lowestoft. <i>2-0001</i>		RDF	52 28 36 N 1 42 12 E				MRCC Yarmouth.
1096 Newhaven. <i>2-0001</i>		RDF	50 46 54 N 0 03 08 E				MRSC Solent.
1097 Newton. <i>2-0001</i>		RDF	55 31 01 N 1 37 06 W				MRSC Humber.
1098 North Foreland. <i>2-0001</i>		RDF	51 22 30 N 1 26 49 E				MRCC Dover.
1098.2 Noss Head. <i>2-0001</i>		RDF	58 28 48 N 3 03 00 W				MRCC Aberdeen.
1098.5 Orlock Head. <i>2-0175</i>		RDF	54 40 25 N 5 34 58 W				MRSC Belfast.
1105 Rame Head. <i>2-0001</i>		RDF	50 18 59 N 4 13 06 W				MRSC Brixham.
1105.2 Rhiw. <i>2-0001</i>		RDF	52 49 59 N 4 37 41 W				MRSC Holyhead.
1106 Rodel. <i>2-0001</i>		RDF	57 44 54 N 6 57 24 W				MRSC Stornoway.
1108 St. Ann's Head. <i>2-0001</i>		RDF	51 40 58 N 5 10 31 W				MRSC Milford Haven.
1109 St. Mary's, Isles of <i>2-0001 Scilly.</i>		RDF	49 55 42 N 6 18 10 W				MRCC Falmouth.
1110 Sandwick. <i>2-0001</i>		RDF	58 12 39 N 6 21 16 W				MRSC Stornoway.
1115 Selsey. <i>2-0001</i>		RDF	50 43 49 N 0 48 12 W				MRSC Solent.
1116 Shoeburyness. <i>2-0001</i>		RDF	51 31 20 N 0 46 41 E				MRSC Thames.
1117 Skegness. <i>2-0001</i>		RDF	53 09 00 N 0 21 00 E				MRCC Yarmouth.
1120 Snaefell. <i>2-0001</i>		RDF	54 15 50 N 4 27 40 W				MRSC Liverpool.
1150 Tiree. <i>2-0001</i>		RDF	56 30 37 N 6 57 41 W				MRCC Clyde.
1155 Trevoze Head. <i>2-0001</i>		RDF	50 32 54 N 5 01 53 W				MRCC Falmouth.
1160 Trimmingham. <i>2-0001</i>		RDF	52 54 34 N 1 20 36 E				MRCC Yarmouth.
1165 Tynemouth. <i>2-0001</i>		RDF	50 01 05 N 1 24 54 W				MRSC Humber.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1170 Walney Island. <i>2-0001</i>		RDF	54 06 37 N 3 16 00 W				MRSC Liverpool.
1171 West Torr. <i>2-0175</i>		RDF	55 11 54 N 6 05 36 W				MRSC Belfast.
1172 Whitby. <i>2-0001</i>		RDF	54 29 24 N 0 36 15 W				MRSC Humber.
1175 Wideford Hill. <i>2-0001</i>		RDF	58 59 17 N 3 01 24 W				MRSC Shetland.
1180 Windyhead. <i>2-0001</i>		RDF	57 38 54 N 2 14 30 W				MRCC Aberdeen.

FRANCE

The VHF direction finding stations of France are for emergency use only. The following details of operation are common to all of these stations:

CROSS Stations:
A. Ch.11, 16 (67 when 11 is in use for distress traffic).
B. Ch.11, 16 (67).
C. Ch.11, 16 (67).
Signal and lookout stations:
A. Ch.16 and 7 additional frequencies (swept by scanner) from Ch.1-29, 36, 39, 48, 50, 52, 55, 56, 60-88.
B. Ch.11, 16.
C. Ch.11, 16.

1182 Gris-Nez. <i>2-0815</i>		RDF	50 52 12 N 1 35 00 E				Controlled by CROSS.
1182.1 Jobourg. <i>2-0815</i>		RDF	49 41 06 N 1 54 36 W				Controlled by CROSS.
1182.2 Roches-Douvres. <i>2-0815</i>		RDF	49 06 30 N 2 48 48 W				Controlled by CROSS-Jobourg.
1182.3 Dunkerque. <i>2-0815</i>		RDF	51 03 24 N 2 20 24 E				Controlled by signal station.
1182.35 Sangatte. <i>2-0815</i>		RDF	50 57 11 N 1 46 23 E				Controlled by signal station.
1182.4 Boulogne. <i>2-0815</i>		RDF	50 44 00 N 1 36 00 E				Controlled by Signal Station. Day service only.
1182.5 Ault. <i>2-0815</i>		RDF	50 06 30 N 1 27 30 E				Controlled by Signal Station. Day service only.
1182.6 Dieppe. <i>2-0815</i>		RDF	49 56 00 N 1 05 12 E				Controlled by signal station. Day service only.
1182.7 Fecamp. <i>2-0815</i>		RDF	49 46 06 N 0 22 12 E				Controlled by signal station.
1182.8 La Heve. <i>2-0815</i>		RDF	49 30 36 N 0 04 12 E				Controlled by signal station.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1182.9 Villerville. <i>2-0815</i>		RDF	49 23 12 N 0 06 30 E				Controlled by signal station. Day service only.
1183 Port-en-Bessin. <i>2-0815</i>		RDF	49 21 06 N 0 46 18 W				Controlled by signal station.
1183.05 Saint-Vaast. <i>2-0815</i>		RDF	49 34 30 N 1 16 30 W				Controlled by signal station. Day service only.
1183.1 Barfleur. <i>2-0815</i>		RDF	49 41 54 N 1 15 54 W				Controlled by signal station.
1183.15 Levy. <i>2-0815</i>		RDF	49 41 42 N 1 28 12 W				Controlled by signal station. Day service only.
1183.2 Homet. <i>2-0815</i>		RDF	49 39 30 N 1 37 54 W				Controlled by lookout station.
1183.25 La Hague. <i>2-0815</i>		RDF	49 43 36 N 1 56 18 W				Controlled by signal station. Day service only.
1183.3 Carteret. <i>2-0815</i>		RDF	49 22 24 N 1 48 18 W				Controlled by signal station. Day service only.
1183.35 Le Roc. <i>2-0815</i>		RDF	48 50 06 N 1 36 54 W				Controlled by signal station. Day service.
1183.4 Creac'h (Ile d'Ouessant). <i>2-0815</i>		RDF	48 27 36 N 5 07 48 W				Controlled by CROSS-Corsen.
1183.45 Grouin (Cancale). <i>2-0815</i>		RDF	48 42 36 N 1 50 36 W				Controlled by signal station. Day service only.
1183.5 Saint-Cast. <i>2-0815</i>		RDF	48 38 36 N 2 14 42 W				Controlled by signal station. Day service only.
1183.55 S. Quay Portrieux. <i>2-0815</i>		RDF	48 39 18 N 2 49 30 W				Controlled by signal station.
1183.6 Brehat. <i>2-0815</i>		RDF	48 51 18 N 3 00 06 W				Controlled by signal station. Day service only.
1183.65 Ploumanach. <i>2-0815</i>		RDF	48 49 30 N 3 28 12 W				Controlled by signal station.
1183.7 Batz. <i>2-0815</i>		RDF	48 44 48 N 4 00 36 W				Controlled by signal station. Day service only.
1183.75 Brignogan. <i>2-0815</i>		RDF	48 40 36 N 4 19 42 W				Controlled by signal station.
1183.8 Creac'h (Ile d'Ouessant). <i>2-0815</i>		RDF	48 27 36 N 5 07 42 W				Controlled by signal station. Day service only (24 hr. service provided by nearby CROSS station).

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1183.85 <i>2-0815</i>	Saint-Mathieu.	RDF	48 19 48 N 4 46 12 W				Controlled by lookout station.
1183.9 <i>2-0815</i>	Toulinguet (Camaret).	RDF	48 16 48 N 4 37 30 W				Controlled by signal station. Day service only.
1183.95 <i>2-0815</i>	Cap de la Chevre.	RDF	48 10 12 N 4 33 00 W				Controlled by signal station. Day service only.
1184 <i>2-0815</i>	Pointe du Raz.	RDF	48 02 18 N 4 43 48 W				Controlled by signal station.
1184.05 <i>2-0815</i>	Penmarc'h.	RDF	47 47 54 N 4 22 24 W				Controlled by signal station.
1184.1 <i>2-0815</i>	Beg-Meil.	RDF	47 51 18 N 3 58 24 W				Controlled by signal station. Day service only.
1184.15 <i>2-0815</i>	Etel.	RDF	47 39 48 N 3 12 00 W				Controlled by CROSS.
1184.2 <i>2-0815</i>	Beg Melen.	RDF	47 39 12 N 3 30 06 W				Controlled by signal station. Day service only.
1184.25 <i>2-0815</i>	Port-Louis.	RDF	47 42 36 N 3 21 48 W				Controlled by lookout station.
1184.3 <i>2-0815</i>	Saint-Julien.	RDF	47 29 42 N 3 07 30 W				Controlled by signal station. Day service only.
1184.35 <i>2-0815</i>	Taillefer.	RDF	47 21 48 N 3 09 00 W				Controlled by signal station. Day service only.
1184.4 <i>2-0815</i>	Le Talut.	RDF	47 17 42 N 3 13 00 W				Controlled by signal station. Day service only.
1184.45 <i>2-0815</i>	Piriac.	RDF	47 22 30 N 2 33 24 W				Controlled by signal station. Day service only.
1184.5 <i>2-0815</i>	Chemoulin.	RDF	47 14 06 N 2 17 48 W				Controlled by signal station.
1184.55 <i>2-0815</i>	Saint-Sauveur.	RDF	46 41 42 N 2 18 48 W				Controlled by signal station. Day service only.
1184.6 <i>2-0815</i>	Les Baleines.	RDF	46 14 36 N 1 33 42 W				Controlled by signal station. Day service only.
1184.65 <i>2-0815</i>	Chassiron.	RDF	46 02 48 N 1 24 30 W				Controlled by signal station. Day service only.
1184.7 <i>2-0815</i>	La Coubre.	RDF	45 41 54 N 1 13 24 W				Controlled by signal station.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1184.75 <i>2-0815</i>	Pointe de Grave.	RDF	45 34 18 N 1 03 54 W				Controlled by signal station. Day service only.
1184.8 <i>2-0815</i>	Cap Ferret.	RDF	44 37 30 N 1 15 00 W				Controlled by signal station. Day service only.
1184.82 <i>2-0815</i>	Messanges.	RDF	43 48 48 N 1 23 54 W				Controlled by signal station. Day service only.
1184.85 <i>2-0815</i>	Socoa.	RDF	43 23 18 N 1 41 06 W				Controlled by signal station.
1185.5 <i>2-1040</i>	La Garde.	RDF	43 06 18 N 5 59 30 E				Controlled by CROSS.
1185.6 <i>2-1040</i>	Cap Bear.	RDF	42 30 48 N 3 08 00 E				Controlled by signal station.
1185.7 <i>2-1040</i>	Cap Leucate.	RDF	42 55 06 N 3 03 42 E				Controlled by signal station. Day service only.
1185.8 <i>2-1040</i>	Sete.	RDF	43 23 48 N 3 41 30 E				Controlled by signal station.
1185.9 <i>2-1040</i>	L'Espiguette.	RDF	43 29 18 N 4 08 30 E				Controlled by signal station. Day service only.
1186 <i>2-1040</i>	Cap Couronne.	RDF	43 20 06 N 5 03 18 E				Controlled by signal station.
1186.1 <i>2-1040</i>	Pomegues.	RDF	43 16 00 N 5 17 42 E				Controlled by signal station. Day service only.
1186.2 <i>2-1040</i>	Bec de L'Aigle.	RDF	43 10 30 N 5 34 36 E				Controlled by signal station. Day service only.
1186.3 <i>2-1040</i>	Cap Cepet.	RDF	43 04 48 N 5 56 30 E				Controlled by lookout station.
1186.4 <i>2-1040</i>	Porquerolles.	RDF	43 00 00 N 6 13 42 E				Controlled by signal station. Day service only.
1186.5 <i>2-1040</i>	Cap Camarat.	RDF	43 12 06 N 6 40 30 E				Controlled by signal station. Day service only.
1186.6 <i>2-1040</i>	Cap du Dramont.	RDF	43 24 48 N 6 51 12 E				Controlled by signal station. Day service only.
1186.7 <i>2-1040</i>	La Garoupe.	RDF	43 34 00 N 7 08 12 E				Controlled by signal station. Day service only.
1186.8 <i>2-1040</i>	Cap Ferrat.	RDF	43 41 12 N 7 19 30 E				Controlled by signal station. Day service only.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position		(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
			Rx	Tx				
1186.9 <i>2-1040</i>	Cap Corse.	RDF	43 00 18 N 9 21 36 E					Controlled by signal station. Day service only.
1187 <i>2-1040</i>	Ile Rousse.	RDF	42 37 54 N 8 55 24 E					Controlled by signal station. Day service only.
1187.1 <i>2-1040</i>	La Parata.	RDF	41 54 06 N 8 36 48 E					Controlled by signal station. Day service only.
1187.2 <i>2-1040</i>	Pertusato.	RDF	41 22 24 N 9 10 42 E					Controlled by signal station.
1187.3 <i>2-1040</i>	La Chiappa.	RDF	41 35 36 N 9 21 54 E					Controlled by signal station. Day service only.
1187.4 <i>2-1040</i>	Alistro.	RDF	42 15 36 N 9 32 30 E					Controlled by signal station. Day service only.
1187.5 <i>2-1040</i>	Sagro.	RDF	42 47 48 N 9 29 24 E					Controlled by signal station. Day service only.
BULGARIA								
1187.6 <i>2-1279</i>	Maslen Nos Lt.	RDF	42 18 30 N 27 47 42 E		297.5 kHz, A2A.	10	On request to Hydrographic Service, Varna.	Transmits MN .
1187.61 <i>2-1282</i>	Nos Galata Lt.	RDF	43 10 17 N 27 56 49 E		297.5 kHz, A2A.	5	On request to Hydrographic Service, Varna.	Transmits DG .
PAKISTAN								
1188 <i>2-2147</i>	Karachi (ASK).	RDF	24 52 44 N 67 09 50 E	24 51 05 N 67 02 32 E	A. 410, 500 kHz, A1A. B. 410, 500 kHz, A1A. C. 410, 500 kHz, A1A, A2A, 1.5 kW.			CALIBRATED SECTOR: 360°.
INDIA								
1188.1 <i>2-2200</i>	Calcutta (VWC).	RDF	22 28 56 N 88 21 26 E	22 38 37 N 88 23 07 E	A. 500 kHz, A1A, A2A. B. 500, 410 kHz, A1A. C. 500 kHz, A1A, 1.5 kW.			

RADIO DIRECTION FINDER AND RADAR STATIONS

PART II RADAR STATIONS

110A. Coast and Port Radar Station List

Details concerning shore-based radar stations rendering navigational assistance to ships on request are given in the listings which follow. These stations are indicated on charts by the abridged description: Ra.

These stations provide information of interest to the mariner. They have a limited range of transmission and usually broadcast traffic, navigational, weather and other information concerning only their port limits and approaches. The provision of such information does not

relieve the Master of his responsibility for the safe navigation of his ship.

Mariners are warned that port radar stations may suspend operation without notice for varying periods because of minor defects, maintenance work, etc.

Many of these stations provide radar information in conjunction with Vessel Traffic Service (VTS) operations. In many ports participation in VTS may be compulsory for certain classes of vessels. For further information on VTS in specific ports, refer to National Ocean Service Coast Pilots (NOSPBCP1 - 9), NIMA Sailing Directions (SDPUB121 - 200), and other applicable guides.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
RUSSIA							
1190	Sankt-Peterburg.	RA		Ch.12.		Call Sankt-Peterburg Radio-12.	Vessels can obtain assistance between sea buoy and heads of Severnaya and Yuzhnaya Dambas.
1192	Novorossiysk.	RA		Ch.09,95.		Call Novorossiysk 17.	Continuous radar guidance is compulsory for vessels over 200 GRT. Covers area N of 44-37.7N, between 37-48.0E 37-52.9E.
1194	Nakhodka.	RA		Ch.12,16.		Call Traffic Control Center (Kamenskiy 17).	Mandatory radar control of vessels N of line joining 42-44.0N 132-51.6E and 42-42.9N 132-59.9E.
1196	Murmansk.	RA		Ch.12,18,67.		Call Coast Radar Station (Murmansk Radio 9).	When visibility is less than 0.5M, navigation will only be conducted under radar control. Covers area S of 60-02.7N and should be requested 2 hrs. in advance.
LATVIA							
1198	Ventspils.	RA		Ch.14,16.		Call Radio 9.	Compulsory when visibility is less than 2M or vessel is over 150m in length or 12000 DWT.
LITHUANIA							
1199	Klaipeda.	RA		Ch.09.		Call Radio 17.	Compulsory when visibility is less than 0.5M or for ferries, tankers, vessels with dangerous cargos and vessels constrained by their draft.
POLAND							
1200	Leba.	RA		Ch.12,16.		Call Leba Port Radar.	Covers area of port and roads.
1201	Darlowo.	RA		Ch.12,16; or Witowo Radio (SPS) 2182kHz.		Call Darlowo Port Radar Station.	
1202	Kolobrzeg.	RA		Ch.12,16.		Call Kolobrzeg Port Radar Station.	Covers area of port and roads.
SWEDEN							
1203	Goteborg.	RA		Ch.09,13,16.		Call Goteborg Trafik.	Available on request for large tankers and other vessels with defective radar in poor visibility. Covers the area seaward of Alvsborgsbron (57-41.5N 11-54.2E).
NORWAY							
1204	Fedje.	RA		Ch.16,80.			Compulsory for all vessels over 200 GRT or 24m. in length (including tows) or carrying dangerous cargos. Permission to navigate within the VTS area should be obtained at least 1 hr. before entering the area. Covers the approaches of the Sture and Mongstad oil terminals.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
GERMANY							
1205 Die Elbe.		RA		Cuxhaven Control: Elbe Approach West Ch.65. Elbe Approach East Ch.19. Scharhorn Ch.18. Neuwerk Ch.05. Cuxhaven Ch.21. Belum Ch.03. Brunsbuttel Control: Brunsbuttel I Ch.04. II Ch.67. S. Margarethen Ch.18. Freiburg Ch.22 Rhinplatte Ch.05 Pagensand Ch.66 Hetlingen Ch.21 Wedel Ch.60.		Call Cuxhaven Elbe Traffic on Ch.71,16; Brunsbuttel Elbe Traffic on Ch.68,16; or the appropriate Control Area.	Radar information provided on request. Vessels exempt from compulsory pilotage should use this service when visibility is less than 2000m (on the Lower Elbe, W of Seemannshoft, less than 3000m).
1210 Hamburg.		RA		Light buoy No.123 to 129 Ch.19. Light buoy No.129 to Seemannshoft Ch.03. Seemannshoft to Vorhafen Ch.63. Parkhafen to Kuhwerder Vorhafen Ch.07. Kuhwerder Vorhafen to Norderelbbrücke Ch.05. Kohlbrand to Harburger harbors Ch.80.		Call Cuxhaven Elbe Traffic on Ch.71; Brunsbuttel Elbe Traffic on Ch.68; or Hamburg Radar.	Radar service provided on request. Vessels exempt from compulsory pilotage should use this service when visibility is less than 2000m (W of Seemannshoft, less than 3000m).
1215 Die Weser.		RA		Alte Weser Ch.22. Hohe Weg I,II Ch.02. Robbenplate I,II Ch.04. Blexen Ch.07. Luneplate I Ch.05. II Ch.82. Dedesdorf Ch.82. Sandstedt Ch.21. Harriersand I Ch.21. II Ch.19. Elsflether Ch.19. Ronnebeck, Ritzenbutteler, Schönebecker Ch.78. Ochtumer, Seehausen, Lankensau Ch.81. All stations Ch.16.		Call Bremerhaven Weser Radar or Bremen Weser Radar on Ch.16.	Radar information is provided on request or if instructed by the VTS Center (in German and English). Radar service is provided when visibility is less than 3000m (Bremerhaven Weser) or 2000m (Bremen Weser); when pilot vessel is in a sheltered position; when light buoys are withdrawn due to ice; when required by traffic situation or when requested by a vessel. VTS compulsory for all vessels over 50m in length and all vessels carrying dangerous cargo.
1216 Die Jade.		RA		Jade I,II: Light buoy 1b/Jade 1 to 33 Ch.63. Light buoy 33 to 60 Ch.20.		Call Jade Radar Ch.16.	Radar information provided when visibility is less than 3000m; when pilot vessel is in a sheltered position; when light buoys are withdrawn due to ice; when required by traffic situation or when requested by a vessel. VTS compulsory for vessels (including tows) over 50m in length and all vessels carrying dangerous cargo.
1217 Die Ems.		RA		Borkum: Light buoy No.1 to 35 Ch.18. Knock: Light buoy No.35 to 57 Ch.20. Wybelsum: Light buoy No.57 to Emden harbor entrance Ch.21.		Call Ems Traffic.	Radar information is provided on request or if instructed by the VTS Center (in German and English). Radar service is provided when visibility is less than 2000m; when pilot vessel is in a sheltered position; when light buoys are withdrawn due to ice; when required by traffic situation or when requested by a vessel. VTS compulsory for all vessels over 40m in length and all vessels carrying dangerous cargo.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
NETHERLANDS							
1218 Eemshaven.		RA		Ch.19.		Available on request of the pilot 1 hr. in advance to Verkeersdienst Eemsmoonding on Ch.14 or Delfzijl Pilot Vessel on Ch.06,16. Call Eemshaven Radar.	Covers Lt buoy 31 or 35 to Eemshaven.
1218.5 Delfzijl.		RA		Ch.66.		Requests should be made by the master of any sea going or inland vessel through the VHF Channel appropriate for the port. Call Delfzijl Radar.	When visibility falls below 2000m within the jurisdiction of the Delfzijl VTS area. Under special circumstances assistance can be given when visibility is good, for example if navigational aids are not working correctly.
1219 Den Helder.		RA		Ch.12.		Call Yerkeerscentrale, Den Helder.	Vessels equipped with VHF are requested to participate. Vessels should make notification when navigating in area or passing Moormanbrug.
1220 Ijmuiden.		RA		West of Ijmuiden light buoy Ch.12. Ijmuiden light buoy to North Sea Locks Ch.09.		Call Traffic Center Ijmuiden west of Ijmuiden light buoy; call Ijmuiden Port Control from Ijmuiden light buoy to North Sea Locks.	Radar information provided to vessels within 13M of Ijmuiden light buoy (52-28.7N 04-23.9E) which do not have a pilot aboard.
1225 Scheveningen.		RA		Ch.21.	9.5	Call Radar Scheveningen.	In reduced visibility vessels may request information on their position and traffic.
1226 Dordrecht.		RA		Ch.19.		Call Post Dordrecht.	
Nieuwe (Rotterdamsche) Waterweg is covered by the following five Radar Stations. The Traffic Management and Information Service is compulsory for all vessels navigating in the area. Inbound vessels with draft 20.7m and over should make notification to HCC Rotterdam through Scheveningen (PCH) 24 hrs. in advance. Vessels with draft 17.4m and over navigating Nieuwe Waterweg should make notification to Traffic Center Hook through Scheveningen 6 hrs. in advance; vessels 250m and over 4 hrs. in advance. Inbound vessels with dangerous cargo should report to Central Traffic Control (HCC) 24 hrs. in advance (1 hr. in advance of unberthing). All other vessels should make notification to Hoek van Holland 3 hrs. in advance of arrival and notify their area Radar Station 1 hr. in advance of unberthing.							
1230 Hoek van Holland (VCH).		RA		Ch.01,02,03,13,65, 66; 2182kHz.		Call Traffic Center Hoek van Holland.	Covers Maas Traffic Separation Schemes, Europort and Nieuwe Waterweg to Kilometer Post 1023.
1231 Botlek (VCB).		RA		Ch.13,61,80.		Call Traffic Center Botlek.	Covers Nieuwe Waterweg to Kilometer Post 1011 Nieuwe Maas, 1005 Oude Maas.
1232 Hartel (VPH).		RA		Ch.62.		Call Traffic Center Hartel.	Covers Oude Maas to Buoy O12 and Hartelkanal.
1233 Stad (VCS).		RA		Ch.13,60,63.		Call Traffic Center Stad.	Covers Nieuwe Maas to Kilometer Post 998.
1234 Maasboulevard (VPM).		RA		Ch.21,81.		Call Traffic Center Maasboulevard.	Covers Nieuwe Maas to Kilometer Post 993.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
UNITED KINGDOM							
1237	Lerwick.	RA		Ch.12.		Call Lerwick Harbour Radio.	Vessels should report at N and S Entrances. Covers N Entrance, S Entrance and Inner Harbour.
1240	Sullom Voe Harbour.	RA		Ch.14,16.		Call Sullom Voe Harbour Radio.	Vessels arriving should make notification 24 hrs. in advance. Covers Yell Sound and Sullom Voe. VHF reception is poor W and N of Yell Sound.
1245	Tees.	RA		Ch.14,22.	10	Call Tees Harbour Radio.	All vessels navigating when "Channel Closed" signals are displayed or when visibility is less than 1000m must obtain prior permission from Harbour Master; all vessels with dangerous cargo must make 24 hr. advance notification; all vessels over 20m must make 6 hrs. advance notification. Covers Tees Bay, Tees River to tidal limits and Hartlepool.
1250	Medway.	RA		Ch.22.		Call Medway Radio.	All inbound vessels should contact Medway Navigation Service 24 hrs. in advance; outbound vessels should make 1 hr. advance notification.
1254	Gravesend Radio.	RA		Thames seaward approaches to Sea Reach No.4 light buoy Ch.13. Sea Reach No.4 light buoy to Crayford Ness Ch.12. Secondary Ch.09,16, 18,20.		Call Port Control London or Gravesend Radio.	Inbound and outbound vessels should make notification 24 hrs. in advance. Covers Thames R. from Erith to seaward limits of the Port of London.
1255	Woolwich Radio.	RA		Ch.14,16,22.			Inbound and outbound vessels should make notification 24 hrs. in advance. Covers Thames R. from Crayford Ness to Greenwich.
1262	Harwich.	RA		Ch.14,20.			Inbound and outbound vessels should make notification 24 hrs. in advance.
1265	Southampton Vessel Traffic Services Centre.	RA		Ch.16(calling). Ch.18,20,22 (working).		Call Southampton VTS.	Compulsory for vessels 20m or over. Inbound vessels should contact VTS on Ch.12 when approaching the Nab or the Needles. Covers the Solent and Southampton waters.
1270	Liverpool.	RA		Ch.18,22. Ch.19(tankers to or from Tranmere).		Call Mersey Radio.	Vessels over 50 GRT carrying dangerous cargo should make notification 48 hrs. in advance of arrival/departure. All other vessels over 50 GRT should make notification 24 hrs. in advance of arrival and 4 hrs. in advance of departure. Covers River Mersey including Liverpool, Birkenhead, Eastham and Garston.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
FRANCE							
1273 Dunkerque.		RA		Dunkerque Pilots: Ch.16 (calling). Ch.72 (working). Dunkerque Port: Ch.73.		Call Dunkerque Pilots or Dunkerque Port.	Radar coverage of the pilot embarkation zone at the entrance to the Passe de l'Ouest is provided by the Pilot Station (50-59.2N 01-58.0E). Radar coverage of the access channels is provided by the port.
1274 Gris-Nez (CROSS).		RA		Ch.13,79.		Call Gris-Nez Traffic.	Radar assistance provided on request. Two radar stations at Gris-Nez (50-52.2N 01-35.1E) and Saint-Frieux (50-36.6N 01-36.6E) provide coverage extending approximately SW up to 00-30E and NE up to 30 miles from Gris-Nez.
1275 Le Havre.		RA		Ch.12.		Call Havre Port.	Radar assistance provided on request in poor visibility for Le Havre or Antifer. The area of radar coverage is a circular zone 12.5 miles radius centered on 49-39.0N 00-08.0W (approx.). Inbound vessels should make notification 48 hrs. in advance. Outbound vessels should make notification 24 hrs. in advance.
1280 La Seine.		RA		Ch.13,73.		Call Honfleur Radar.	Radar assistance provided in poor visibility and on request. The area of radar coverage extends to 20 miles W of Radar Honfleur (49-25.7N 00-14.1E) up to 00-36.2E.
1285 Rouen.		RA		Ch.13,73.		Call Radar Honfleur.	Radar assistance provided in poor visibility and on request. Coverage area extends to 20 miles W of Radar Honfleur (49-25.7N 00-14.1E) up to 00-36.2E.
1287 Corsen (CROSS).		RA		Ch.13,79.		Call Ouessant Traffic.	Coverage area is a circular zone up to 35 miles from Le Stiff Radar Tower (48-28.6N 05-03.1W).
1288 La Loire.		RA		Ch.12.		Call Saint-Nazaire Port.	Radar assistance provided on request. Coverage area from the pilot boarding point (47-07.5N 02-21.5W) to Saint-Nazaire Roads.
1290 La Gironde.		RA		Ch.16 (calling). Ch.12,14 (working).		Call Radar Verdon 3 hrs. in advance of ETA on Ch. 12.	Covers La Gironde and approaches (a circular zone 34 miles radius centered on (45-39.8N 01-07.2W). Radar information is supplied on Ch. 12 or 14 for the area between BXA lightbuoy and Le Verdon's roads. Notification of arrival should be made 48 hrs. in advance to Bordeaux Traffic through agent, 24 hrs. and 12 hrs. in advance direct to Bordeaux Traffic.
PORTUGAL							
1295 Aveiro.		RA		Ch.14,16.		Call Pilotosaveiro.	In bad weather pilot vessel assists vessel's approach to harbor entrance. Arrival notification should be made 6 hrs. in advance.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
SPAIN							
1300	Strait of Gibraltar.	RA		Ch.10,16.	19	Call Tarifa Traffic.	Tarifa Vessel Traffic Service is compulsory for VHF-equipped vessels which are Spanish flag, intend to enter Spanish territorial seas, have dangerous cargo or limitations to maneuverability or navigation. Vessels should call when within 21M of Tarifa (36-01.1N 05-34.8W) or on leaving a port within that area.
UKRAINE							
1305	Odessa.	RA		Ch.14,16.		Call Odessa Port Control.	
1310	Yuzhnyy.	RA		Ch.16,74.		Call Yuzhnyy Radio 5.	
1315	Mariupol (Zhdanov).	RA		Ch.14,16.		Call Zhdanov Radio 1.	Provides radar assistance in restricted visibility and in the absence of navigational aids. Covers from approach channel buoys 15 and 16 to berths in Port Zhdanov.
MOROCCO							
1320	Casablanca.	RA		Ch.12.		Call CNP2.	Vessels should send notification of arrival to the Port Captain through Casablanca (CNP) 24 hrs. in advance.
THAILAND							
1480	Laem Chabang.	RA		500kHz,A1A,A2A;2182 kHz,A3E,H3E;Ch.13, 14,16.			Pilotage is compulsory. ETA should be sent 24 hrs. in advance. Radar-equipped VTS station is located at Laem Krabang Hill.
REPUBLIC OF KOREA							
1520	Busan.	RA		Ch.12,14,16,20,22.		Call Busan Port Control.	Radar assistance is available during limited visibility.
JAPAN							
1530	Osaka.	RA		2182,2130,2150, 2394.5kHz,H3E,J3E; Ch.14,16,22.	8	Call Osaka Harbor Radar.	Information on position, traffic and weather provided for area within 4M of Osaka Central Pier (within 8M for vessels over 1000 GRT).
1540	Kanmon Kaikyo.	RA		1651kHz,H3E;Ch.13, 14,16,22.		Call Kanmon MARTIS.	All vessels should report on entering the Radar Service Area. Covers Kanmon Kaikyo, including W and E approaches and area N and E of Mutsure Shima.
1550	Bisan Seto.	RA		1651kHz,H3E;Ch.13, 14,16,22.		Call Bisan MARTIS.	All vessels should report on entering the Radar Service Area. Covers all traffic routes between 133-37.5E and 133-55E except Bisan Seto N traffic route W of Takami Shima.
1555	Nagoya.	RA		1665kHz,H3E;Ch.14, 16,22.	11	Call Nagoya Harbor Radar.	All vessels should report on entering the Radar Service Area. Covers Nagoya port, including its approaches.

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1560	Tokyo Wan.	RA		1665kHz,H3E;Ch.13, 14,16,22.		Call Tokyo MARTIS.	All vessels over 100 GRT or carrying more than 30 people should report when entering the Radar Service Area. Covers Tokyo Wan N of 35-10N.
1570	Kushiro.	RA		2182,2150,2245, 2394.5,2785.9kHz, H3E,J3E;Ch.14,16, 22.	10	Call Kushiro Harbor-Radar.	Radar assistance provided within 2M of 42-58.0N 144-22.6E (within 10M for vessels over 1000 GRT).
NEW ZEALAND							
1625	Auckland.	RA		2182,2012kHz,H3E, J3E; Ch.12,16.	45		Provides vessel's range and bearing from Signal Station (36-51S 174-49E) in restricted visibility. Vessels over 100 NRT should make notification 24 hrs. in advance of arrival.
1630	Otago Harbour.	RA		2182,2012,2045,2129, 2162,4125,4417, 6215,6224kHz,H3E, J3E;Ch.12,14,16.	20	Call ZMH32 (Taiaroa Head).	Provides range and bearing from Taiaroa Head Signal Station (0.1M S of lighthouse) in restricted visibility. Vessels over 100 NRT should make notification 72 hrs. in advance of arrival, through Wellington (ZLW) or Awarua (ZLB).
1635	Wanganui.	RA		2012,2045,2162,2182, 4125,4417,6215, 6224kHz,H3E,J3E; Ch.09,12,14,16,67, 69.	20	Call Wanganui Harbour Radio (ZMH211).	Provides range and bearing from Pilot Station (39-56.9S 174-59.5E).
1640	Westport.	RA		2012,2045,2162,2182, 4125,4417kHz,H3E, J3E;Ch.12,16.	15		Provides range and bearing from Signal Station (41-44.9S 171-35.7E) in restricted visibility. Vessels should make notification 12 hrs. in advance of arrival.
AUSTRALIA							
1665	Port Hedland.	RA		Ch.06,08,09,12,13, 16,67.	64		Provides range and bearing from Control Tower (20-19.0S 118-34.5E). All foreign vessels and Australian vessels over 6500 GRT should make notification 48 hrs. in advance of arrival.
1675	Port Dampier.	RA		Ch.11,13,16,68,78, 79. Ch.67(emergency).		Call Dampier Port Control.	Provides range and bearing from Port Control (20-37.2S 116-45.0E). All vessels over 150 GRT should make notification of arrival 72 hrs. in advance (7 days for vessels arriving from overseas).

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
UNITED STATES							
United States VTS Vessel Movement Reporting System (VMRS) rules, VTS frequency monitoring requirements and General VTS operating rules are mandatory for power-driven vessels 40 meters or more in length, vessels certificated to carry 50 or more passengers for hire, and towing vessels 8 meters or more in length engaged in towing. VTS frequency monitoring requirements and General VTS operating rules are mandatory for vessels covered by the Vessel Bridge-to-Bridge Radiotele- phone Act.							
1720 New York, NY.		RA		Ch.11,12,13,14,16.		Call New York Traffic.	Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers the Upper New York Bay E to the Brooklyn Bridge in the East River and N to 40-43.7N and 74-01.6W in the Hudson River, and includes the Kill Van Kull S to the AK Railroad Bridge, Newark Bay N to the Lehigh Valley Draw Bridge, and portions of the Lower New York Bay S to the entrance buoys at Ambrose, Sandy Hook, and Swash Channels.
1730 Berwick Bay, LA.		RA		Ch.11,13,16.			Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers various Intracoastal Waterway Routes converging at Berwick and Morgan City.
1735 LOOP Deepwater Port (Louisiana Offshore Oil Port).		RA		Ch.10,16,74.		Call LOOP Radar.	Compulsory for all vessels; tankers must report to COTP and Vessel Traffic Supervisor 24 hrs. before arrival. Covers vicinity of port (28-53.2N 90-01.5W), anchorage and safety fairway to SE and S.
NOTE: LOOP Deepwater Port is not a VTS.							
1740 Houston-Galveston , TX.		RA		Ch.11,12,13,16.		Call Houston Traffic.	Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers the Galveston Bay Channels and Houston Ship Channel to the Houston Turning Basin.
1750 San Francisco, CA.		RA		Ch.12,13,14,16.		Call San Francisco Traffic.	Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers the waters of San Francisco Bay and its approaches S of 38N, E of 123-07W and N of 37-27N, and its tributaries as far as Stockton and Sacramento.
1760 Puget Sound, WA.		RA		Ch.05A,13,14,16.		Call Seattle Traffic.	Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers the Strait of Juan de Fuca E of 124-40W, Rosario Strait, the San Juan Islands, Admiralty Inlet, and Puget Sound.
NOTE: Puget Sound Vessel Traffic Service is one sector of a Cooperative Vessel Traffic Management System (CVTMS), which is a joint U.S. and Canadian vessel traffic management effort. Canada administers the two remaining sectors of CVTMS.							

RADIO DIRECTION FINDER AND RADAR STATIONS

(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
1770	Prince William Sound, AK.	RA		Ch.13,16.		Call Valdez Traffic.	Vessels should make notification 15 mins. before navigating within the VTS area and upon entering or getting underway within the VTS area. Covers Prince William Sound North of Cape Hinchinbrook, including Valdez Arm, Valdez Narrows and Port Valdez.
COLOMBIA							
1850	Puerto Covenas, Floating Storage Unit.	RA		Ch.10,13,16.		Call FSU Covenas.	Compulsory for all vessels. Vessels should contact FSU 30M from terminal.
CHILE							
1895	Valparaiso.	RA		2182,2738kHz,H3E, J3E; 4143.6kHz,J3E; Ch.09,14,16.		Call CBV 20 (Port Captain).	Radar assistance provided on request in fog.
1900	Primera Angostura.	RA		Ch.11,13,16,68.		Eastbound vessels requiring radar assistance should call Magallanes Zonal Radio (CBM), Ch.16, when abeam Punta Arenas, or call CBM5 (Punta Delgada), Ch.68,11,13, when 20M from Punta Baxa. Westbound vessels should call Magallanes 24 hrs. before arrival at 52-35.0S 68-10.5W, or call CBM71 (Punta Dungeness), Ch.16, or CBM72 (Cabo Espiritu Santo), Ch.16, when 20M from that point.	Covers area between Banco Triton and E approaches to the Strait of Magellan.

CHAPTER 3

RADIO NAVIGATIONAL WARNINGS

300A. General

Radio navigational warning broadcasts are designed to provide the mariner with up-to-date marine information vital to safe navigation. These warnings are described as follows:

- Worldwide - Important worldwide marine information.
- Long Range - Important worldwide information issued by geographic area.
- Coastal and Local - Short-range marine information, including items of interest to small craft.

300B. Coastal and Local Warnings

These broadcasts are generally restricted to ports, harbors, and coastal waters, and involve items of local interest. Usually, local or short-range warnings are broadcast from a single coastal station, frequently by voice as well as radiotelegraph, to assist small craft operators in the area. The information is often quite detailed. Foreign area broadcasts are frequently in English as well as the native language. In the United States, short-range radio navigational warnings are broadcast by the U.S. Coast Guard Districts via NAVTEX and subordinate coastal radio stations.

300C. Long Range Warnings

These warnings are intended primarily to assist mariners on the high seas by promulgating navigational safety information concerning port and harbor approaches, coastlines, and major ocean areas. Long-range radio navigational warnings are usually broadcast by means of radiotelegraphy, and in many instances by radio-teletypewriter.

The NAVAREA system of 16 navigational warning areas has been developed by a joint committee of the International Hydrographic Organization and the International Maritime Organization. The NAVAREA system provides worldwide coverage in English using standard format and procedures.

Each NAVAREA is under the jurisdiction of an Area Coordinator. The Area Coordinator assimilates information from the coastal countries within the NAVAREA. Accountability is maintained through annual serialization and notification of cancellation. National Coordinators are charged with collecting warning information from sources within their national boundaries. National Coordinators often broadcast local or coastal warnings.

The United States participates as Area Coordinator for both NAVAREA IV and NAVAREA XII. NAVAREA IV includes the Western North Atlantic. NAVAREA XII includes the Eastern North Pacific.

The National Imagery and Mapping Agency (NIMA) acts as the NAVAREA IV and XII Coordinator and the United States Coast Guard (USCG) acts as the U.S. National Coordinator.

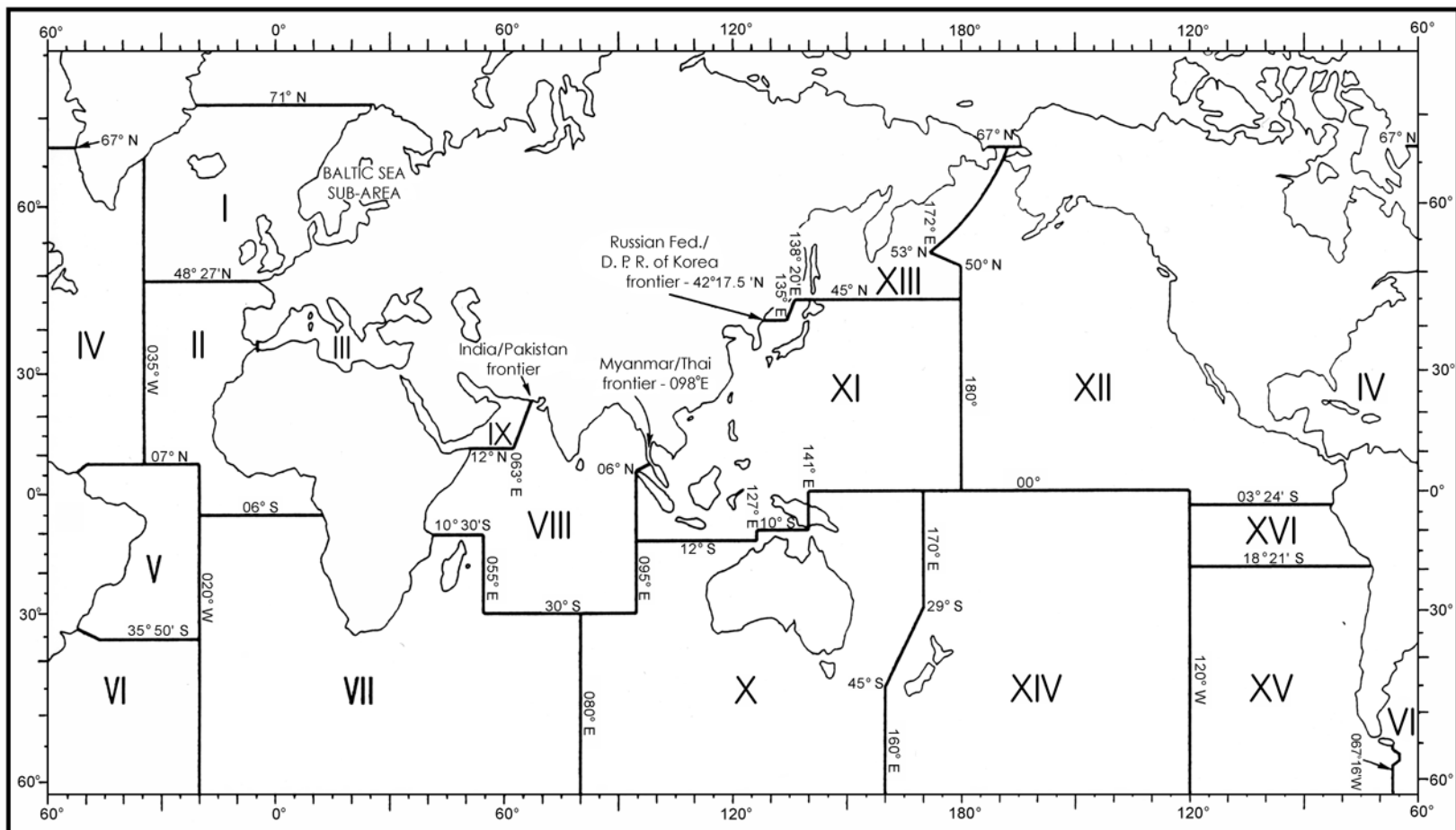
300D. Worldwide Warnings

The United States also maintains worldwide coverage using the HYDROLANT/HYDROPAC Navigational Warning System outside of NAVAREAs IV and XII. HYDROLANTs cover the eastern North Atlantic, South Atlantic, North Sea, Baltic Sea, English Channel, Mediterranean Sea, and contiguous areas. HYDROPACs include the western North Pacific, South Pacific, South China Sea, Indian Ocean, Red Sea, Persian Gulf, and contiguous areas. The combination of HYDROLANTs, HYDROPACs, NAVAREA IVs and NAVAREA XIIs provides worldwide notification of the more important marine incidents and navigational changes.

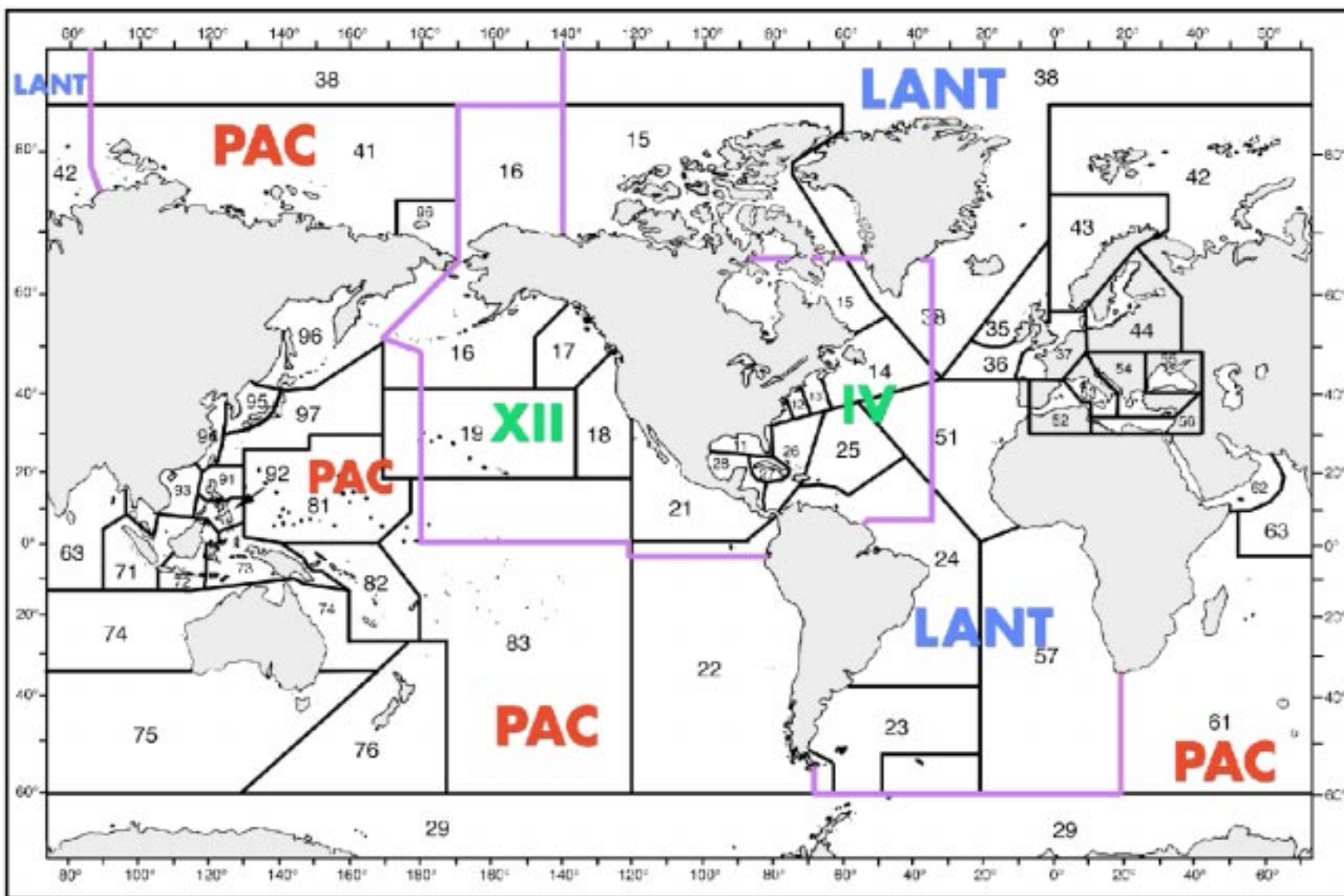
300E. Worldwide Warnings Message Content

NAVAREA IV, NAVAREA XII, HYDROLANT, and HYDROPAC Warnings normally include:

- Casualties to major and outermost aids to navigation such as primary lights, lightships, large navigational buoys (LNBs), approach or sea buoys, etc. Mariners should monitor local broadcasts for information concerning inshore, harbor and inland waterways, and aids which otherwise may not affect offshore navigation.
- Establishment of new aids that could affect the safety of offshore navigation. Alterations of an established aid where the change might be confusing are also broadcast.
- Floating dangers, such as those drifting in or near sea-lanes and large derelicts adrift on the high seas. Following the end of the ice season, all reports of ice below 52°N which endanger the North Atlantic shipping lanes are also broadcast. Trees, timbers, and drifting buoys do not normally constitute a danger for oceangoing ships and are not broadcast on the long-range systems. They may be promulgated in local broadcasts.
- New or amended shoal depths, or other changes in hydrography.
- Dangerous wrecks, obstructions, etc.
- Selected exercises and hazardous operations conducted by units of the armed forces are normally broadcast. Specifically, these include the use of flares, searchlights or pyrotechnics that may be mistaken for distress signals, night firing exercises, darken-ship exercises, submarine exercises, missile launches, space missions, and nuclear tests. Such warnings are purely cautionary and are not intended to obstruct the right of innocent passage upon the high seas.



THE DELIMINATION OF SUCH AREAS IS NOT RELATED AND SHALL NOT PREJUDICE THE DELIMITATIONS OF ANY BOUNDARIES BETWEEN STATES
WORLDWIDE NAVIGATIONAL WARNING SERVICE (WWNWS) NAVAREAS



U.S. RADIO NAVIGATIONAL WARNING SYSTEMS

RADIO NAVIGATIONAL WARNINGS

- Information regarding drifting mines and unexploded ordnance at depths of less than 100 fathoms is broadcast when there is a clear danger to shipping.
- Vessels engaged in seismic operations, which often detonate explosives and tow extremely long cables.
- Malfunctions, scheduled off-air time for maintenance, and other information concerning electronic aids to navigation, including marine radiobeacon, LORAN-C, GPS, DGPS service, and satellite navigation systems.
- Establishment of offshore structures in or near shipping lanes.
- The presence of large unwieldy tows in congested waters.
- Notification of special changes or events such as alteration or suspension of mandatory traffic separation schemes or activation of a new buoyage system.

In accordance with IMO guidelines (COMSAR/Circ.3, dated 19 April 1996), NIMA no longer promulgates messages for distress, search and rescue, man overboard, overdue vessels, EPIRBs, etc., in NAVAREA IV and XII. Rescue Coordination Centers (RCCs) are responsible for promulgating messages concerning distress and search and rescue as SafteyNET broadcasts via Inmarsat-C. Distress messages outside the limits of NAVAREA IV and XII will continue to be promulgated as HYDROLANT and HYDROPAC Warnings.

300F. Warning Message Format

Each of the four different types of Radio Navigational Warnings issued by NIMA uses the same format. The first word of the heading identifies what series is involved: NAVAREA IV, NAVAREA XII, HYDROLANT, or HYDROPAC. Following the series title is the annual serial number, used for identification and record keeping purposes. Following the serial number and year, and enclosed by parentheses, are two more digits: the geographic subregion locator. This is the same as the subregion system used for numbering charts. The limits of the subregions appear on the inside back cover of each Notice to Mariners. Last, a brief geographic description is included.

The second line contains a chart number if the message concerns an aid to navigation. This chart is selected to identify the aid. It is not necessarily the largest-scale chart of the area, but is usually the best for determining how the warning will affect the mariner. It is usually the chart the mariner would select for navigation when approaching the aid.

Times are always expressed in Universal Time Coordinated (UTC).

Navigation safety messages are canceled when no longer applicable. Messages are always canceled by specific notification. A message pertaining to an exercise or event of known duration includes its own cancellation, usually one hour after conclusion of the event. Warnings which are sufficiently permanent in nature to warrant promulgation in the Notice to Mariners are canceled no sooner than six weeks after publication of that printed Notice.

Section III of the Notice to Mariners includes a listing of the serial numbers for all Radio Navigational Warnings in force. Each week, NIMA promulgates a general Radio Navigation Warning message for each series which lists the serial number of each message issued during the last six weeks and in force at the time the message is compiled.

300G. SPECIAL WARNINGS and Broadcast Stations

SPECIAL WARNINGS are limited series broadcasts by U.S. Navy and Coast Guard radio stations primarily for the dissemination of official government proclamations affecting shipping.

The texts of all SPECIAL WARNINGS in force are published in Notice to Mariners No. 1 each year. SPECIAL WARNINGS may be broadcast throughout the year. NIMA promulgates SPECIAL WARNINGS 24 hours, 48 hours and for the next five Fridays after their initial release. Their text appears in the next published Notice to Mariners following their broadcast. Each Notice to Mariners lists all in-force SPECIAL WARNINGS.

Masters are urged to provide themselves with an accurate list of all radio navigational warning messages and SPECIAL WARNINGS prior to sailing.

Radio Navigational Warnings issued by NIMA are broadcast by the following stations:

- HYDROLANT Warnings are transmitted from Boston, MA (NMF).
- NAVAREA IV Warnings are transmitted from Boston, MA (NMF).
- HYDROPAC and NAVAREA XII warnings are transmitted from Port Reyes, CA (NMC), Honolulu, HI (NMO); Guam (NRV).

300H. NAVTEX

NAVTEX is an international automated direct printing service for the promulgation of navigational and meteorological warnings and urgent information to ships. It provides a low cost, simple means for the automatic reception of Marine Safety Information (MSI) by narrow band direct-printing telegraphy. NAVTEX is a component of the WorldWide Navigational Warning Service (WWNWS) and is an essential element of the Global Maritime Distress and Safety System (GMDSS). Vessels regulated by the Safety of Life at Sea (SOLAS) Convention, as amended in 1988 (cargo vessels over 300 tons and passenger vessels, on international voyages), and operating in areas where NAVTEX service is available, have been required to carry NAVTEX receivers since 1 August 1993. The USCG discontinued broadcasts of safety information over MF Morse frequencies on that date. The USCG voice broadcasts (Ch. 22A), often of more inshore and harbor information, will remain unaffected by NAVTEX.

A NAVTEX user's placard, which is intended to be laminated and either hung or posted near the NAVTEX receiver, can be found on pgs. 3-9 and 3-10.

RADIO NAVIGATIONAL WARNINGS

NAVTEX FEATURES: NAVTEX messages are broadcast on a single frequency, 518 kHz, using the English language. Nominated stations within each NAVAREA transmit on a time-sharing basis to eliminate mutual interference. All necessary information is contained in each transmission. The power of each transmitter is regulated in order to avoid the possibility of interference between transmitters.

A dedicated NAVTEX receiver has the ability to select messages to be printed according to:

- a technical code (B₁B₂B₃B₄) which appears in the preamble of each message; and
- whether or not the particular message has already been printed.

By International agreement, certain essential classes of safety information such as navigational and meteorological warnings and search and rescue information are non-rejectable to ensure that ships using NAVTEX always receive the most vital information.

NAVTEX coordinators exercise control of messages transmitted by each station according to the information contained in each message and the geographical coverage required. Therefore, the mariner may choose to accept messages, as appropriate, either from the single transmitter which serves the sea area around his position or from a number of transmitters.

MESSAGE PRIORITIES: Three message priorities are used to dictate the timing of the first broadcast of a new warning in the NAVTEX service. In descending order of urgency they are:

- VITAL–for immediate broadcast, subject to avoiding interference of ongoing transmissions;
- IMPORTANT– for broadcast at the next available period when the frequency is unused;
- ROUTINE–for broadcast at the next scheduled transmission period.

Both VITAL and IMPORTANT warnings will normally need to be repeated, if still valid, at the next scheduled transmission period.

TRANSMITTER IDENTIFICATION CHARACTER (B₁): The transmitter identification character B₁ is a single unique letter which is allocated to each transmitter. It is used to identify the broadcasts which are to be accepted or rejected by the receiver. Two stations having the same B₁ character must have a sufficient geographical separation so as to minimize interference with one another. NAVTEX transmissions have a designed range of about 400 nautical miles.

SUBJECT INDICATOR CHARACTERS (B₂): Information in the NAVTEX broadcast is grouped by subject. The subject indicator character B₂ is used by the receiver to identify the different classes of messages listed below. The indicator is also used to reject messages concerning certain optional subjects which are not required by the ship (e.g., LORAN-C messages might be rejected by a ship which is not fitted with a LORAN-C receiver). Receivers also use the B₂ character to identify messages, which because of their importance, may not be rejected.

A:	Navigational warnings ¹
B*:	Meteorological warnings ¹
C:	Ice reports
D:	Search and rescue information, and pirate attack warnings ¹
E:	Meteorological forecasts
F*:	Pilot service messages
G*:	DECCA messages
H:	LORAN messages
J:	SATNAV messages
K:	Other electronic navaid messages
L:	Navigational warnings (additional to A) ²
V to Y:	Special services (allocation by NAVTEX Panel)
Z:	No messages on hand

¹Cannot be rejected by the receiver

² Should not be rejected by the receiver

*Normally not used in the United States

NOTE: Since the National Weather Service normally includes meteorological warnings in forecast messages, meteorological warnings are broadcast using the subject indicator character E. U.S. Coast Guard District Broadcast Notices to Mariners affecting ships outside the line of demarcation, and inside the line of demarcation in areas where deep draft vessels operate, use the subject indicator character A. Two subject indicator characters for non-MSI messages in the United States were established 1 October 1995, but currently are not in use: V for Notice to Fisherman and W for Environmental messages.

MESSAGE NUMBERING (B₃B₄): Each message within a subject group is assigned a serial number, B₃B₄, between 01 and 99. This number will not necessarily relate to series numbering in other radio navigational warning systems. On reaching 99, numbering should restart at 01 but avoid the use of message numbers still in force.

300I. U.S. NAVTEX Transmitting Stations

NAVTEX coverage is reasonably continuous off the U.S. East, Gulf, and West Coasts, as well the area around Puerto Rico, Kodiak Alaska, Hawaii and Guam. The U.S. has no coverage in the Great Lakes, though coverage of much of the Lakes is provided by the Canadian Coast Guard. U.S. Coast Guard NAVTEX broadcast stations are as follows:

- Boston (NMF) (Station F)
- Chesapeake (Portsmouth) (NMN) (Station N)
- Savannah (NMN) (Station E)
- Miami (NMA) (Station A)
- Isabella (San Juan) (NMR) (Station R)
- New Orleans (NMG) (Station G)
- Cambria (NMQ) (Station Q)
- Point Reyes (San Francisco) (NMC) (Station C)
- Astoria (NMW) (Station W)
- Kodiak (NOJ) (Station J)
- Honolulu (NMO) (Station O)
- Guam (NRV) (Station V)



NAVTEX COVERAGE WITHIN NAVAREAS IV AND XII

RADIO NAVIGATIONAL WARNINGS

PRACTICAL INSTRUCTIONS FOR THE USE OF A NAVTEX RECEIVER

The NAVTEX receiver is a Narrow Band Direct Printing (NBDP) device operating on the frequency 518 kHz (some equipment can also operate on 490 and 4209.5 kHz), and is a vital part of the Global Maritime Distress and Safety System (GMDSS).

It automatically receives Maritime Safety Information such as Radio Navigational Warnings, Storm/Gale Warnings, Meteorological Forecasts, Piracy Warnings, Distress Alerts, etc. (full details of the system can be found in IMO Publication IMO-951E - The NAVTEX Manual).

The information received is printed on the receiver's own paper recorder roll. Each message begins with a start of message function (ZCZC) followed by a space then four B characters. The first, (B_1), identifies the station being received, the second, (B_2), identifies the subject i.e. Navigational Warning, Met Forecasts, etc., and the third and fourth, ($B_3 + B_4$), form the consecutive number of the message from that station. This is followed by the text of the message and ends with an end of message function (NNNN).

The NAVTEX system broadcasts COASTAL WARNINGS that cover the area from the Fairway Buoy out to about 250 nautical miles from the transmitter; the transmissions from some transmitters can be received out to 400 nautical miles and even further in unusual propagational conditions.

The practical advice on the other side of this card will help to ensure that you make the most efficient use of your NAVTEX receiver, guaranteeing the reception of Maritime Safety Information within the respective coverage areas of the NAVTEX stations being used.

RADIO NAVIGATIONAL WARNINGS

NAVTEX RECEIVER CHECK-OFF LIST

For a NAVTEX receiver to function effectively, it is essential that the operator should have a sound knowledge of how to programme and operate his particular receiver. This is not difficult provided the following practical steps are followed:

1. Make sure that there are sufficient rolls of NAVTEX paper on board.
2. Check that there is paper in the receiver.
3. Turn the NAVTEX receiver on at least four hours before sailing, or better still, leaves it turned on permanently. This avoids the chance of losing vital information that could affect the vessel during its voyage.
4. Make sure that the Equipment Operating Manual is available close to the equipment, paying particular attention to the fact that your equipment may be programmed differently from other makes and models.
5. Using the Equipment Operating Manual, make a handy guide for programming, status and autotesting procedures for your vessel's equipment, place it in a plastic cover and keep it with the equipment.
6. Have available next to the equipment a plasticised copy of the NAVAREAs/METAREAs in which the vessel is likely to sail, showing the NAVTEX stations, their coverage ranges, their respective time schedules and B₁ characters.
7. Programme your receiver to accept only those messages identified with the B₁ character of the NAVTEX station which covers the area in which your vessel is currently sailing and the one covering the area into which you are about to sail. This will avoid the equipment printing information which has no relevance to your voyage and will avoid unnecessary waste of paper.
8. Programme your receiver to accept only those messages identified with the B₂ characters (type of message) you wish to receive. It is recommended that most B₂ characters (A to Z) be programmed, but you may exclude those for navaid equipments (Decca or Loran for example) with which your vessel is NOT fitted. Be aware that the characters A, B and D MUST be included, as they are mandatory.
9. Take extra care not to confuse the programming of B₁ characters (station designators) with those of B₂ characters (type of messages). It is very easy for an operator to believe that he/she is programming B₁ characters when in fact they are programming B₂ characters. After programming ALWAYS CHECK the programme status to ensure that it is correct.
10. If information is received incomplete/garbled, inform the relevant NAVTEX station, giving the time of reception (UTC) and your vessel's position. By so doing, not only will you obtain the information you require, but you will also help to improve the system. In the same way, any safety-critical occurrences observed during the voyage must be passed immediately to the nearest (or most convenient) Coast Radio Station and addressed to the relevant NAVAREA/METAREA or National Co-ordinator responsible for the area in which you are sailing.

RADIO NAVIGATIONAL WARNINGS

300J. Worldwide NAVTEX Transmitting Stations

The following operational coast radio stations, extracted from ANNEX 7 of the IMO GMDSS Master Plan, provide

NAVTEX service. The frequency is 518 kHz unless otherwise indicated. For scheduled Maritime Safety Information (MSI) broadcast times of a particular coast radio station see sec. 300L.

NAV/MET Area	Country	NAVTEX Coast Station	Position	Range (NM)	Transmitter Identification (B ₁) Character
I	Belgium	Oostende	51-11N 02-48E	150	M
				55	T
	Denmark (Greenland-East Coast)	Reykjavik	64-05N 21-51W	550	X
	Estonia	Tallinn	59-30N 24-30E	250	U
	France	Niton (U.K.)	50-35N 01-18W	270	K
					T (French) ¹
	Iceland	Reykjavik	64-05N 21-51W	550	R
	Ireland	Valentia	51-27N 09-49W	400	W
		Malin Head	55-22N 07-21W	400	Q
	Netherlands	Netherlands Coast Guard (Den Helder)	52-57N 04-47E	250	P
	Norway	Bodø	67-16N 14-23E	450	B
		Rogaland	58-48N 05-34E	450	L
		Vardø	70-22N 31-06E	450	V
		Svalbard	78-04N 13-38E	450	A
		Ørlandet	63-40N 09-33E	450	N
	Russian Federation	Murmansk	68-46N 32-58E	300	C
		Arkhangel'sk	64-33N 40-32E	300	F
	Sweden	Stockholm (Bjuröklubb)	64-28N 21-36E	300	H
		Stockholm (Gislövshammer)	55-29N 14-19E	300	J
		Stockholm (Grimeton)	57-06N 12-23E	300	D
	United Kingdom	Cullercoats	55-04N 01-28W	270	G
					U ¹
		Portpatrick	54-51N 05-07W	270	O
					C ¹
		Niton	50-35N 01-18W	270	S
					I ¹
II	France	Corsen (CROSS)	48-28N 05-03E	300	A
					E (French) ¹
	Portugal	Horta (Azores)	38-32N 28-38W	640	F
					J (Portuguese) ¹
		Monsanto	38-44N 09-11W	530	R
	Spain	Coruna	43-21N 08-27W	400	D
					G
					I

¹ 490 kHz broadcast service.

RADIO NAVIGATIONAL WARNINGS

NAV/MET Area	Country	NAVTEX Coast Station	Position	Range (NM)	Transmitter Identification (B ₁) Character
III	Bulgaria	Varna	43-04N 27-46E	350	J
	Croatia	Split	43-30N 16-29E	85	Q
	Cyprus	Cyprus	35-03N 33-17E	220	M
	Egypt	Alexandria	31-12N 29-52E	350	N
	France	La Garde (CROSS)	43-06N 05-59E	250	W
					S (French) ¹
	Greece	Iraklion	35-20N 25-07E	280	H
		Kerkira	39-37N 19-55E	280	K
		Limnos	39-52N 25-04E	280	L
	Israel	Haifa	32-49N 35-00E	200	P
	Italy	Roma	41-48N 12-31E	320	R
		Augusta	37-14N 15-14E	320	V
		Cagliari	39-14N 09-14E	320	T
		Trieste	45-41N 13-46E	320	U
	Malta	Malta	35-49N 14-32E	400	O
	Russian Federation	Novorossiysk	44-42N 37-44E	300	A
	Spain	Cabo de la Nao	38-43N 00-09E	300	X
	Turkey	Istanbul	41-04N 28-57E	300	D
		Samsun	41-17N 36-20E	300	E
		Antalya	36-53N 30-42E	300	F
		Izmir	38-22N 26-36E	300	I
	Ukraine	Mariupol	47-06N 37-33E	280	B
		Odessa	46-29N 30-44E	280	C
IV	Bermuda	Bermuda	32-23N 64-40W	280	B
	Canada	Riviere-au-Renard	50-15N 66-10W	300	C
					D (French)
		Warton	44-20N 81-10W	300	H
		St. John's	47-30N 52-40W	300	O
		Thunder Bay	48-25N 89-20W	300	P
		Sydney	46-10N 60-00W	300	Q
					J (French)
		Yarmouth	43-45N 66-10W	300	U
					V (French)
		Labrador	53-40N 57-00W	300	X
		Iqaluit	63-43N 68-33W	300	T
					S (French) ¹
	Denmark (Greenland-West Coast)	Nuuk (Kook Island)	64-04N 52-01W	400	W
	Netherlands Antilles	Curaçao	12-10N 68-52W	400	H
	United States	Miami	25-37N 80-23W	240	A
		Boston	41-43N 70-30W	200	F
		New Orleans	29-53N 89-57W	200	G
		Chesapeake (Portsmouth)	36-43N 76-00W	280	N

¹ 490 kHz broadcast service.

RADIO NAVIGATIONAL WARNINGS

NAV/MET Area	Country	NAVTEX Coast Station	Position	Range (NM)	Transmitter Identification (B ₁) Character
IV	United States (cont.)	Isabella	18-28N 67-04W	200	R
		Savannah	32-08N 81-42W	200	E
VI	Argentina	Ushuaia	54-48S 68-18W	280	M
		Rio Gallegos	51-37S 65-03W	280	N
		Comodoro Rivadavia	45-51S 67-25W	280	O
		Bahia Blanca	38-43S 62-06W	280	P
		Mar del Plata	38-03S 57-32W	280	Q
		Buenos Aires	34-36S 58-22W	560	R
	Uruguay	La Paloma	34-40S 54-09W	280	F
					A (Spanish) ¹
VII	Namibia	Walvis Bay	23-03S 14-37E	378	B
	South Africa	Cape Town	33-40S 18-43E	500	C
		Port Elizabeth	34-02S 25-33E	500	I
		Durban	30-00S 31-30E	500	O
VIII	India	Bombay	19-05N 72-50E	N.I.	G
		Madras	13-08N 80-10E	N.I.	P
	Mauritius	Mauritius	20-10S 57-28E	400	C
IX	Bahrain	Hamala	26-09N 50-28E	300	B
	Egypt	Ismailia (Serapeum)	30-28N 32-22E	400	X ²
		Quseir (Kosseir)	26-06N 34-17E	350	V
	Iran	Bushehr	28-59N 50-50E	300	A
		Bandar Abbas	27-07N 56-04E	300	F
	Saudi Arabia	Dammam	26-26N 50-06E	390	G
		Jiddah	21-23N 39-10E	390	H
	Oman	Muscat	23-36N 58-30E	270	M
	Pakistan	Karachi	24-51N 67-03E	400	P
X	Australia is only providing coastal warnings through the International SafetyNET Service (AUSCOAST).				
XI	China	Sanya	18-14N 109-30E	250	M
		Guangzhou	23-08N 113-32E	250	N
		Fuzhou	26-01N 119-18E	250	O
		Shanghai	31-08N 121-33E	250	Q
		Dalian	38-52N 121-31E	250	R
	Indonesia	Jayapura	02-31S 140-43E	300	A
		Ambon	03-42S 128-12E	300	B
		Makassar	05-06S 119-26E	300	D
		Jakarta	06-06S 106-54E	300	E
	Japan	Otaru	43-19N 140-27E	400	J
		Kushiro	42-57N 144-36E	400	K
		Yokohama	35-14N 139-55E	400	I
		Moji	34-01N 130-56E	400	H
		Naha	26-05N 127-40E	400	G

¹ 490 kHz broadcast service.

² Includes 4209.5 kHz broadcast service.

RADIO NAVIGATIONAL WARNINGS

NAV/MET Area	Country	NAVTEX Coast Station	Position	Range (NM)	Transmitter Identification (B ₁) Character
XI	Malaysia	Pinang	05-26N 100-24E	350	U
		Miri	04-28N 114-01E	350	T
		Sandakan	05-54N 118-00E	350	S
	Korea, Republic of	Chukpyon	37-03N 129-26E	200	V
					J (Korean) ¹
		Pyonsan	35-36N 126-29E	200	W
					K (Korean) ¹
	Singapore	Singapore	01-25N 103-52E	400	C
	Taiwan	Chi-lung (Keelung)	25-08N 121-45E	540	P ²
		Linyuan	22-29N 120-25E	540	P ²
		Meilung	23-59N 121-37E	350	P ¹
		Lintou	23-33N 119-38E	350	P ¹
	Thailand	Bangkok	13-43N 100-34E	200	F
	United States	Guam	13-29N 144-50E	100	V
	Vietnam	Ho Chi Minh City	10-47N 106-40E	400	X
		Da Nang	16-05N 108-13E	400	P
	Hong Kong (China)	Hong Kong	22-13N 114-15E	400	L
XII	Canada	Prince Rupert	54-17N 130-25W	300	D
		Tofino	48-55N 125-32W	300	H
	United States	Pt. Reyes (San Francisco)	37-55N 122-44W	350	C
		Kodiak	57-46N 152-34W	200	J
		Honolulu	21-22N 158-09W	350	O
		Cambria (Long Beach)	35-31N 121-03W	350	Q
		Astoria	46-10N 123-49W	216	W
XIII	Russian Federation	Kholmsk	47-02N 142-03E	300	B
XV	Chile	Antofagasta	23-40S 70-25W	300	A
					H (Spanish)
		Valparaiso	32-48S 71-29W	300	B
					I (Spanish)
		Talcahuano	36-42S 73-06W	300	C
					J (Spanish)
		Puerto Montt	41-30S 72-58W	300	D
					K (Spanish)
		Punta Arenas (Magallanes)	53-09S 70-58W	300	E
					L (Spanish)
XVI	Peru	Isla de Pascua	27-09S 109-25W	300	F
					G (Spanish)
		Paita	05-05S 81-07W	400	S
		Callao	12-03S 77-09W	400	U
		Mollendo	17-01S 72-01W	400	W

¹ Includes 490 kHz broadcast service.

² 4209.5 kHz broadcast service.

RADIO NAVIGATIONAL WARNINGS

300K. Ice Information

INTERNATIONAL ICE PATROL: In February or March, depending upon iceberg conditions, the International Ice Patrol (IIP) commences its annual service of monitoring and broadcasting the southeastern, southern, and southwestern limits of icebergs in the vicinity of the Grand Banks of Newfoundland. Reports of ice in this area

originate from passing ships and IIP reconnaissance flights. During the ice season, IIP broadcasts two message bulletins and a radiofacsimile chart each day containing ice information to inform ships of the extent of the estimated limits of all known ice. However, regardless of ice density the IIP will begin broadcasting at least weekly (Friday) updates starting on 16 February.

Broadcasts of IIP bulletins are as follows:

BROADCAST STATION	BROADCAST TIME (UTC)	FREQUENCIES
NAVTEX Broadcast		
USCG Communication Station Boston/NMF.	0045, 0445, 0845, 1245, 1645, 2045.	518 kHz, F1B.
	Special Broadcast during next available time slot.	518 kHz, F1B.
Canadian CG Marine Communications and Traffic Services St. John's/VON.	1820 (winter), 2220 (summer).	518 kHz, F1B.
SITOR Broadcast		
USCG Communication Station Boston/NMF. (NIK via NMF)	0030.	6314, 8416.5, 12579 kHz, F1B.
	1218.	8416.5, 12579, 16806.5 kHz, F1B.
RADIOFACSIMILE Broadcast		
USCG Communication Station Boston/NMF. (NIK via NMF)	1600, 1810.	6340.5, 9110, 12750 kHz, F3C.
Offenbach (Main), Germany via Pinneberg/DDK/DDH.	0930, 2100.	3855, 7880, 13882.5 kHz, F3C.
Radio Telephone		
Canadian CG Marine Communications and Traffic Services St. Anthony/VCM. (Iceberg Bulletin for NFLD Coast and Belle Isle)	0107, 0907, 1907.	2598 kHz, J3E.
	Continuous.	VHF Channel 21B, 83B.
Special Broadcasts		
Canadian CG Marine Communications and Traffic Services St. John's/VON.	0007, 0837, 1637, 2207 and as required.	2598 kHz, J3E.
	Continuous.	VHF Channel 21B, 28B, 83B.
Inmarsat SafetyNET Broadcasts		
AOR-E and AOR-W Satellites.	0000, 1200.	Inmarsat-C SafetyNET.
	Special Broadcasts of targets outside limits sent upon receipt.	
World Wide Web		
International Ice Patrol Web Page.	Updated after 0000, 1200.	http://www.uscg.mil/lantarea/iip/home.html
National Weather Service.	Updated daily after 1600.	http://weather.noaa.gov/pub/fax/PIEA88.gif
Automated Weather Network		
Automated Weather Network (AWN).	Updated daily at 0000, 1200.	Header: STNT41 KNIK.
Telefacsimile upon Demand		
Fax On Demand.	Updated daily after 1600.	Fax: (1) 860-441-2773.
E-mail On Demand.	Updated daily after 1600.	ftpmail@weather.noaa.gov

RADIO NAVIGATIONAL WARNINGS

Mariners should note that NAVTEX ice reports may be programmed for rejection at the receiver. Mariners desiring to receive IIP NAVTEX ice reports must ensure that their receivers are appropriately programmed for reception.

The Ice Chart Facsimile and the 0000Z and 1200Z Ice Bulletins are available on the World Wide Web at the International Ice Patrol's products section. IIP's homepage can be found at:

<http://www.uscg.mil/lantarea/iip/home.html>

The Ice Chart Facsimile is also available via Fax on Demand from the IIP's telefax machine. Dial (1) 860-441-2773 from a fax phone, and press "Copy" after successful connection.

The Ice Chart Facsimile is also available via E-mail on Demand from the National Weather Service's FTP e-mail system. Send an e-mail to ftp@weather.noaa.gov with any subject line. The body of the text should read as follows:

```
open
cd fax
get PIEA88.gif    ---or---    get PIEA88.tif
quit
```

The e-mail server will then automatically send a GIF or TIF formatted image of the facsimile back to the sender's e-mail address.

The Ice Bulletin is now posted to the Automated Weather Network, a weather service bulletin board accessible by U.S. Department of Defense and NATO units. Use header STNT41 KNIK to access IIP's products.

The 0000Z and 1200Z Ice Bulletins will be broadcast over the AOR-E and AOR-W Satellites. The 0000Z bulletin is broadcast between 2000 and 2359Z, and the 1200Z bulletin is broadcast at 1130Z. In addition, safety broadcasts regarding icebergs outside of the limits of all known ice will be transmitted over both satellites upon receipt.

COMMUNICATIONS WITH COMMANDER, INTERNATIONAL ICE PATROL: All ships are encouraged to immediately report sightings of ice to COMINTICEPAT GROTON CT, when near or within the "estimated limits of all known ice." Ships are encouraged to make reports even if no ice is sighted. The following information should be included when reporting ice:

- Ship name and call sign.
- Iceberg position [specify either the geographic coordinates (latitude, longitude) or range/bearing from ship's stated geographic position (latitude, longitude)].
- Time of sighting (in UTC).
- Method of detection (visual, radar, or both).
- Size and shape of iceberg (see tables below).
- Sea ice concentration (in tenths).
- Sea ice thickness in feet or meters (specify units).

The following tables describe size and shape criteria used by the Ice Patrol:

DESCRIPTIVE NAME	HEIGHT		LENGTH	
	(ft)	(m)	(ft)	(m)
Growler	< 17	< 5	< 50	< 15
Small Berg	17-50	5-15	50-200	15-60
Medium Berg	51-150	16-45	201-400	61-122
Large Berg	151-240	46-75	401-670	123-213
Very Large Berg	> 240	> 75	> 670	> 213

SHAPE	DESCRIPTION
Non-Tabular	This category covers all icebergs that are not tabular-shaped as described below. This includes icebergs that are dome-shaped, sloping, blocky, and pinnacle.
Tabular	Flat topped iceberg with length-height ratio greater than 5:1.

In addition to ice reports, sea surface temperature and weather reports are important to the Ice Patrol in predicting the drift and deterioration of ice and in planning aerial patrols. If you make routine weather reports to METEO WASHINGTON, please continue to do so. If your vessel does not normally make these reports, it is requested that you make special reports directly to the Ice Patrol every 6 hours when within the area between latitudes 40°N to 52°N and between longitudes 39°W to 57°W. Ships with one radio operator may prepare the reports every 6 hours and

hold them for transmission when the radio operator is on watch. When reporting, please include the following:

- Ship position.
- Course.
- Speed.
- Visibility.
- Air and sea surface temperature.
- Barometric pressure.
- Wind direction and speed.

RADIO NAVIGATIONAL WARNINGS

Report ice sightings, weather, and sea surface temperature to COMINTICEPAT GROTON CT through Inmarsat, U.S. Coast Guard Communication Stations or Canadian Coast Guard Marine Communications and Traffic Services Centers. If reporting iceberg sightings to IIP through Inmarsat-A or -C, use service code 42. This will ensure the ice information immediately reaches the COMINTICEPAT GROTON CT. There is no charge to the user for iceberg reports sent using service code 42.

INMARSAT-A (General Instructions):

- Select Telenor (global identification code 01).
- Select routine priority.
- Select duplex telex channel.
- Initiate the call.
- Upon receipt of GA (Go Ahead), select the desired two-digit prefix access code followed by at + sign (42+).
- Send the report.
- The message will be forwarded at NO CHARGE from the mariner to International Ice Patrol by Telenor Satellite Services, Inc.

INMARSAT-C (General Instructions):

- Access the two-digit code service on SES as instructed in the manufacturer's information.
- Using the SES text editor, prepare the message.
- Enter the two-digit code of the service required (42).
- Select the CES (01, Telenor, AORW).
- Transmit the message.
- Wait for acknowledgment from the CES.
- The message will be forwarded at NO CHARGE from the mariner to International Ice Patrol by Telenor Satellite Services, Inc.

Iceberg sightings may also be reported on the guarded frequencies listed below:

Canadian Coast Guard Marine Communications and Traffic Services

Receiving Station	Bands Guarded/ Transmit Frequency (Day/Night)
St. John's (VON), Newfoundland (St. John's Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
St. Anthony (VCM), Newfoundland (St. Anthony Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
Labrador (VOK) (Labrador Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
Placentia (VCP), Newfoundland (Placentia Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E

Canadian Coast Guard Marine Communications and Traffic Services

Receiving Station	Bands Guarded/ Transmit Frequency (Day/Night)
Port aux Basques (VOJ), Newfoundland (Port aux Basques Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
Sydney (VCO), Nova Scotia (Sydney Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
Dartmouth (VCS), Nova Scotia (Halifax Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E
Saint John (VAR), New Brunswick (Fundy Coast Guard Radio)	VHF Ch. 16 2182 kHz, H3E

U.S. Coast Guard Communication Stations

DIRECT PRINTING RADIOTELETYPE

SELCALL 1097 (NMN)

(Assigned Frequency)

Ship Transmit	Shore Transmit	
4174 kHz	4212 kHz	On request
6264.5 kHz	6316 kHz	2300-1100
8388 kHz	8428 kHz	Continuous
12490 kHz	12592.5 kHz	Continuous
16696.5 kHz	16819.5 kHz	Continuous
22297.5 kHz	22389.5 kHz	1100-2300

SSB VOICE FREQUENCIES

(Carrier Frequency)

Ship Transmit	Shore Transmit	NMF	NMN
4134 kHz	4426 kHz	2230-1030	2300-1100
6200 kHz	6501 kHz	Continuous	Continuous
8240 kHz	8764 kHz	Continuous	Continuous
12242 kHz	13089 kHz	1030-2230	1100-2300
16432 kHz	17314 kHz	On request	On request

NOTE that USCG CAMSLANT Chesapeake (NMN) provides all U.S. east coast ON-CALL SITOP service.

Telephone communications are available to the Ice Patrol Office in Groton, CT throughout the season. The numbers are: (1) 860-441-2626 (Ice Patrol Duty Officer, 0700-1630 EST) or (1) 757-398-6231 (USCG Atlantic

RADIO NAVIGATIONAL WARNINGS

Area Command Center, Portsmouth, VA, after working hours); IIP fax: (1) 860-441-2773.

CAUTIONS: The IIP attempts to locate and track icebergs south of 52°N, especially those south of 48°N, which may pose a hazard to shipping in the vicinity of the Grand Banks of Newfoundland. When the position, time of sighting, size, and description of icebergs are reported to IIP, the data is entered into a computer program that predicts their drift. Please note that the iceberg positions reported in all IIP products are always the predicted position for the date and time of that product. As the time after sighting increases, so does the probability of error in the icebergs' predicted positions. This probability of error is taken into account when the limits of all known ice are determined.

The purpose of the Ice Patrol's messages and charts is to advise mariners of the best estimate of the extent of icebergs in the region of the Grand Banks of Newfoundland. The iceberg positions represented within the estimated limits are intended only to give the mariner an understanding of the relative densities of icebergs. Any attempt to navigate among icebergs within the estimated limits on the basis of the facsimile charts or the message bulletins is strongly discouraged.

While the IIP attempts to be as accurate as possible in reporting the presence of icebergs to mariners, it is not possible to assure that all icebergs are reported. Mariners are strongly urged to use radar carefully, but not to rely entirely upon it to detect icebergs, since icebergs often are not detected distinctly with radar. There is no substitute for vigilance and prudent seamanship, especially when navigating near sea ice and icebergs.

The IIP earnestly solicits comments, particularly concerning the value and effectiveness of its services. Additionally, facsimile charts annotated with the ship's position, frequency used, and time of receipt can also help the IIP to better serve its customers. Comments can be provided using the phone and/or fax numbers above, or by mail to:

COMMANDER
INTERNATIONAL ICE PATROL
1082 SHENNECOSSETT ROAD
GROTON CT 06340-6095

NATIONAL ICE CENTER (NIC): The National Ice Center is a multi-agency operational center representing the Department of Defense (U.S. Navy), the Department of Commerce (NOAA), and the Department of Transportation (U.S. Coast Guard). The NIC mission is to provide worldwide operational sea ice analyses and forecasts for the armed forces of the U.S. and Allied nations, the Departments of Commerce and Transportation, and other U.S. government and international agencies, and the civil sector. The NIC produces analyses and forecasts of Arctic, Antarctic, Great Lakes and Chesapeake Bay ice conditions. These products are available, in the following two formats, on the World Wide Web at the NIC Website:

- <http://www.natice.noaa.gov>
- GIF and TIFF image files using the World Meteorological Organization's (WMO) Ice Egg Code.
- Geographic Information System (GIS) vector files.
- Some of the NIC's products are also transmitted as text messages.

The NIC is located at:

NATIONAL ICE CENTER
FEDERAL BUILDING 4
4251 SUITLAND ROAD
WASHINGTON DC 20395

Telephone: (1) 301-457-5303.

GULF OF ST. LAWRENCE, ST. LAWRENCE RIVER, SOUTH AND EAST COASTS OF NEWFOUNDLAND AND LABRADOR COAST: Commencing December 15 each year, and until ice in the Gulf of St. Lawrence is no longer likely to hinder shipping, an experienced ship Master will be attached to ECAREG CANADA as Ice Operations Officer. During this period, vessels inbound to the Gulf of St. Lawrence should report using the address ECAREG CANADA through any Marine Communications and Traffic Services (MCTS) Center 24 hours prior to their expected entry into the Cabot Strait, stating their position, destination, whether loaded or in ballast, ice class (if any), and classification society. This procedure will facilitate the passing of ice information and a suggested shipping track as necessary. Ships bound for ports on the south and east coasts of Newfoundland and along the coast of Labrador should also report to ECAREG CANADA for ice information, routing and escort as necessary. Gulf shipping interests are requested to maintain close contact with the Ice Operations Office so that all routing and escort assistance needed may be provided as circumstances permit.

All radio communications addressed to ECAREG CANADA and passed through a MCTS Center will be handled free of charge to the ship.

Ships outbound from Canadian ports east of Sept-Iles should report to the Ice Operations Officer ECAREG CANADA through any MCTS Center 24 hours in advance of sailing time, if possible, for ice information, suggested routing, and escort if deemed necessary.

Ships outbound from Sept-Iles and ports west of Sept-Iles may obtain the latest bulletin pertaining to reported ice conditions, forecast, and recommended routing for the Gulf and River St. Lawrence by calling Quebec, Les Escoumins or Montreal Coast Guard Traffic Center on the control frequency of the sector in which the vessel is located. Vessels bound seaward when passing off Sept-Iles should also contact ECAREG CANADA through any MCTS Center for up-to-date ice information, routing, and icebreaker escort if required.

During the winter navigation season, MTCS Centers broadcast ice advisories and forecasts on a regular schedule as indicated in the station listings. Ice forecasts will normally be for five-day periods when ice is light and of no immediate concern to shipping. Frequency of issue will be increased and forecast periods shortened when direct tactical

RADIO NAVIGATIONAL WARNINGS

support to shipping is required. Ice advisories will normally include a summary of existing ice conditions, a forecast of ice conditions for an appropriate period (2 to 5 days), and may include a suggested shipping track. This information is also broadcast in the form of charts by facsimile from stations so equipped.

GREAT LAKES: The Department of Fisheries and Oceans operates a service for the support of vessels navigating in Canadian waters of the Great Lakes during the season in which navigation is restricted by ice. This service includes the promulgation of up-to-date information on ice conditions, routing advice, aids to navigation, and the provision of icebreaker support when available and considered necessary, as well as the formation of convoys when conditions dictate. The following information outlines the service and facilities provided by the Canadian Coast Guard:

- Assembly and distribution of ice advisories, forecasts, and synoptic ice charts.
- Routing advice through light ice conditions, upon request.
- Coordination and direction of icebreaker support activities.

The service is known as Ice Sarnia and will commence December 1 each year, terminating when ice conditions permit unrestricted navigation. The address is:

ICE SARNIA
CANADIAN COAST GUARD
105 CHRISTINA STREET SOUTH
SARNIA ONTARIO N7T 7W1

Telephone: (1) 519-383-1855 or (1) 519-337-2498.

The Canadian Coast Guard has a limited number of icebreakers available for the support of shipping, and these are heavily committed. Therefore, it is emphasized that icebreaker support can not always be provided on short notice. In order to make the most efficient use of available resources it is most important that Ice Sarnia be kept informed about the position and projected movements of vessels on the Great Lakes. Masters or agents should notify Ice Sarnia as soon as their sailing time is known, giving their ETD and destination in order to receive the most up-to-date information

ARCTIC AND HUDSON STRAIT AND BAY: The Canadian Coast Guard operates a service for the support of ships navigating in the ice-congested Canadian Arctic and other ice-free northern waters during the summer navigation season. Access to this service can be obtained by calling NORDREG CANADA. This support includes the promulgation of up-to-date information on ice conditions, advice on routes, aids to navigation, icebreaker support when available and considered necessary, and organization of convoys when conditions dictate.

Throughout the navigation season ice advisories, forecasts, and synoptic ice charts are issued by Ice Central in Ottawa and broadcast daily by radio and radio facsimile.

The Canadian Coast Guard has established a MCTS Center at Iqaluit, Nunavut. The Center opens in early June

and is staffed until the end of December, or as long as ships are at sea in the area. The address is:

FISHERIES AND OCEANS
CANADIAN COAST GUARD
NORDREG CANADA
PO BOX 189
IQALUIT NUNAVUT X0A 0H0

Telephone: (1) 867-979-5724.

Fax: (1) 867-979-4236.

Radiogram: NORDREG CANADA.

An Ice Information Office at Churchill, Manitoba supplies information on local ice conditions to ships in port. The address is:

ICE INFORMATION OFFICE
PORT WARDEN
NATIONAL HARBOURS BOARD BUILDING
CHURCHILL MANITOBA R0B 0E0

Telephone: (1) 204-675-2263.

Fax: (1) 204-675-2611.

The Canadian Coast Guard has a limited number of icebreakers for the support of shipping. Because of heavy commitments, it is emphasized therefore that icebreaker support cannot always be provided at short notice. It is important that the Arctic Canada Traffic System (NORDREG CANADA) is as well informed as possible about the position and movements of ships in the Canadian Arctic. Ships bound for or leaving Hudson Bay or the High Arctic are required to contact NORDREG CANADA in accordance with procedures specified in the latest Annual Edition of Canadian Notices to Mariners.

BALTIC SEA ICE CODE: This code is used by the following countries: Denmark, Finland, Germany, Netherlands, Norway, Poland, Sweden, Russia, Estonia, Lithuania, and Latvia. The general form of the message code is:

ICE: AA 1ABSBTBK2ABSBTBKB . . . nABSBTBKB
BB 1ABSBTBK2ABSBTBKB . . . nABSBTBKB
CC etc.

Letter Symbols:

AA, BB, etc.	Index letters defining districts for fairway sections or sea areas to which the following five-figure groups refer.
1, 2, . . . n	Identifier figures of code groups referring to fairway sections or sea areas within the districts defined by AA, BB, CC, etc. The number cannot exceed 9.
AB	Amount and arrangement of sea ice (Table I).
SB	Stage of ice development (Table II).
TB	Topography or form of ice (Table III).

RADIO NAVIGATIONAL WARNINGS

KB Navigational conditions in ice (Table IV).

Notes:

- When a section is free of ice, the corresponding group may be omitted from the report. It should, however, always be coded as n0//KB the first 2 days after it has become ice-free and only omitted the third day if the ice-free conditions continue.
- When all sections within a district are ice-free, the whole district shall be omitted from the report.
- The districts for which ice information is issued by countries using this code are indicated for each country in the following pages.

Table I

AB - Amount and arrangement of sea ice

- 0 Ice-free
- 1 Open water - concentration less than 1/10
- 2 Very open pack ice - concentration 1/10 to less than 4/10
- 3 Open pack ice - concentration 4/10 to 6/10
- 4 Close pack ice - concentration 7/10 to 8/10
- 5 Very close pack ice - concentration 9/10 to 9+/10*
- 6 Very close pack ice, including consolidated pack ice - concentration 10/10
- 7 Fast ice with pack ice outside
- 8 Fast ice
- 9 Lead in very close or compact pack ice or along the ice edge
- / Unable to report
- * 9+/10 means 10/10 ice concentration with small openings

Note: The higher code figure has greater priority in reporting.

Table II

SB - Stage of ice development

- 0 New ice or dark nilas (less than 5 cm thick)
- 1 Light nilas (5 to 10 cm thick) or ice rind
- 2 Gray ice (10 to 15 cm thick)
- 3 Gray-white ice (15 to 30 cm thick)
- 4 Thin first-year ice, first stage (30 to 50 cm thick)
- 5 Thin first-year ice, second stage (50 to 70 cm thick)
- 6 Medium first-year ice (70 to 120 cm thick)
- 7 Ice predominantly thinner than 15 cm with some thicker ice
- 8 Ice predominantly 15 to 30 cm with some ice thicker than 30 cm
- 9 Ice predominantly thicker than 30 cm with some thinner ice
- / No information or unable to report

Note: If AB = 0, SB should be reported as /.

Table III

TB - Topography or form of ice

- 0 Pancake ice, ice cakes, brash ice—less than 20 m across
- 1 Small ice floes - 20 to 100 m across
- 2 Medium ice floes - 100 to 500 m across

Table III

- 3 Big ice floes - 500 to 2000 m across
- 4 Vast or giant ice floes - more than 2000 m across, or level ice
- 5 Rafted ice
- 6 Compacted slush or shuga, or compacted brash ice
- 7 Hummocked or ridged ice
- 8 Thaw holes or many puddles on the ice
- 9 Rotten ice
- / No information or unable to report

Notes: Figures 0 to 4 only to be used if ice concentration is less than 7/10 with no compacted ice present (TB = 4: vast floes). 4 to 9 to be used if ice concentration is greater 7/10 (TB = 4: level ice). If AB = 0, TB should be reported as /.

Table IV

KB - Navigation conditions in ice

- 0 Navigation unobstructed
- 1 Navigation difficult or dangerous for wooden vessels without ice sheathing
- 2 Navigation difficult for unstrengthened or low-powered vessels built of iron or steel; navigation for wooden vessels even with ice
- 3 Navigation without icebreaker assistance possible only for high-powered vessels of strong construction and suitable for navigation in ice
- 4 Navigation proceeds in lead or a broken ice-channel without the assistance of icebreaker
- 5 Icebreaker assistance can only be given to vessels suitable for navigation in ice and of special size
- 6 Icebreaker assistance can only be given to vessels of special ice class and of special size
- 7 Icebreaker assistance can only be given to vessels after special permission
- 8 Navigation temporarily closed
- 9 Navigation has ceased
- / Unknown

Baltic District Designators

Denmark

AA

- (1) Sea area N of Hammaren
- (2) Fairway to Ronne
- (3) Sea area between Ronne and Falsterbo
- (4) Sea area off Falsterbo Rev
- (5) Fairway through Drogden
- (6) Fairway to Kobenhavn

BB

- (1) Sea area W of Ven
- (2) Sea area E of Ven
- (3) Sea area off Helsingor
- (4) Sea area off Nakkehoved
- (5) Sea area S of Hesselo
- (6) Fairway to Isefjorden-Kynbyvaerkets

CC

- (1) Sea area off Mon lighthouse (Route T)
- (2) Sea area S of Gedser (Route T)
- (3) Sea area S of Rodby Havn (Route T)

RADIO NAVIGATIONAL WARNINGS

- (4) Sea area SE of Keldsnor (Route T)
- (5) Sea area off Sprodsbjerg (Route T)
- (6) Sea area W of Omo (Route T)

DD

- (1) Agerso Sund-Stignaes
- (2) Store Baelt channel, W part
- (3) Store Baelt, E part (Route T)
- (4) Sea area E of Romso (Route T)
- (5) Fairway to Kalundborg oil harbor
- (6) Sea area W of Rosnaes (Route T)

EE

- (1) Sea area W of Sjaelland Rev (Route T)
- (2) Sea area W of Hesselo (Route T)
- (3) Sea area E of Anholt (Route T)
- (4) Sea area W of Fladen Lt (Route T)
- (5) Sea area NW of Kummelbanke (Route T)
- (6) Sea area N of Skagen (Route T)

FF

- (1) S entrance to Lille Baelt, Skjoldnaes
- (2) Sea area off Helnaes
- (3) Fairway to Abenra-Enstedvaerket
- (4) Sea area off Assens
- (5) Kolding Yderfjord to the bridges
- (6) Fairway to Esbjerg

GG

- (1) Fairway at Fredericia to the bridges
- (2) Sea area N of Aebelo
- (3) Fairway to Odense
- (4) Sea area at Vesborg lighthouse
- (5) Sea area S of Sletterhage
- (6) Fairway to Aarhus

HH

- (1) Sea area off Fornaes
- (2) Fairway to Randers
- (3) Entrance at Hals Barre
- (4) Fairway to Aalborg
- (5) Sea area NW of Laeso
- (6) Sea area off Hirsholmene

Finland

AA

- (1) Roytta harbor
- (2) Roytta-Etukari
- (3) Etukari-Ristinmatala
- (4) Ajos harbor
- (5) Ajos-Ristinmatala
- (6) Ristinmatala-Nukkujanmatala
- (7) Nukkujanmatala-Kemi lighthouse
- (8) Sea area SW of Kemi lighthouse
- (9) Nukkujanmatala-Ulkokrunni

BB

- (1) Virpiniemi-Ulkokrunni
- (2) Oulu harbor
- (3) Oulu-Kattilankalla
- (4) Kattilankalla-Oulu Lt 3
- (5) Oulu Lt 3-Oulu Lt 1
- (6) Sea area W of Oulu Lt 1
- (7) Open sea N of latitude of Marjaniemi

CC

- (1) Raahe harbor and vicinity

- (2) Heikinkari-Raahe lighthouse
- (3) Raahe lighthouse-Nahkiainen
- (4) Open sea between latitudes of Marjaniemi and Ulkokalla

DD

- (1) Rahja harbor
- (2) Rahja-Valimatala
- (3) Sea area from Valimatala to the line Ulkokalla-Ykskivi
- (4) Open sea between latitudes of Ulkokalla and Pietarsaari

EE

- (1) Ykspihlaja harbor and vicinity
- (2) Repskaret-Kokkola lighthouse
- (3) Sea area off Kokkola lighthouse
- (4) Pietarsaari harbor and vicinity
- (5) Masskar-Kallan
- (6) Sea area off Kallan
- (7) Open sea between latitudes of Pietarsaari and Nordvalen

FF

- (1) Sea area NE of Nordvalen
- (2) Sea area from Nordvalen to W of Norrskar
- (3) Vaskiluoto harbor
- (4) Vaskiluoto-Storhasten
- (5) Storhasten-Ensten
- (6) Ensten-Korso
- (7) Korsu-Norrskar
- (8) Fairway NW of Norra Glopsten-Skvattan
- (9) Sea area off Skvattan

GG

- (1) Kaskinen harbor
- (2) Sea area off Salgrund
- (3) Sea area farther off Salgrund
- (4) Open sea N of latitude of Yttergrund

HH

- (1) Tahkoluoto harbor
- (2) Mantyluoto harbor
- (3) Kallo-Kolmikulma
- (4) Sea area from Kolmikulma to the line
- (5) Sea area W of Sappi
- (6) Sea area beyond that visible from Sappi
- (7) Open sea between the latitudes of Yttergrund and Rauma

II

- (1) Rauma harbor and vicinity
- (2) Valkeakari-Kylmapihlaja
- (3) Kylmapihlaja-Raumanmatala
- (4) Sea area W of Raumanmatala
- (5) Open sea S of latitude of Rauma

JJ

- (1) Uusikaupunki harbor and vicinity
- (2) Kirsta-Isokari
- (3) Isokari-Sandback
- (4) Sea area off Sandback

KK

- (1) Sea area off Salskar
- (2) Sea area N of Market
- (3) Sea area W of Market
- (4) Sea area S of Market

RADIO NAVIGATIONAL WARNINGS

- LL
- (1) Maarianhamina harbor and vicinity
 - (2) Sea area off Kobbaklintar and Nyhamn
 - (3) The middle Aland Sea
 - (4) Sea area off Lagskar

- MM
- (1) Naantali harbor
 - (2) Naantali-Rajakari
 - (3) Turku harbor
 - (4) Turku-Rajakari
 - (5) Rajakari-Orhisaari
 - (6) Orhisaari-Lovskar

- NN
- (1) Lovskar-Korra
 - (2) Korra-Iso Hauteri
 - (3) Iso Hauteri-Isokari
 - (4) Lovskar-Berghamn
 - (5) Berghamn-Gustav Dalen
 - (6) Gustav Dalen-Stora Sottunga
 - (7) Stora Sottunga-Brandokobben
 - (8) Brandokobben-Ledskar
 - (9) Sea area off Rodhamn

- OO
- (1) Lovskar-Grisselborg
 - (2) Grisselborg-Norparskar
 - (3) Sea area at Vidskar
 - (4) Uto
 - (5) Sea area S of Uto
 - (6) Sea area beyond that visible from Uto
 - (7) Sea area near Bogskar
 - (8) Sea area S of Bogskar
 - (9) Sea area beyond that visible southward from Bogskar

- PP
- (1) Hanko harbor
 - (2) Sea area E of Russaro
 - (3) Sea area S of Russaro
 - (4) Sea area beyond that visible S from Russaro
 - (5) Hanko-Jarngrynnorna
 - (6) Jarngrynnorna-Uto

- QQ
- (1) Koverhar harbor and vicinity
 - (2) Hasto Buso-Langden
 - (3) Langden-Ajax
 - (4) Sea area S of Ajax
 - (5) Sea area S of Jussaro

- RR
- (1) Inkoo harbor and vicinity
 - (2) Kantvik harbor and vicinity
 - (3) Sea area at Porkkala
 - (4) Porkkala Ronnskar-Sommario
 - (5) Sea area off Sommario
 - (6) Sea area farther off Sommario

- SS
- (1) Helsinki harbor
 - (2) Suomenlinna-Harmaja
 - (3) Harmaja-Svartbaden
 - (4) Svartbaden-Helsinki lighthouse
 - (5) Helsinki lighthouse-sea area S of Porkkala

- (6) Archipelago fairway Helsinki-Porkkala Ronnskar

- TT
- (1) Porvoo harbor and vicinity
 - (2) The S point of Emsalo-Porvoo lighthouse
 - (3) Porvoo lighthouse-Kalbadagrund
 - (4) Sea area Kalbadagrund-Helsinki lighthouse
 - (5) Valkom harbor and vicinity
 - (6) Archipelago fairway Boisto-Glosholm
 - (7) Archipelago fairway Glosholm-Helsinki

- UU
- (1) Kotka harbor and vicinity
 - (2) Viikari-Boisto
 - (3) Boisto-Orrengrund
 - (4) Orrengrund-Tiiskeri
 - (5) Sea area Tiiskeri-Kalbadagrund
 - (6) Hamina harbor and vicinity
 - (7) Suurmusta-Merikari
 - (8) Merikari-Kaunissaari

Germany

- AA
- (1) Stralsund to Palmer Ort
 - (2) Palmer Ort to Freesendorfer Haken
 - (3) Osttief
 - (4) Landtief fairway
 - (5) Sassnitz, port
 - (6) Sea area off Sassnitz
 - (7) Sea area off Arkona

- BB
- (1) Stralsund to Bessiner Haken
 - (2) Vierendehlrinne
 - (3) Barhoft to Gellenfahrwasser
 - (4) Sea area off Neuendorf

- CC
- (1) Rostock to Warnemunde
 - (2) Rostock, Seehafen
 - (3) Warnemunde, Seekanal
 - (4) Sea area off Warnemunde
 - (5) Rostock, sea area N of navigation buoy

- DD
- (1) Wismar to Walfisch
 - (2) Walfisch to Timmendorf
 - (3) Timmendorf to Wismar navigation buoy
 - (4) Lubeck to Travemunde
 - (5) Travemunde, harbor
 - (6) Sea area off Travemunde
 - (7) Sea area off Dahmeshoved

- EE
- (1) Holtenau to Laboe
 - (2) Sea area off Bulk
 - (3) Sea area NE of Kiel lighthouse
 - (4) Sea area off Westermarkeldorf
 - (5) Sea area off Marienleuchte
 - (6) E entrance of Fehmarnbelt

- FF
- (1) Flensburg to Holnis
 - (2) Holnis to Neukirchen
 - (3) Neukirchen to Kalkgrund
 - (4) Sea area off Falshoft

RADIO NAVIGATIONAL WARNINGS

- | | |
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| <p style="text-align: center;">GG</p> <p>(1) Holtenau, Kanalzufahrt</p> <p>(2) Kanal, Holtenau to Rendsburg</p> <p>(3) Kanal, Rendsburg to Brunsbittel</p> <p>(4) Brunsbittel, Kanalzufahrt</p> <p style="text-align: center;">HH</p> <p>(1) Hamburg-Landungsbrücken, Elbe</p> <p>(2) Stadersand (Elbe)</p> <p>(3) Brunsbittel (Elbe)</p> <p>(4) Cuxhaven to Neuwerk</p> <p>(5) Sea area off Elbe lightship</p> <p style="text-align: center;">II</p> <p>(1) Bremen (Weser)</p> <p>(2) Brake (Weser)</p> <p>(3) Bremerhaven (Weser)</p> <p>(4) Hohe Weg lighthouse, channel</p> <p>(5) Alte Weser, channel</p> <p>(6) Neue Weser, channel</p> <p style="text-align: center;">KK</p> <p>(1) Wilhelmshaven harbor entrance</p> <p>(2) Wilhelmshaven oil pier (Jade)</p> <p>(3) Schillig (Jade)</p> <p>(4) Wangerooge channel</p> <p style="text-align: center;">LL</p> <p>(1) Emden (Ems) and outer harbor</p> <p>(2) Emden to Randzelgat (Ems)</p> <p>(3) Borkum, Randzelgat (Ems)</p> <p>(4) Borkum, Westerems</p> <p style="text-align: center;">Netherlands</p> <p style="text-align: center;">AA</p> <p>(1) Delfzijl</p> <p>(2) Eemshaven</p> <p>(3) Eems; Oterdum-Eemshaven</p> <p>(4) Eems; Eemshaven-Hubertgat</p> <p style="text-align: center;">BB</p> <p>(1) Harlingen</p> <p>(2) Along Pollendam</p> <p>(3) Blauwe Slenk</p> <p>(4) Vlietstroom and Stortemelk</p> <p style="text-align: center;">CC</p> <p>(1) Den Helder</p> <p>(2) Texelstroom and Marsdiep</p> <p>(3) Schulpengat</p> <p style="text-align: center;">DD</p> <p>(1) Branch canal G and Zaandam harbors</p> <p>(2) Amsterdam E harbors</p> <p>(3) Amsterdam W harbors</p> <p>(4) Branch canal A (Beverwijk)</p> <p>(5) Nordseekanal</p> <p>(6) IJmuiden locks-fairway buoy</p> <p style="text-align: center;">EE</p> <p>(1) Nieuwe Maas and harbors</p> <p>(2) Botlek harbors</p> <p>(3) Europoort</p> <p>(4) Nieuwe Waterweg</p> <p>(5) Hoek van Holland-fairway buoy</p> <p style="text-align: center;">FF</p> <p>(1) Moerdijk</p> <p>(2) Moerdijk-Dordrecht</p> | <p>(3) Dordrecht</p> <p>(4) Oude Maas</p> <p>(5) Noord</p> <p style="text-align: center;">GG</p> <p>(1) Antwerpen harbors</p> <p>(2) Schelde: Antwerpen-Hansweert</p> <p>(3) Schelde: Hansweert-Vlissingen roads</p> <p>(4) Sloehaven</p> <p>(5) Oostgat</p> <p>(6) Wielingen</p> <p>(7) Terneuzen Canal-Gent</p> <p style="text-align: center;">Norway</p> <p style="text-align: center;">AA</p> <p>(1) Sekken (Halden)</p> <p>(2) Singlefjorden (Halden)</p> <p>(3) Svinesund-Halden</p> <p>(4) Torbjørnskjær light</p> <p>(5) Struten light</p> <p>(6) Loperen (Fredrikstad)</p> <p style="text-align: center;">BB</p> <p>(1) Osterelv (Fredrikstad)</p> <p>(2) Leira (Fredrikstad)</p> <p>(3) Vesterelv (Fredrikstad)</p> <p>(4) Rauoyfjord</p> <p>(5) Verlebukta-Moss</p> <p>(6) Mossesundet</p> <p style="text-align: center;">CC</p> <p>(1) Oslo-Steilene-Spro light</p> <p>(2) Spro light-Fagerstrand-Drobak</p> <p>(3) Drobak-Filtvet light</p> <p>(4) Filtvet light-Gullholmen light</p> <p>(5) Rodtangen- Svelvik</p> <p>(6) Svelvik-Steinsbraten light</p> <p>(7) Steinsbraten light-Drammen</p> <p>(8) Breiangen (N of Horten)</p> <p style="text-align: center;">DD</p> <p>(1) Langgrunn (Horten)</p> <p>(2) Gullholmen light-Mefjordbaen</p> <p>(3) Mefjordbaen-Fulehuk light</p> <p>(4) Fulehuk light-Faerder light</p> <p>(5) W of Faerder light</p> <p>(6) S of Faerder</p> <p style="text-align: center;">EE</p> <p>(1) Torgersøygapet (Tonsberg)</p> <p>(2) Husøysund-Tonsberg channel</p> <p>(3) Tonsberg inner harbor</p> <p>(4) Vestfjord (Tonsberg)</p> <p>(5) Leistenslop</p> <p>(6) Vrengen</p> <p style="text-align: center;">FF</p> <p>(1) Tjømekjæla</p> <p>(2) Sandefjord</p> <p>(3) Inside Svenner light</p> <p>(4) Off Svenner light</p> <p>(5) Larviksfjorden (Stavern-Larvik)</p> <p>(6) Langesundsbukta</p> <p style="text-align: center;">GG</p> <p>(1) Brevikfjorden</p> <p>(2) Frierfjorden (Porsgrunn, Skien)</p> |
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RADIO NAVIGATIONAL WARNINGS

- (3) Jomfrulandsrenna
- (4) Off Jomfruland
- (5) Skatoysundet (Kragero)
- (6) Langarsund (Kragero)

HH

- (1) Kragerofjorden
- (2) Gronholmgapet (Risor)
- (3) Stangholmgapet (Risor)
- (4) Lyngorfjorden
- (5) Off Lyngor
- (6) Tvedestrandsfjord

II

- (1) Tromsoysundet (Arendal)
- (2) Galtesund (Arendal)
- (3) Inside Torungen light (Arendal)
- (4) Off Torungen light (Arendal)
- (5) Grimstad
- (6) Inside Homborsund light

JJ

- (1) Off Homborsund light
- (2) Lillesand
- (3) Kristiansandsfjorden
- (4) Off Iksoy light (Kristiansand)

Poland

AA

- (1) Sea area off Krynica Morska
- (2) Gdansk harbor
- (3) Gdansk, Port Polnocny, harbor
- (4) Sea area off Gdansk
- (5) Gdynia, harbor
- (6) Sea area off Gdynia
- (7) Sea area S of Hel
- (8) Sea area E of Hel
- (9) Sea area N of Hel

BB

- (1) Sea area off Rozewie
- (2) Ustka, harbor
- (3) Sea area off Ustka
- (4) Darlowo harbor
- (5) Sea off Darlowo
- (6) Kolobrzeg, harbor
- (7) Sea area off Kolobrzeg

CC

- (1) Zalew Szczecinski
- (2) Szczecin, harbor
- (3) Swinoujscie-Szczecin, fairway
- (4) Swinoujscie, harbor
- (5) Sea area off Swinoujscie

Sweden

AA

- (1) Karlsborg-Maloren
- (2) Sea area off Maloren
- (3) Lulea-Bjornklack
- (4) Bjornklack-Farstugrunden
- (5) Sea area off Farstugrunden
- (6) Lulea-Rodkallen
- (7) Rodkallen-Norstromsgrund

BB

- (1) Haraholmen-Nygran
- (2) Sea area off Nygran
- (3) Skelleftehamn-Gasoren
- (4) Sea area off Gasoren
- (5) Sea area off Bjuroklubb

CC

- (1) NE of Nordvalen
- (2) SW of Nordvalen
- (3) Vastra Kvarken (W of Holmoarne)
- (4) Umea-Vaktaren
- (5) SE of Vaktaren
- (6) Sea area NE and SE of Sydostbrotten

DD

- (1) Fairway to Husum
- (2) Ornskoldsvik-Hornskaten
- (3) Hornskaten-Skagsudde
- (4) Sea area off Skagsudde
- (5) Fairway W of Ulvoarna
- (6) Sea area off Ulvoarna

EE

- (1) Angermanalven above Sando bridge
- (2) Angermanalven below Sando bridge
- (3) Harnosand-Harnon
- (4) Sea area off Harnon
- (5) Sundsvall-Draghallan
- (6) Draghallan-Astholmsudde-Bramon
- (7) Sea area off Astholmsudde
- (8) Sea area off Bramon

FF

- (1) Hudiksvall-Saltvik
- (2) Saltvik-Ago
- (3) Sea area off Ago
- (4) Sandarne-Hallgrund
- (5) Sea area off Hallgrund
- (6) Ljusnefjarden-Storjungfrun
- (7) Sea area off Storjungfrun

GG

- (1) Gavle-Bonan
- (2) Bonan-Eggegrund
- (3) E of Eggegrund
- (4) Sea area off Orskar
- (5) Oregrundsgrepen
- (6) Sea area off Grundkallen

HH

- (1) Passage at Understen
- (2) Sea area off Svartklubben
- (3) Oregrund, Hallstavik-Svartklubben
- (4) Sea area off Simpna
- (5) Sea area off Soderarm and Tjarven
- (6) Sea area off Svenska Hogarna

II

- (1) Stockholm-Tralhavet-Klovholmen
- (2) Tralhavet-Furusund-Kappelskar
- (3) Kappelskar-Soderarm
- (4) Klovholmen-Sandhamn
- (5) Sea area off Sandhamn and Ravegegrundet
- (6) Trollharan-Daloro
- (7) Daloro-Landsort
- (8) Fairway to Nynashamn
- (9) Sea area S of Landsort

RADIO NAVIGATIONAL WARNINGS

KK

- (1) Koping-Kvicksund
- (2) Vasteras-Gronso
- (3) Gronso-Sodertalje
- (4) Stockholm-Sodertalje
- (5) Sodertalje-Fifong
- (6) Fifong-Landsort

LL

- (1) Norrkoping-Hargokalv
- (2) Hargokalv-Vinterklasen
- (3) Oxelosund-Vinterklasen
- (4) Vinterklasen-Havringe-Norra Krankan
- (5) Oxelosund steelworks-Lillhammaren-Norra Krankan
- (6) Norra Krankan-Gustafe Dalen

MM

- (1) Sea area W of Gotska Sandon
- (2) Sea area off Visby
- (3) W of Stora Karlso
- (4) Sea area off Hoburg
- (5) Sea area off Mago (Slite)
- (6) Sea area off Faro

NN

- (1) Vastervik-Marsholmen-Ido
- (2) Sea area off Ido
- (3) Oskarshamn-Furon
- (4) Furon-Olands Norra Udde
- (5) Sea area off Olands Norra Udde

OO

- (1) Bla Jungfrun-Kalmar
- (2) Kalmar-Utgrunden
- (3) Utgrunden-SW of Olands Sodra Udde
- (4) Sea area SE of Olands Sodra Udde

PP

- (1) Karlskrona-Aspo
- (2) Sea area off Aspo
- (3) Fairway to Karishamn
- (4) Sea area off Hano
- (5) Fairway to Ahus
- (6) Sea area off Sandhammaren
- (7) Fairway to Trelleborg
- (8) Sea area SE of Falsterbo Rev

RR

- (1) Sea area N of Falsterbo Rev
- (2) Drogden
- (3) FlintraAnnan
- (4) Fairway to Malmo
- (5) The Sound between Malmo and Ven
- (6) The Sound E of Ven
- (7) The Sound off Halsingborg
- (8) N entrance to the Sound (W and S of Kullen)

SS

- (1) Fairway to Halmstad (Bight of Laholm)
- (2) Fairway to Valberg
- (3) Sea area S and W off Nidingen
- (4) Knippelholmen-Botto
- (5) Vinga Sand and Danafjord
- (6) Buskar-Vinga
- (7) Buskar-Trubaduren
- (8) Sea area off Vinga and Trubaduren

TT

- (1) Uddevalla-Stenungsund
- (2) Stenungsund-Astol
- (3) Astol-Hatteberget
- (4) Sea area off Pater Noster
- (5) Sea area off Maseskar
- (6) Brofjorden harbor-Dynabrott
- (7) Sea area off Dynabrott and Gaven
- (8) Kosterfjorden
- (9) Sea area off Nordkoster

UU

- (1) Gota Alv
- (2) Trollhatte canal-Dalbo bridge
- (3) Vanersborgsviken
- (4) Fairway through Luro archipelago
- (5) Fairway to Gruvon
- (6) Fairway to Karlstad
- (7) Fairway to Kristinehamn
- (8) Fairway to Otterbacken
- (9) Fairway to Lidkoping

Russia, Estonia, Latvia, and Lithuania

AA

- (1) Sankt-Peterburg harbor
- (2) Sankt-Peterburg-Kotlin, fairway
- (3) Kotlin-Shepelevskiy, fairway
- (4) Shepelevskiy to Gulf of Vyborg, by way of Proliv B'yerke
- (5) Vyborg, Gulf and harbor
- (6) Meridian of Shepelevskiy-Narvskaya guba, fairway

BB

- (1) Meridian of Narvskaya guba-meridian of Gogland, fairway
- (2) Meridian of Gogland-meridian of Loksa
- (3) Meridian of Loksa-meridian of Tallin, fairway
- (4) Meridian of Tallin-meridian of Ostrov Vormsisaar, fairway
- (5) Meridian of Ostrov Vormsisaar-meridian of Ristna, fairway
- (6) Meridian of Ristna-Irbenskiy prokhod, fairway

CC

- (1) Irbenskiy prokhod, fairway
- (2) Irbenskiy prokhod-Mersrags, fairway
- (3) Mersrags-Riga harbor entrance, fairway
- (4) Riga harbor
- (5) Irbenskiy prokhod-Zaliv Pyarnu-lakht, fairway
- (6) Pyarnu, bight and harbor

DD

- (1) Irbenskiy prokhod-Ventspils harbor entrance, fairway
- (2) Ventspils harbor
- (3) Ventspils-Liyepaya, fairway
- (4) Liyepaya-Klaipeda harbor entrance, fairway
- (5) Klaipeda harbor
- (6) Klaipeda, sea area SW

RADIO NAVIGATIONAL WARNINGS

300L. Navigational Warning Station List

The stations in the following list broadcast navigational warnings, including ice information. Where these stations also provide weather and other miscellaneous information, those broadcast times and frequencies are included. Stations providing only weather information, however, are omitted. For information and schedules of marine weather broadcasts made primarily in English, refer to the Selected Worldwide Marine Weather Broadcasts (WWMARWETHRBC), a joint publication of the National Weather Service (NWS) and Naval Oceanography Command.

Broadcasts are in English unless otherwise indicated.

NOAA Weather Radio is a service providing specialized weather broadcasts for maritime users along the U.S. coastline, Great Lakes, Puerto Rico, the Virgin Islands, Guam and Saipan. It provides continuous broadcasts of the latest weather information directly from National Weather Service (NWS) offices. Taped weather messages are repeated every four to six minutes and are routinely revised every one to three hours, or more frequently if needed. During severe weather, NWS forecasters can interrupt the routine weather broadcasts and substitute special warning messages. NOAA Weather Radio broadcasts are received on one of seven VHF channels listed below. These channels are generally designated on marine VHF equipment as WX-1 through WX-7. These broadcasts usually can be received within 40 miles of the antenna site.

NOAA Weather Radio VHF Channels	
WX-1	162.550 MHz
WX-2	162.400 MHz
WX-3	162.475 MHz
WX-4	162.425 MHz
WX-5	162.450 MHz
WX-6	162.500 MHz
WX-7	162.525 MHz

A list of broadcast stations and frequencies may be obtained from the NOAA Weather Radio Website at:
<http://www.nws.noaa.gov/nwr>

or from the NWS at the following address:

NATIONAL WEATHER SERVICE
ATTN: W/OM12
NOAA
1325 EAST WEST HIGHWAY
SILVER SPRING MD 20910

The NWS Marine Product Dissemination Information Homepage is internet accessible through the World Wide Web at:

<http://www.nws.noaa.gov/om/marine/home.htm>

Information available includes forecasts and warnings, up-to-date marine weather charts, including those broadcast by the Coast Guard over HF radiofacsimile, and the NOAA Weather Radio Guide.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
GREENLAND				
3001.5	Qaqortoq (OXF).	2129, 2225, 2265 kHz, J3E.	0035, 0335, 0635, 0935, 1235, 1535, 1835, 2135.	Local navigational warnings.
3002	Ammassalik (OZL).	2250, 3250 kHz, J3E.	0120, 0420, 0720, 1020, 1320, 1620, 1920, 2220.	Local navigational warnings.
3003	Greenland Radio.	570, 650, 720, 810, 900 kHz, A3E, 90.5, 92, 95, 95.2, 95.4, 95.5, 96, 96.25, 97, 98.5, 98.7 MHz, F3E.	2030 (Mon. - Fri.), 2100 (Sat., Sun.).	Local navigational warnings.
		570, 650, 720, 810, 900 kHz, A3E, 90.5, 92, 95, 95.2, 95.4, 95.5, 96, 96.25, 97, 98.5, 98.7 MHz, F3E.	0200, 1000, 1145, 1545, 2030 (Mon. - Sat.).	Weather.
		570, 650, 720, 810, 900 kHz, A3E, 90.5, 92, 95, 95.2, 95.4, 95.5, 96, 96.25, 97, 98.5, 98.7 MHz, F3E.	0200, 1100, 1500, 2100 (Sun., Hol.).	Weather.
3005	Nuuk (Kook Island).	518 kHz, F1B.	0340, 0740, 1140, 1540, 1940, 2340.	NAVTEX (W).
3015	Aasiaat (OYR).	2116, 2304, 2400, 3125, 3276, 3280 kHz, J3E.	0235, 0535, 0835, 1135, 1435, 1735, 2035, 2335.	Local navigational warnings.
CANADA - ARCTIC AND ATLANTIC				
3017	Iqaluit, N.T. (VFF).	2514, 6513 kHz, J3E.	0110, 1320, 1705.	Local navigational warnings, weather and ice (ice at 0110, 1705).
		2514, 2582, 4363 kHz, J3E.	1340, 1705, 2235.	Local navigational warnings, weather and ice (ice only at 1705).
		3251.1, 7708.1 kHz (USB), J3C.	1000, 2100.	Weather FAX; 120/576.
		3251.1, 7708.1 kHz (USB), J3C.	0500, 2125.	Ice FAX; 120/576.
		2582, 4363 kHz, J3E.	1240, 1705, 2310.	Local navigational warnings, weather and ice (ice only at 1705) (Resolute).
		3251.1, 7708.1 kHz (USB), J3C.	1100, 2330.	Weather FAX; 120/576 (Resolute).
		3251.1, 7708.1 kHz (USB), J3C.	0010, 0700.	Ice FAX; 120/576 (Resolute).
		490 kHz, F1B.	0310, 0710, 1110, 1510, 1910, 2310.	NAVTEX (S) in French.
		518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (T).
NOTE: Station open during navigation season only, Jun. - Dec.				
3018	Inuvik, N.W.T. (VFA).	2558, 4363, 6218.6 kHz, J3E, Ch. 26, F3E.	0235, 1435.	Local navigational warnings and weather.
		4363, 5803 kHz, J3E, Ch. 26, F3E.	0115, 1315.	Local navigational warnings and weather.
		8457.8 kHz (USB), J3C.	0200, 1630.	Weather and ice FAX; 120/576.
NOTE: During navigation season only, May - Oct.				
3019.5	Labrador, Labr. (VOK).	2598 kHz, J3E.	0137, 1007, 1437, 2037.	Weather and ice.
		2598 kHz, J3E.	1107, 2307.	Local navigational warnings.
		Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
		518 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350; 0910, 2110 (Jul. - Oct.).	NAVTEX (X).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3020	St. Anthony, Nfld. (VCM).	2598 kHz, J3E.	0107, 0907, 1337, 1937.	Weather and ice (ice at 0107, 0907).
		2598 kHz, J3E.	1237, 1907.	Local navigational warnings and ice (ice at 1907).
		Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
3021	Port aux Basques, Nfld. (VOJ).	2598 kHz, J3E.	0207, 0807, 1507, 2107.	Weather and ice (ice at 0807).
		2598 kHz, J3E, Ch. 21B, 28B, 83B, F3E.	1207, 1837.	Local navigational warnings and ice (ice at 1837).
		Ch. 21B, 28B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
3023	St. John's, Nfld. (VON).	2598 kHz, J3E.	0007, 0837, 1637, 2207.	Weather and ice.
		2598 kHz, J3E.	1307, 2007.	Local navigational warnings.
		Ch. 21B, 28B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
		518 kHz, F1B.	0220, 0620, 1020, 1420, 1820, 2220.	NAVTEX (O).
3027.5	Placentia, Nfld. (VCP).	2598 kHz, J3E.	0048, 0737, 1607, 2137.	Weather and ice (ice at 0737, 2137).
		2598 kHz, J3E.	1137, 1807.	Local navigational warnings.
		Ch. 21B, 23B, 28B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
3032	Quebec, Que. (VCC).	Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
3036	Montreal, Que. (VFN).	Ch. 21B, 25B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice. (Seasonal operation May - Oct. on Ch. 83B.)
3038	Les Escoumins, Que. (VCF).	Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
3040	Riviere-au-Renard, Que. (VCG).	2598, 2749 kHz, J3E.	0937, 1737.	Local navigational warnings and ice.
		2598, 2749 kHz, J3E.	0437, 0847, 1407, 2317.	Weather.
		Ch. 21B, 25B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
		518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (C).
		518 kHz, F1B.	0035, 0435, 0835, 1235, 1635, 2035.	NAVTEX (D) in French.
3042	Sydney, N.S. (VCO).	2749 kHz, J3E, Ch. 21B, 83B, F3E.	1510, 2140.	Local navigational warnings.
		2749 kHz, J3E.	0040, 0740, 1440, 2110.	Weather.
		Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
		4416 kHz, J3C.	1121, 1142, 1741.	Ice FAX; 120/576.
		6915.1 kHz, J3C.	2200, 2331.	Ice FAX; 120/576.
		518 kHz, F1B.	0240, 0640, 1040, 1440, 1840, 2240.	NAVTEX (Q).
		518 kHz, F1B.	0255, 0655, 1055, 1455, 1855, 2255.	NAVTEX (J) in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3045	Halifax, N.S. (VCS) (CFH).	2749 kHz, J3E, Ch. 21B, 83B, F3E.	1310, 1910.	Local navigational warnings.
		2749 kHz, J3E.	0110, 0810, 1540, 2010.	Weather.
		Ch. 21B, 83B, F3E.	0240, 0840.	Local navigational warnings.
		Ch. 21B, 83B, F3E.	Continuous.	Weather.
		122.5, 4271, 6496.4, 10536, 13510 kHz, F3C.	Continuous.	Weather FAX*; 120/576.
		122.5, 4271, 6496.4, 10536, 13510 kHz, F3C.	0001, 2222, 2301.	Ice FAX*; 120/576.
*NOTE: CFH broadcast schedule at 1101.				
3047	Saint John, N.B. (VAR).	2749 kHz, J3E, Ch. 21B, 83B, F3E.	0140, 1040, 1640, 2040.	Weather.
		2749 kHz, J3E, Ch. 21B, 83B, F3E.	0140, 1240, 1640, 1940.	Local navigational warnings.
		Ch. 21B, 83B, F3E.	Continuous.	Weather.
		518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (U).
		518 kHz, F1B.	0335, 0735, 1135, 1535, 1935, 2335.	NAVTEX (V) in French.
ST. PIERRE AND MIQUELON				
3050	St. Pierre Radio.	1375 kHz, A3E.	1050, 1130, 1515, 2150.	Weather in French.
UNITED STATES AND CANADA - LAKES				
3068	Warton, Ont.	518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
3069	Prescott, Ont. (VBR).	Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
		Ch. 23B, 28B, F3E.	Continuous.	Local navigational warnings, weather and ice in French.
3070	Sarnia, Ont. (VBE).	Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings, weather and ice.
LOCAL WARNINGS: Local Notice to Mariners: Original reports to nearest Coast Guard station for relay to District Commander (oan).				
3074	Sault St. Marie, MI (NOG) U.S. Coast Guard.	Ch. 22A, F3E.	0005, 1205.	Local Notice to Mariners and weather.
3076	Buffalo, NY (NMD-47) U.S. Coast Guard.	Ch. 22A, F3E.	0255, 1455.	Local Notice to Mariners and weather.
3077	Detroit, MI (NMD-25) U.S. Coast Guard.	Ch. 22A, F3E.	0135, 1335.	Local Notice to Mariners and weather.
3078	Grand Haven, MI (NMD-32) U.S. Coast Guard.	Ch. 22A, F3E.	0235, 1435.	Local Notice to Mariners and weather.
3079	Milwaukee, WI (NMP-9) U.S. Coast Guard.	Ch. 22A, F3E.	0255, 1455.	Local Notice to Mariners and weather.
3080	Thunder Bay, Ont. (VBA).	2582 kHz, J3E, Ch. 26, F3E.	0040, 1410, 1520.	Local navigational warnings, weather and ice.
		Ch. 19, 26, F3E.	0030, 1000, 1130, 1330, 1730, 2230.	Local navigational warnings and weather.
		Ch. 21B, 83B, F3E.	Continuous.	Local navigational warnings and weather.
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
UNITED STATES - ATLANTIC AND GULF				
LONG-RANGE WARNINGS: NAVAREA IV: Original reports to NAVAREA IV Coordinator, National Imagery and Mapping Agency, Attn: PTNM (Mail stop D-44). HYDROLANT: Original reports to National Imagery and Mapping Agency. LOCAL WARNINGS: Local Notice to Mariners: Original reports to nearest Coast Guard Station for relay to District Commander (oan).				
3083	Southwest Harbor, ME (NMF-44) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1135, 2335.	Local Notice to Mariners and weather.
3084	Portland, ME (NMF-31) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1105, 2305.	Local Notice to Mariners and weather.
3086	Boston, MA (NMF) (NIK) (NMF-7) U.S. Coast Guard.	6314, 8416.5, 12579 kHz, F1B.	0030.	Ice (seasonal).
		6314, 8416.5, 12579 kHz, F1B.	0140.	Maritime Safety Information (MSI) (HF NBDP) (NAVAREA IV, HYDROLANT and weather).
		8416.5, 12579, 16806.5 kHz, F1B.	1218.	Ice (seasonal).
		8416.5, 12579, 16806.5 kHz, F1B.	1630.	Maritime Safety Information (MSI) (HF NBDP) (NAVAREA IV, HYDROLANT and weather).
		4235 kHz, F3C.	0230, 0745.	Weather FAX*; 120/576.
		6340.5, 9110 kHz, F3C.	0230, 0745, 1400, 1720, 1900.	Weather FAX*; 120/576.
		12750 kHz, F3C.	1400, 1900.	Weather FAX*; 120/576.
		6340.5, 9110, 12750 kHz, F3C.	1600, 1810.	Ice FAX; 120/576 (Feb. - Aug.).
		2670 kHz, J3E, Ch. 22A, F3E.	1035, 2235.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0045, 0445, 0845, 1245, 1645, 2045.	NAVTEX (F).
*NOTE: Broadcast schedule at 0243, 1405.				
3087	Woods Hole, MA (NMF-2) U.S. Coast Guard.	2670 kHz, J3E.	0440, 1640.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1005, 2205.	Local Notice to Mariners and weather.
3088.5	Long Island Sound, CT (NMY-15) U.S. Coast Guard.	Ch. 22A, F3E.	1120, 2320.	Local Notice to Mariners and weather.
3088.6	Moriches, NY (NMY-42) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	0010, 1210.	Local Notice to Mariners and weather.
3088.7	New York, NY (NMY-3) U.S. Coast Guard.	Ch. 22A, F3E.	1050, 2250.	Local Notice to Mariners and weather.
3090.7	Atlantic City, NJ (NMK-2) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1103, 2303.	Local Notice to Mariners and weather.
3092	Baltimore, MD (NMX) U.S. Coast Guard.	Ch. 22A, F3E.	0130, 1205.	Local Notice to Mariners and weather.
3093	Chincoteague, VA (NMN-70) U.S. Coast Guard.	2670 kHz, J3E.	0233, 1403.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	0200, 1145.	Local Notice to Mariners and weather.
3096	Chesapeake, VA (NMN) (NMN-80) U.S. Coast Guard.	4426, 6501, 8764, kHz, J3E.	0330, 0500, 0930.	Maritime Safety Information (MSI).
		6501, 8764, 13089 kHz, J3E.	1130, 1600, 2200, 2330.	Maritime Safety Information (MSI).
		8764, 13089, 17314 kHz, J3E.	1730.	Maritime Safety Information (MSI).
		2670 kHz, J3E.	0203, 1333.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	0230, 1120.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (N).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3099	Cape Hatteras, NC (NMN-13) U.S. Coast Guard.	2670 kHz, J3E.	0133, 1303.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	0100, 1055.	Local Notice to Mariners and weather.
3099.5	Fort Macon, NC (NMN-37) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E..	0103, 1233.	Local Notice to Mariners and weather.
3100	Charleston, SC (NMB) U.S. Coast Guard.	2670 kHz, J3E.	0420, 1620.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1200, 2200.	Local Notice to Mariners and weather.
3101	Savannah, GA (NMN) U.S. Coast Guard.	518 kHz, F1B.	0040, 0440, 0840, 1240, 1640, 2040.	NAVTEX (E).
3102	Mayport, FL (NMV) U.S. Coast Guard.	2670 kHz, J3E.	0620, 1820.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1215, 2215.	Local Notice to Mariners and weather.
3104	Miami, FL (NMA) (NCF) U.S. Coast Guard.	2670 kHz, J3E.	0350, 1550.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1230, 2230.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A).
3106	Key West, FL (NOK) U.S. Coast Guard.	Ch. 22A, F3E.	1200, 2200.	Local Notice to Mariners and weather.
3107.8	St. Petersburg, FL (NME) U.S. Coast Guard.	2670 kHz, J3E.	0320, 1420.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1300, 2300.	Local Notice to Mariners and weather.
3108	New Orleans, LA (NMG) (NMG-2) U.S. Coast Guard.	2670 kHz, J3E.	0550.	Local Notice to Mariners and weather.
		2670 kHz, J3E, Ch. 22A, F3E.	1035, 1235, 1635, 2235.	Local Notice to Mariners and weather.
		4316, 8502, 12788 kHz, J3E.	0330, 0500, 0930, 1130, 1600, 1730, 2200, 2330.	Local Notice to Mariners and weather.
		4317.9, 8503.9, 12789.9 kHz, F3C.	0000, 0600, 1200, 1800.	Weather FAX*; 120/576.
		518 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (G).
*NOTE: Broadcast schedule at 2025.				
3111	Mobile, AL (NOQ) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1020, 1220, 1620, 2220.	Local Notice to Mariners and weather.
3112	Galveston, TX (NOY) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1050, 1250, 1650, 2250.	Local Notice to Mariners and weather.
3116	Corpus Christi, TX (NOY-8) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	1040, 1240, 1640, 2240.	Local Notice to Mariners and weather.
MEXICO				
3118	Veracruz (XFU).	451 kHz, A1A.	0300, 1600, 2100.	Local navigational warnings.
		8656 kHz, A1A.	1600, 2100.	Local navigational warnings.
		451, 8656 kHz, A1A.	0400, 1600, 2100.	Weather.
CUBA				
3119	Santiago de Cuba (CLM).	482 kHz, A1A.	1903.	Local navigational warnings in Spanish.
		2760 kHz, J3E.	2340.	Local navigational warnings in Spanish.
3120	Arroyos de Mantua (CLF-2).	2760 kHz, J3E.	2350.	Local navigational warnings in Spanish.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3121	Cienfuegos (CLC).	460 kHz, A1A.	1903.	Local navigational warnings in Spanish.
		2760 kHz, J3E.	2305.	Local navigational warnings in Spanish.
3122	Nuevitas (CLK).	446 kHz, A1A.	1903.	Local navigational warnings in Spanish.
		2760 kHz, J3E.	2320.	Local navigational warnings in Spanish.
3131	Habana (CLA) (CLT).	476 kHz, A1A.	1903.	Local navigational warnings in Spanish.
		2760 kHz, H3E, J3E.	2310.	Local navigational warnings in Spanish.
		2760 kHz, H3E, J3E.	0105, 1305, 2005, 2205.	Weather in Spanish.
		476 kHz, A1A.	0150, 1350, 1750, 2150.	Military exercise warnings.
		2760 kHz, H3E, J3E.	0403, 1003, 1603, 2203.	Military exercise warnings in Spanish.
3133	Nueva Gerona (CLT-3).	2760 kHz, J3E.	1500.	Local navigational warnings in Spanish.
BERMUDA				
3135	Bermuda Harbor (ZBM).	2582 kHz, J3E, Ch. 27, F3E.	0035, 0435, 0835, 1235, 1635, 2035.	Local navigational warnings.
		2582 kHz, J3E, Ch. 27, F3E.	1235, 2035.	Weather.
		162.4 MHz (WX2)(Ch. 38), J3E.	Continuous.	Weather.
		Ch. 07, F3E.	1300.	Local navigational warnings and weather.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).
JAMAICA				
3135.5	Jamaica Coast Guard (6YX).	2738 kHz, A3E, Ch. 13, F3E.	1330, 1830.	Local navigational warnings and weather.
		Ch. 13, F3E.	0130, 1430, 1930.	Weather.
PUERTO RICO				
3138	San Juan, PR (NMR) (NMR-1) U.S. Coast Guard.	2670 kHz, J3E.	0305, 1505.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1210, 2210.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0200, 0600, 1000, 1400, 1800, 2200.	NAVTEX (R).
MARTINIQUE				
3140	Fort de France (CROSSAG) (MRCC).	Ch. 79, F3E; Ch. 80, F3E.	0020, 0040, 1450, 1510; 0030, 0050, 1500, 1520.	Local navigational warnings and weather in French for Martinique, St. Lucia and Dominica.
		Ch. 79, F3E; Ch. 80, F3E; Ch. 64, F3E.	1530, 2300; 1540, 1600, 2310, 2330; 1550, 2320.	Gunfire warnings and weather in French for Guadeloupe.
		Ch. 64, F3E.	0000, 1630.	Local navigational warnings and weather in French for St. Martin and Antigua.
		2545 kHz, J3E.	1215, 2133.	Weather in French.
		2545 kHz, J3E.	Every even hour.	Weather.
		Ch. 64, 79, 80, F3E.	Every hour.	Weather.
		Ch. 79, F3E; Ch. 80, F3E;	1120, 1140, 2220, 2240; 1130, 1150, 2230, 2250.	Weather in French for Martinique, St. Lucia and Dominica.
		Ch. 79, F3E; Ch. 80, F3E; Ch. 64, F3E.	0100, 1200; 0110, 0130, 1210, 1230; 0120, 1220.	Weather in French for Guadeloupe.
		Ch. 64, F3E.	0200, 1300.	Weather in French for St. Martin and Antigua.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
TRINIDAD AND TOBAGO				
3143	North Post (9YL) (Trinidad).	2735, 3165 kHz, J3E.	1250, 1850.	Local navigational warnings (weather on 3165 kHz).
		8441 kHz, A1A.	0100, 0600, 0900, 1300, 1500, 1730, 2130.	Weather.
		17184.8 kHz, A1A.	1200, 1530.	Weather.
		12885 kHz, A1A.	1330, 2050.	Weather.
		Ch. 24, 25, 26, 27, F3E.	1340, 2040.	Weather.
		6470.5 kHz, A1A.	2300.	Weather.
NETHERLANDS ANTILLES				
3145	Curacao (PJC).	518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
BRAZIL				
LONG-RANGE WARNINGS: NAVAREA V: Includes the waters west of 20°W between 7°N and 35°S, subdivided into the following areas: North Coast, East Coast and South Coast. Navigational aids are referred to by International numbers; the term "number of order" refers to Brazilian Light List numbers. Original reports are addressed "NAVEMAR" and handled by Brazilian government stations without charge.				
3150	Belem (PPL).	4321 kHz, A1A.	0600.	Local navigational warnings in Portuguese, NAVAREA V.
		8462 kHz, A1A.	1800.	Local navigational warnings in Portuguese, NAVAREA V.
		8462 kHz, A1A.	1000.	Weather.
		4321 kHz, A1A.	2200.	Weather.
		4369 kHz, J3E.	0103, 0603, 1003, 1203, 1503, 2103.	Local navigational warnings and weather in Portuguese, NAVAREA V.
3151	Belem Radio Liberal (ZYI-533).	1330 kHz.	0100, 0900, 1700.	Local navigational warnings.
3152	Belem Radio Marajoara (ZYI-531).	1130 kHz.	0200, 0930, 1800.	Local navigational warnings.
3153	Ponta do Ceu.	Ch. 16, F3E.	0000, 1200, 1800.	Local navigational warnings.
3154	Radio Nacional de Macapa (ZYH-222).	630 kHz.	1100, 1600, 2130.	Local navigational warnings.
3157	Olinda (PPO).	4321 kHz, A1A.	0200.	Local navigational warnings in Portuguese, NAVAREA V.
		8462 kHz, A1A.	1400.	Local navigational warnings in Portuguese, NAVAREA V.
		8294 kHz, F3C.	0745-0830, 1745-1830.	Weather FAX; 120/576
		4321 kHz, A1A.	0430.	Weather.
		8462 kHz, A1A.	1630.	Weather.
3161	Rio de Janeiro Naval (PWZ-33).	4369 kHz, J3E.	0103, 0603, 1003, 1203, 1503, 2103.	Local navigational warnings and weather in Portuguese, NAVAREA V.
		4289, 6435, 8550, 12795, 17160, 22530 kHz, A1A.	0500, 1330, 2230.	NAVAREA V and local navigational warnings.
		4289, 6435, 8550, 12795, 17160, 22530 kHz, F1B.	0400, 1230, 2130.	NAVAREA V and local navigational warnings.
		12660, 17140 kHz, F3C.	0745-0830, 1745-1830.	Weather FAX; 120/576.
		4289, 6435, 8550, 12795, 17160, 22530 kHz, A1A.	0215, 0945, 1945.	Weather.
		4289, 6435, 8550, 12795, 17160, 22530 kHz, F1B.	0115, 0845, 1845.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3166	Juncao (PPJ).	4321 kHz, A1A.	0800.	Local navigational warnings in Portuguese, NAVAREA V.
		8462 kHz, A1A.	2000.	Local navigational warnings in Portuguese, NAVAREA V.
		4321 kHz, A1A.	0000.	Weather.
		8462 kHz, A1A.	1200.	Weather.
		4381 kHz, J3E.	0103, 0603, 1003, 1203, 1503, 2103.	Local navigational warnings and weather in Portuguese, NAVAREA V.
URUGUAY				
3168	La Paloma (CWC-30).	2721.5, 4143.6, 6218.6 kHz, J3E, Ch. 15, F3E.	0303, 1533, 2303.	Local navigational warnings and weather in Spanish.
		490 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A) in Spanish.
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).
3169	Punta del Este (CWC-34).	2721.5 kHz, J3E, Ch. 15, F3E.	0133, 1503, 2133.	Local navigational warnings and weather in Spanish.
3170	Cerrito (Punta Carretas) (CWA) (CWF).	421.5 kHz, A1A, A2A, 4346, 8602, 12750, 16781.3, 22312.5 kHz, A1A.	0000, 1400, 1900.	Local navigational warnings and weather in Spanish.
		2768.5 kHz, H3E, J3E, R3E.	0010, 1410, 1910.	Local navigational warnings and weather in Spanish.
		4357.4, 6518.8, 8291.1, 13128.7, 17260.8, 22636.3 kHz, J3E, R3E.	0003, 1403, 1903.	Local navigational warnings and weather in Spanish.
3172	Montevideo Armada (CWM).	4280 kHz, A1A, 6376 kHz, A2A.	0100, 1130, 1800.	Local navigational warnings and weather in Spanish.
3176.1	Montevideo Trouville (CWC-39).	2721.5, 4143.6, 6218.6 kHz, J3E, Ch. 15, F3E.	0103, 1133, 1903.	Local navigational warnings and weather in Spanish.
3177	Colonia (CWC-23).	2721.5 kHz, J3E, Ch. 15, F3E.	0330, 1330, 2100.	Local navigational warnings and weather in Spanish.
ARGENTINA				
LONG-RANGE WARNINGS: NAVAREA VI: Includes the waters between the coast of Argentina and 20°W between 35°50'S and Antarctica. Original reports to NAVAREA VI Coordinator, Hidrografia Naval, Buenos Aires.				
3182	Buenos Aires (L2B) (L2C) (L2G).	4239.5, 8528, 12901 kHz, A1A.	0030, 1530, 2130.	NAVAREA VI.
		4239.5, 8528, 12901 kHz, A1A.	1230.	Local navigational warnings and weather in Spanish.
		437, 12901 kHz, A1A.	2330.	Local navigational warnings in Spanish.
		437, 4239.5, 8528, 12901 kHz, A1A.	0130.	Weather in Spanish.
		Ch. 14, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
		518 kHz, F1B.	0250, 0650, 1050, 1450, 1850, 2250.	NAVTEX (R).
3184	Mar del Plata (L2T) (L2U).	2065, 6224 kHz, J3E.	0315, 1315, 2115.	Weather in Spanish.
		2065, 6224 kHz, J3E.	1315, 2215.	Local navigational warnings in Spanish.
		Ch. 14, F3E.	0230, 0530, 1130, 1730, 2330.	Local navigational warnings and weather in Spanish.
		518 kHz, F1B.	0240, 0640, 1040, 1440, 1840, 2240.	NAVTEX (Q).
3186	Recalada Rio de la Plata (L3Z).	Ch. 15, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3191	Quequen (L5B).	Ch. 14, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
3192	Bahia Blanca (L2N).	Ch. 14, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
3193	Puerto Madryn (L4S).	Ch. 15, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
3196	Comodoro Rivadavia (L2Y) (L2Z) (L3A) (L3B).	437, 4239.5 kHz, A1A.	1230, 2200.	Local navigational warnings (weather at 2200) in Spanish.
		2065, 6224 kHz, J3E.	1035, 1450.	Local navigational warnings in Spanish.
		2065 kHz, J3E.	0750, 1950.	Weather in Spanish.
		Ch. 14, F3E.	0350, 0750, 1050, 1650, 2250.	Local navigational warnings and weather in Spanish.
		4210 kHz, F1B.	0530, 2300.	Maritime Safety Information (MSI) (HF NBDP) (Local navigational warnings and weather).
		8416.5, 12579 kHz, F1B.	0530, 1300, 1830, 2300.	Maritime Safety Information (MSI) (HF NBDP) (Local navigational warnings and weather).
		19680.5 kHz, F1B.	1300, 1830.	Maritime Safety Information (MSI) (HF NBDP) (Local navigational warnings and weather).
		518 kHz, F1B.	0220, 0620, 1020, 1420, 1820, 2220.	NAVTEX (O).
3204	Rio Gallegos (L3I).	Ch. 14, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
		518 kHz, F1B.	0210, 0610, 1010, 1410, 1810, 2210.	NAVTEX (N).
3208	Ushuaia (L3P).	Ch. 14, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather in Spanish.
		518 kHz, F1B.	0200, 0600, 1000, 1400, 1800, 2200.	NAVTEX (M).
ANTARCTICA				
3210	Molodezhnaya.	6785, 9280, 15830, 17660, 18490 kHz, A3C.	0910, 0930, 1215, 1235, 1730, 2330.	Ice FAX; 28, 120/576.
3211	Palmer Station (KWB-268).	4553 kHz, F1B.	0100.	Ice.
		13553 kHz, F1B.	1500.	Ice.
		10235 kHz, F1B.	2000.	Ice.
ICELAND				
3212	Reykjavik (TFA).	438 kHz, A1A.	0530, 1130, 1730, 2330.	Local navigational warnings, weather and ice.
		1650 kHz, A3E.	0430.	Local navigational warnings, weather and ice in Icelandic.
		1876 kHz, J3E.	0533, 1133, 1733, 2333.	Weather.
		518 kHz, F1B.	0250, 0650, 1050, 1450, 1850, 2250.	NAVTEX (R).
		518 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350.	NAVTEX (X) (East Coast Greenland broadcast for Denmark).
3212.5	Icelandic State Broadcasting Service.	209, 666, 738 kHz, A3E.	1010, 1245, 1615, 1845, 2215.	Ice in Icelandic.
		209 kHz, A3E.	0100.	Weather and ice in Icelandic.
		209, 666, 738 kHz, A3E.	0645, 0815, 1010, 1615, 1845, 2215.	Weather in Icelandic.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
JAN MAYEN				
3214	Jan Mayen (LMJ).	1743 kHz, J3E.	2100.	Local navigational warnings.
		1743 kHz, J3E, Ch. 60, F3E.	0905, 2005.	Weather and ice.
FAROE ISLANDS				
3215	Torshavn (OXJ).	512.5 kHz, A1A.	Every odd hour +50m.	Local navigational warnings and weather.
		1641 kHz, A3E, Ch. 23, 24, 25, 26, F3E.	Every even hour +35m.	Local navigational warnings and weather.
BJORNOYA				
3216	Bjornoya (LJB).	1722 kHz, J3E, Ch. 66, F3E.	On request.	Local navigational warnings, weather and ice.
SVALBARD				
3218	Svalbard (LGS).	1731 kHz, J3E, Ch. 25, 26, 27, F3E.	On request.	Weather and ice.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A).
RUSSIA - NORTHERN COASTS				
	LONG-RANGE WARNINGS: NAVIP: World-wide navigational warnings. LOCAL WARNINGS: PRIP.			
3224	Murmansk (UHS) (UDK) (UDK2).	4307, 6331.5, 12661.5 kHz, A1A, F1B.	0630, 1700.	PRIP warnings in Russian (selected coastal warnings are repeated in English).
		4307, 6331.5, 12661.5 kHz, A1A, F1B.	0630, 1700.	Weather and ice in Russian.
		521.5, 3740, 6393.5 kHz, A1A, F1B.	0400, 1730.	PRIP warnings.
		521.5, 3740, 6393.5 kHz, A1A, F1B.	0420, 1740.	Weather in Russian.
		2666 kHz, J3E.	0533, 1733.	Weather and ice in Russian.
		6446, 7907, 8444 kHz, F3C.	0700, 0800, 1400, 1430, 2000.	Weather and ice FAX*; 120/576.
		518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (C).
	*NOTE: Broadcast schedule at 1850 (RPM/OC: 90/576).			
3226	Arkhangel'sk (UGE).	2595 kHz, J3E.	0630, 1830.	Weather and ice (ice at 1830) in Russian.
		4545 kHz, F3C.	0125, 1625, 1925, 2225.	Weather FAX; 60/576.
		5345, 7760 kHz, F3C.	0125, 0425, 0725, 1025, 1325, 1625, 1925, 2225.	Weather FAX; 60/576.
		4545, 5345, 7760 kHz, F3C.	1715.	Ice FAX*; 60/576.
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).
	*NOTE: 15 Jan. - 10 May.			
3230	Dikson (UCI).	428.6 kHz, A1A.	0818, 2018.	PRIP warnings in Russian (selected coastal warnings are repeated in English).
		428.6 kHz, A1A.	0530, 1630.	Weather in Russian.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3232	Amderma (UPM).	344.8 kHz, A1A.	0818, 1218, 2018.	Local navigational warnings in Russian (selected warnings are repeated in English).
		344.8 kHz, A1A.	0500, 1600.	Weather in Russian.
		4270 kHz, F3C.	0130, 0430, 0730, 0900, 1030, 1200, 1330, 1630, 1930, 2230.	Weather FAX; 90/576
		4270, 6380 kHz, F3C.	0300, 1830.	Ice FAX; 90/576.
		6380 kHz, F3C.	0130, 1930, 2230.	Weather FAX; 90/576
		8463 kHz, F3C.	0430, 0730, 0900, 1030, 1200, 1330, 1630.	Weather FAX; 90/576
		8463 kHz, F3C.	0300.	Ice FAX; 90/576.
3235	Pevek.	148 kHz, F3C.	0530-0730, 1130-1330, 1430-1630.	Ice FAX, 90/576.
NORWAY				
3242	Vardo (LGV).	1635, 1674, 1695, 1713 kHz, J3E, Ch. 04, 23, 24, 25, 26, 27, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings, weather and ice.
		443.5, 523.5 kHz, A1A.	0218, 0518, 0818, 1118, 1418, 1718, 2018, 2318.	Local navigational warnings.
		443.5, 523.5 kHz, A1A.	1118, 2318.	Weather.
		1635, 1674, 1695, 1713 kHz, J3E, Ch. 04, 23, 24, 25, 26, 27, F3E.	1033, 2233.	Weather.
		518 kHz, F1B.	0330, 0730, 1130, 1530, 1930, 2330.	NAVTEX (V).
3244	Bodo (LGP).	1659, 1710, 1770, 1803 kHz, J3E, Ch. 01, 02, 03, 04, 05, 07, 19, 20, 21, 23, 24, 25, 26, 27, 28, 60, 62, 63, 64, 65, 81, 84, 85, F3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings, weather and ice.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).
3248	Orlandet (LFO) (LGA) (LGD).	1737, 1782 kHz, J3E, Ch. 02, 03, 05, 07, 24, 25, 26, 27, 28, 61, 62, 82, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings, weather and ice.
		518 kHz, F1B.	0210, 0610, 1010, 1410, 1810, 2210.	NAVTEX (N).
3251	Floro (LGL).	1680 kHz, J3E, Ch. 03, 23, 27, 65, F3E.	0233, 0633, 1033, 1433, 1833, 2133.	Local navigational warnings, weather and ice.
3252	Bergen (LGN).	1728 kHz, H3E, Ch. 07, 18, 21, 25, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings, weather and ice.
3254	Rogaland (LFL) (LGN) (LGQ) (LGT).	1692 kHz, J3E, Ch. 20, 24, 26, F3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings, weather and ice.
		8749, 13158 kHz, J3E.	1205, 1215.	Weather.
		1725 kHz, J3E.	1215, 2315.	Weather.
		6507, 8749 kHz, J3E.	2305, 2315.	Weather.
		518 kHz, F1B.	0150, 0550, 0950, 1350, 1750, 2150.	NAVTEX (L).
3256	Farsund (LGZ).	1671, 1785 kHz, J3E, Ch. 05, 07, 27, 61, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings, weather and ice.
3258	Tjome (LGT).	1665 kHz, J3E, Ch. 02, 03, 07, 24, 25, 26, 27, 62, 63, 65, 79, 81, 86, 87, F3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings, weather and ice.
		1665 kHz, J3E, Ch. 02, 03, 07, 24, 25, 26, 27, 62, 63, 65, 79, 81, 86, 87, F3E.	1020, 1320.	Ice.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
SWEDEN				
3280	Karlskrona (SAA).	2789 kHz, J3E.	Every odd hour +54m.	Local navigational warnings and weather.
		2789 kHz, J3E.	1154, 2154.	Ice.
		2789 kHz, J3E.	0954, 2154.	Weather.
3282	Tingstade (SAE).	2768 kHz, J3E.	Every even hour +06m.	Local navigational warnings and weather.
		2768 kHz, J3E.	1206, 2206.	Ice.
		2768 kHz, J3E.	1006, 2206.	Weather.
		Ch. 13, F3E.	0600, 1200.	Weather in Swedish (May - Nov.).
3288	Stockholm (SDJ).	1674, 1710, 1779, 1797, 2733 kHz, J3E, Ch. 01, 03, 21, 22, 23, 24, 25, 26, 27, 28, 62, 64, 65, 66, 78, 81, 82, 84, F3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings, weather and ice (weather at 0733, 1933) (ice at 1133).
		1674, 1710, 1779, 1797, 2733 kHz, J3E, Ch. 01, 03, 21, 22, 23, 24, 25, 26, 27, 28, 62, 64, 65, 66, 78, 81, 82, 84, F3E.	0633, 1433.	Weather in Swedish (May - Nov.).
		518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
		518 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (J).
		518 kHz, F1B.	0030, 0430, 0830, 1230, 1630, 2030.	NAVTEX (D).
		FINLAND		
NOTE: Ships are requested to report ice and other navigational hazards by radio; ice conditions may be reported in ice code, English, Finnish, German or Swedish, and should be sent to the nearest coast radio station. Finnish icebreakers Urho (OHMS), Sisu (OHMW)*, Voima (OHLW), Apu (OHMP), Fennica (OJAD), Nordica (OJAE), Otso (OIRT), Kontio (OIRV) and Botnica (OJAK) maintain 24 hour watch on radiotelephone 2338 kHz and on VHF Ch. 16. Icebreakers will reply on the call frequency, whereafter the communication will continue on a working frequency. * Also 12 hour watch on radiotelegraphy 500 kHz.				
3314	Turku (OFK).	1638, 1677, 1719, 2810 kHz, J3E, Ch. 01, 02, 03, 04, 05, 07, 23, 24, 25, 26, 27, 28, 84, 85, 86, 88, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	NAVAREA I, local navigational warnings and weather.
		1638, 1677, 1719, 2810 kHz, J3E, Ch. 01, 02, 03, 04, 05, 07, 23, 24, 25, 26, 27, 28, 84, 85, 86, 88, F3E.	0803, 1133, 1933.	Ice.
3315	Radio Finland (Yleisradio).	558, 963 kHz, A3E.	0655, 1045, 1710, 2055.	Local navigational warnings and weather in Finnish.
		93.1-100.3 MHz, F3E.	0615, 1045, 1710, 2010.	Local navigational warnings and weather in Finnish.
		558, 963 kHz, A3E, 93.1-100.3 MHz, F3E.	1045.	Ice in Finnish.
		6120 kHz, A3E.	1045 (Mon. - Sat.).	Local navigational warnings, weather and ice in Finnish.
RUSSIA - BALTIC COAST				
LONG-RANGE WARNINGS: NAVIP: World-wide navigational warnings. LOCAL WARNINGS: PRIP.				
3325	Kaliningrad (UIW) (UIW-2).	4228, 8454, 12877.5, 16927, 19724.5, 22603.5 kHz, F1B.	1000, 1620.	NAVIP warnings.
		3737, 6465, 8466, 12877.5 kHz, A1A.	2030.	NAVIP warnings.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
LITHUANIA				
3332	Klaipeda (LYK) (LYL).	3215 kHz, J3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings.
		523, 3730 kHz, A1A.	0510, 1300.	Weather.
LATVIA				
3333	Riga (UDH) (UKB).	4357 kHz, J3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.
ESTONIA				
3334	Tallinn (ESA).	3310 kHz, H3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings and weather.
		450, 6405 kHz, A1A.	1030.	Weather and ice.
		450 kHz, A1A.	2040.	Weather.
		518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (U) (Broadcast relayed by Stockholm (SDJ)).
POLAND				
3336	Gdynia (SPC).	1692, 2726 kHz, J3E, Ch. 24, 25, 26, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings.
		1692, 2726 kHz, J3E, Ch. 24, 25, 26, F3E.	1035, 1335.	Ice.
		1692, 2726 kHz, J3E, Ch. 24, 25, 26, F3E.	0135, 0735, 1335, 1935.	Weather.
3338	Szczecin (SPO).	1794 kHz, J3E, Ch. 26, F3E.	0200, 0600, 1000, 1400, 1800, 2200.	Local navigational warnings.
		Ch. 26, F3E.	0705, 1305, 1905.	Weather.
DENMARK				
NOTE: Ice information is available 24 hours on request from the Danish Ice Service at the Naval Operation Command (SOK) Århus by telephone: 45 89 43 32 04/53, fax: 45 89 43 32 44.				
3359	Lyngby (OXZ).	1704, 1734, 1758, 2586 kHz, J3E, Ch. 01, 02, 03, 04, 05, 07, 23, 28, 64, 65, 66, 83, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings.
		1704, 1734, 1758, 2586 kHz, J3E.	1305.	Ice.
		1704, 1734, 1758, 2586 kHz, J3E, Ch. 01, 02, 03, 04, 05, 07, 23, 28, 64, 65, 66, 83, F3E.	On request.	Weather and ice.
		Ch. 02, 04, 05, 07, 28, 64, F3E.	0220, 0520, 0820, 1120, 1420, 1720, 2020, 2320.	SHIPPOS information.
3362	Danish Radio (Kalundborg).	243, 1062 kHz, A3E.	0445, 0745, 1045, 1645, 2145.	Weather in Danish.
		243 kHz, A3E.	1150.	Ice.
		243, 1062 kHz, A3E.	1530 (Mon. - Fri.).	Ice.
GERMANY - NORTH SEA				
NOTE: Vessels encountering dangers to navigation in waters of the Federal Republic of Germany should notify Seewarndienstzentrale Cuxhaven (Sea Warning Service Cuxhaven) through the nearest Coast Radio Station. The Sea Warning service is available 24 hours and can be contacted by telephone: 49 4721 567381, fax: 49 4721 567404, telex: 232154 SWD CX D, telegraph: Seewarn Cuxhaven. Reports of oil pollution should be sent to the Zentral Meldekopf Cuxhaven (ZMK) (Central Headquarters Cuxhaven) through the nearest Coast Radio Station. Radio telegrams must carry the legend ZMK Cuxhaven and commence with the codeword Oelunfall (Oil Accident). ZMK Cuxhaven bears the cost of the message and is available 24 hours by telephone: 49 4721 567485, fax: 49 4721 567404, telex: 232263 ZMK CX D, frequency: through Cuxhaven Elbe Traffic Ch. 16, 71.				
3370	Bremen (MRCC).	Ch. 16, F3E.	Every hour +00m, +30m.	Local navigational warnings.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3371	Offenbach/Pinneberg (DDH) (DDK).	147.3, 11039, 14467.3 kHz, F1B.	0950, 1715.	Local navigational warnings.
		4583, 7646, 10100.8 kHz, F1B.	0515.	Local navigational warnings.
		147.3, 11039, 14467.3 kHz, F1B.	0500, 0505, 0520, 0530, 0535, 0600, 0605, 0620, 0630, 0700, 0725, 0730, 0820, 0840, 0900, 0905, 0920, 0930, 1010, 1025, 1030, 1035, 1100, 1120, 1145, 1200, 1205, 1220, 1230, 1300, 1325, 1330, 1420, 1440, 1500, 1505, 1520, 1530, 1610, 1625, 1630, 1635, 1735, 1800, 1805, 1820, 1830, 1900, 1925, 1930, 2020, 2040, 2100, 2105, 2120, 2130.	Weather in German.
		4583, 7646, 10100.8 kHz, F1B.	0000, 0005, 0020, 0030, 0300, 0305, 0320, 0330, 0355, 0415, 0535, 0550, 0600, 0605, 0835, 0850, 0900, 0905, 0930, 0955, 1015, 1110, 1115, 1135, 1150, 1200, 1205, 1435, 1450, 1500, 1505, 1530, 1550, 1610, 1735, 1750, 1800, 1805, 2035, 2050, 2100, 2105, 2130, 2155, 2215, 2315.	Weather.
		3855, 7880, 13882.5 kHz, F3C.	0430-2200.	Weather FAX*; 120/576.
		3855, 7880, 13882.5 kHz, F3C.	0930, 1007, 1520, 1540, 1915, 2100, 2115.	Ice FAX*; 120/576.
*NOTE: Broadcast schedule at 1111.				
3373	Deutschlandfunk.	1269 kHz, A3E.	0105.	Local navigational warnings in German.
		1269 kHz, A3E.	0105, 0640, 1105.	Weather and ice in German.
NETHERLANDS				
3375	Netherlands Coast Guard (PBK).	3673 kHz, J3E, Ch. 23, 83, F3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings and weather.
		3673 kHz, J3E.	0940, 2140.	Weather.
		Ch. 23, 83, F3E.	0705, 1205, 1805, 2205.	Weather in Dutch.
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
BELGIUM				
3378	Antwerpen.	Ch. 24, F3E.	Every hour +03m, +48m.	Local navigational warnings and weather.
3380	Oostende (OST) (OSU).	2761 kHz, J3E, Ch. 27, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		2761 kHz, J3E, Ch. 27, F3E.	0103, 0503, 0903, 1303, 1703, 2103.	Ice.
		2761 kHz, J3E, Ch. 27, F3E.	0820, 1720.	Weather.
		518 kHz, F1B.	0310, 0710, 1110, 1510, 1910, 2310.	NAVTEX (T).
		518 kHz, F1B.	0200, 0600, 1000, 1400, 1800, 2200.	NAVTEX (M) (Dover Strait broadcast for U.K.).
UNITED KINGDOM				
LONG-RANGE WARNINGS: NAVAREA I: Includes waters north to 71°N, south to 48°27'N and west to 35°W, and the Baltic Sea. Original reports to Hydrographer of the Navy, Radio Navigational Warnings, Ministry of Defence, Taunton. LOCAL WARNINGS: WZ: Original reports to Hydrographer of the Navy, Radio Navigational Warnings, Ministry of Defence.				
3390	Aberdeen (Coastguard MRCC).	2226 kHz, J3E, Ch. 10, 73, F3E.	0320, 0720, 1120, 1520, 1920, 2320.	Local navigational warnings and weather.
		2226 kHz, J3E.	0820, 2020 (Oct. 1 - Mar. 31).	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3391	Forth (Coastguard MRSC).	Ch. 10, 73, F3E.	0205, 0605, 1005, 1405, 1805, 2205.	Local navigational warnings and weather.
3392	Cullercoats.	490 kHz, F1B.	0720, 1920.	NAVTEX (U) (Inshore local broadcast).
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G).
3394	Humber (Coastguard MRSC).	2226 kHz, J3E, Ch. 23, 84, F3E.	0340, 0740, 1140, 1540, 1940, 2340.	Local navigational warnings and weather.
		2226 kHz, J3E.	0910, 2110 (Oct. 1 - Mar. 31).	Weather.
3396	Yarmouth (Coastguard MRCC).	1869 kHz, J3E, Ch. 10, 73, F3E.	0040, 0440, 0840, 1240, 1640, 2040.	Local navigational warnings and weather.
3397	Thames (Coastguard MRSC).	Ch. 10, 84, F3E.	0010, 0410, 0810, 1210, 1610, 2010.	Local navigational warnings and weather.
3397.1	Dover (Coastguard MRCC).	Ch. 10, 73, F3E.	0105, 0505, 0905, 1305, 1705, 2105.	Local navigational warnings and weather.
3397.2	Solent (Coastguard MRSC).	1641 kHz, J3E, Ch. 73, 86, F3E.	0040, 0440, 0840, 1240, 1640, 2040.	Local navigational warnings and weather.
3398	Niton.	490 kHz, F1B.	0310, 0710, 1110, 1510, 1910, 2310.	NAVTEX (T) in French.
		490 kHz, F1B.	0520, 1720.	NAVTEX (I) (Inshore local broadcast).
		518 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (S).
		518 kHz, F1B.	0140, 0540, 0940, 1340, 1740, 2140.	NAVTEX (K).
3400	Portland (Coastguard MRSC).	Ch. 10, 73, 86, F3E.	0220, 0620, 1020, 1420, 1820, 2220.	Local navigational warnings and weather.
3400.2	Brixham (Coastguard MRSC).	Ch. 10, 73, F3E.	0050, 0450, 0850, 1250, 1650, 2050.	Local navigational warnings and weather.
3400.3	Falmouth (Coastguard MRCC).	2226 kHz, J3E, Ch. 23, 86, F3E.	0140, 0540, 0940, 1340, 1740, 2140.	Local navigational warnings and weather.
		2226 kHz, J3E.	0950, 2150 (Oct. 1 - Mar. 31).	Weather.
3400.4	Swansea (Coastguard MRCC).	Ch. 10, 23, 73, 84, 86, F3E.	0005, 0405, 0805, 1205, 1605, 2005.	Local navigational warnings and weather.
3400.5	Milford Haven (Coastguard MRSC).	1767 kHz, J3E, Ch. 84, 86, F3E.	0335, 0735, 1135, 1535, 1935, 2335.	Local navigational warnings and weather.
3400.6	Holyhead (Coastguard MRSC).	1880 kHz, J3E, Ch. 10, 73, F3E.	0235, 0635, 1035, 1435, 1835, 2235.	Local navigational warnings and weather.
3400.7	Liverpool (Coastguard MRSC).	Ch. 10, 73, F3E.	0210, 0610, 1010, 1410, 1810, 2210.	Local navigational warnings and weather.
3401	Portpatrick.	490 kHz, F1B.	0820, 2020.	NAVTEX (C) (Inshore local broadcast).
		518 kHz, F1B.	0220, 0620, 1020, 1420, 1820, 2220.	NAVTEX (O).
3402	Clyde (Coastguard MRCC).	1883 kHz, J3E, Ch. 10, 23, 73, 84, 86, F3E.	0020, 0420, 0820, 1220, 1620, 2020.	Local navigational warnings and weather.
3404	Stornoway (Coastguard MRSC).	1743 kHz, J3E, Ch. 10, 67, 73, 84, F3E.	0110, 0510, 0910, 1310, 1710, 2110.	Local navigational warnings and weather.
3404.1	Shetland (Coastguard MRSC).	1770 kHz, J3E, Ch. 10, 23, 73, 84, F3E.	0105, 0505, 0905, 1305, 1705, 2105.	Local navigational warnings and weather.
		1770 kHz, J3E.	0710, 1910 (Oct. 1 - Mar. 31).	Weather.
3404.5	Belfast (Coastguard MRSC).	Ch. 10, 73, F3E.	0305, 0705, 1105, 1505, 1905, 2305.	Local navigational warnings and weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
IRELAND				
3405	Dublin (Coastguard MRCC).	Ch. 23, 83, 87, F3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.
		Ch. 23, 83, 87, F3E.	0033, 0103, 0403, 0633, 0703, 1003, 1233, 1303, 1603, 1833, 1903, 2203 (1 hr. earlier when daylight savings in effect).	Weather.
3406	Malin Head (EJM) (Coastguard MRSC).	1677 kHz, J3E, Ch. 23, 24, 26, 83, F3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.
		Ch. 23, 24, 26, 83, F3E.	0033, 0103, 0403, 0633, 0703, 1003, 1233, 1303, 1603, 1833, 1903, 2203 (1 hr. earlier when daylight savings in effect).	Weather.
		518 kHz, F1B.	0240, 0640, 1040, 1440, 1840, 2240.	NAVTEX (Q).
3408	Valentia (EJK) (Coastguard MRSC).	1752 kHz, J3E, Ch. 23, 24, 26, 28, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		1752 kHz, J3E.	0303, 0833, 0903, 1503, 2033, 2103.	Weather.
		Ch. 23, 24, 26, 28, F3E.	0103, 0403, 0703, 1003, 1303, 1603, 1903, 2203 (1 hr. earlier when daylight savings in effect).	Weather.
		Ch. 23, 24, 26, 28, F3E.	0033, 0633, 1233, 1833 (1 hr. earlier when daylight savings in effect).	Weather.
		518 kHz, F1B.	0340, 0740, 1140, 1540, 1940, 2340.	NAVTEX (W).
CHANNEL ISLANDS				
3410	Jersey.	1659 kHz, J3E, Ch. 25, 82, F3E.	0433, 0833, 1633, 2033.	Local navigational warnings.
		1659 kHz, J3E, Ch. 25, 82, F3E.	0307, 0645, 0745, 0845, 0907, 1245, 1507, 1845, 2107, 2245 (1 hr. earlier when daylight savings in effect for 0645, 0745, 0845).	Weather.
3411	St. Peter Port.	1764 kHz, J3E, Ch. 20, 62, F3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings.
FRANCE - CHANNEL AND ATLANTIC				
LONG-RANGE WARNINGS: NAVAREA II: Includes the waters of the eastern Atlantic between 6°S and 48°27'N, west to 20°W up to 7°N and west to 35°W to the northern boundary. Original reports to the nearest coast radio station and vessels in the vicinity. Message should be preceded by the signal "TTT" and addressed to "PREFET MARITIME". It should include the originating vessel's name and owner. NOTE: Maritime Safety Information (MSI) broadcasts are announced by CROSS Stations on 2182 kHz or VHF Ch. 16 prior to broadcast on scheduled frequency or channel number.				
3421	Gris-Nez (CROSS) (MRCC).	1650 kHz, J3E.	0733, 1933.	Local navigational warnings in French and English.
		1650, 2677 kHz, J3E.	0733, 1933.	Weather in French.
		Ch. 79, F3E.	Every hour +03m, +04m, +10m.	Weather in French.
		Ch. 79, F3E.	0603, 0610, 0620, 1433, 1445, 1503, 1803, 1810, 1820.	Weather in French.
3421.5	Jobourg (CROSS) (MRCC).	Ch. 80, F3E.	Every hour +03m, +20m, +50m.	Weather in French and English.
		Ch. 80, F3E.	0603, 0615, 0633, 0645, 0703, 1433, 1445, 1503, 1515, 1533, 1803, 1815, 1833, 1845, 1903.	Weather in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3423	Corsen (CROSS) (MRCC).	2677 kHz, J3E.	0635, 1835.	Local navigational warnings.
		1650, 2677 kHz, J3E.	0715, 1915.	Weather in French.
		Ch. 79, F3E.	0345, 0403, 0415, 0433, 0445, 0603, 0615, 0633, 0645, 0703, 1003*, 1015*, 1033*, 1045*, 1103*, 1433, 1445, 1503, 1515, 1533, 1803, 1815, 1833, 1845, 1903.	Weather in French.
		Ch. 79, F3E.	Every hour +03m.	Weather in French.
		490 kHz, F1B.	0040, 0440, 0840, 1240, 1640, 2040.	NAVTEX (E) in French.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A).
*NOTE: May 1 - Sep. 30.				
3423.5	Etel (CROSS) (MRCC).	2677 kHz, J3E.	Every hour +33m, 0803, 1403, 1803.	Weather in French.
		Ch. 79, F3E.	Every hour +03m, 0603, 0615, 0633, 0645, 0703, 1433, 1445, 1503, 1515, 1533, 1803, 1815, 1833, 1845, 1903.	Weather in French.
		Ch. 80, F3E.	Every hour +03m, 0603, 0615, 0633, 0645, 0703, 0715, 1433, 1445, 1503, 1515, 1533, 1545, 1803, 1815, 1833, 1845, 1903, 1915.	Weather in French.
SPAIN - NORTH COAST				
3430	La Guardia.	Ch. 82, F3E.	0950, 1150, 2150.	Weather.
		Ch. 82, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3430.1	Vigo.	Ch. 10, F3E.	0015, 0415, 0815, 1215, 1815, 2015.	Weather.
		Ch. 10, F3E.	0215, 0615, 1015, 1415, 1815, 2215.	Local navigational warnings.
		Ch. 20, F3E.	0950, 1150, 2150.	Weather.
		Ch. 20, F3E.	0803, 1503.	Local navigational warnings in Spanish.
		Ch. 10, F3E.	Every even hour +33m, 0033, 0433, 0833, 1233, 1633, 2033.	Weather.
3430.2	Bilbao.	Ch. 10, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		Ch. 26, F3E.	0940, 1140, 2140.	Weather.
		Ch. 26, F3E.	0933, 1533.	Local navigational warnings in Spanish.
		Ch. 27, F3E.	0940, 1140, 2140.	Weather.
3430.3	Pasajes.	Ch. 27, F3E.	0803, 1503.	Local navigational warnings in Spanish.
		Ch. 11, F3E.	0245, 0645, 1045, 1445, 1845, 2245.	Weather.
3430.4	Santander.	Ch. 11, F3E.	0045, 0445, 0845, 1245, 1645, 2045.	Local navigational warnings.
		Ch. 24, F3E.	0940, 1140, 2140.	Weather.
		Ch. 24, F3E.	0803, 1503.	Local navigational warnings in Spanish.
		Ch. 27, F3E.	0940, 1140, 2140.	Weather.
3430.5	Navia.	Ch. 27, F3E.	0833, 1533.	Local navigational warnings in Spanish.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3430.6	Cabo Ortegal.	Ch. 02, F3E.	0950, 1150, 2150.	Weather.
		Ch. 02, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3430.8	Cabo Penas (EAS).	1677 kHz, J3E.	0803, 1203, 1703.	Weather in Spanish.
		Ch. 26, F3E.	0940, 1140, 2140.	Weather.
		Ch. 26, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3430.9	Gijon.	Ch. 10, F3E.	Every even hour +15m (0215-2215).	Weather.
		Ch. 10, F3E.	Every hour +15m.	Local navigational warnings.
3433	Finisterre (EAF).	1764 kHz, J3E, Ch. 11, F3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.
		1764 kHz, J3E.	0803, 1203, 1703.	Weather in Spanish.
		Ch. 11, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Weather.
		Ch. 22, F3E.	0950, 1150, 2150.	Weather.
		Ch. 22, F3E.	0903, 1633.	Local navigational warnings in Spanish.
3434	Coruna.	1698 kHz, J3E.	0833, 1233, 1733.	Weather in Spanish.
		1698 kHz, J3E.	0003, 0403, 0803, 1203, 1603, 2003.	Local navigational warnings.
		Ch. 12, 13, 14, F3E.	0005, 0405, 0805, 1205, 1605, 2005.	Weather.
		Ch. 13, F3E.	0205, 0605, 1005, 1405, 1805, 2205.	Local navigational warnings.
		Ch. 26, F3E.	0950, 1150, 2150.	Weather.
		Ch. 26, F3E.	0803, 1503.	Local navigational warnings in Spanish.
		518 kHz, F1B.	0030, 0430, 0830, 1230, 1630, 2030.	NAVTEX (D).
		1707 kHz, J3E.	0903, 1233, 1733.	Weather in Spanish.
3436	Machichaco.	1707 kHz, J3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.

PORTUGAL

NOTE: Original reports to the nearest coast radio station. Message should be preceded by the signal "TTT" and be in English or International Code (NVPUB 102) giving the following information: description of navigational danger, position and date/time of observation.

3441	Leixoes.	Ch. 11, G3E.	0705, 1905.	Local navigational warnings in Portuguese.
		Ch. 11, G3E.	0705, 1905.	Weather in Portuguese and English, when possible.
3443	Setubal.	Ch. 11, F3E.	1030, 1630.	Local navigational warnings (Mon. - Fri.) and weather in Portuguese.
3443.2	Lisboa.	Ch. 11, F3E.	1030, 1700.	Local navigational warnings and weather in Portuguese.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3444	Monsanto (CTV).	2657 kHz, J3E.	0905, 2105.	Local navigational warnings in Portuguese (important warnings are repeated in English).
		2657 kHz, J3E.	0905, 2105.	Weather in Portuguese and English, when possible.
		Ch. 11, F3E.	1000, 1630.	Weather in Portuguese.
		Ch. 11, F3E.	1000, 1700.	Local navigational warnings in Portuguese.
		490 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G) in Portuguese.
		518 kHz, F1B.	0250, 0650, 1050, 1450, 1850, 2250.	NAVTEX (R).
3445	Faro.	Ch. 11, G3E.	0835, 2035.	Local navigational warnings in Portuguese.
3456	Porto Santo, Madeira.	2657 kHz, J3E.	0905, 2105.	Local navigational warnings and weather.
		Ch. 11, F3E.	1030, 1630.	Local navigational warnings and weather in Portuguese.
ACORES				
3456.2	Ponta Delgada.	Ch. 11, F3E.	0830, 2000.	Local navigational warnings and weather in Portuguese.
3456.3	Horta (CTH).	2657 kHz, J3E.	0935, 2135.	Local navigational warnings and weather.
		Ch. 11, F3E.	0900, 2100.	Local navigational warnings and weather in Portuguese.
		490 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (J) in Portuguese.
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).
3456.4	Flores.	Ch. 11, F3E.	0930, 1900.	Local navigational warnings and weather in Portuguese.
SPAIN - SOUTH AND MEDITERRANEAN				
LONG-RANGE WARNINGS: NAVAREA III: Includes the waters of the Mediterranean and the Black Sea. Original reports to NAVAREA III Coordinator, Instituto de la Marina.				
3458	Cadiz.	Ch. 26, F3E.	0940, 1140, 2140.	Weather.
		Ch. 26, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3459	Alicante.	Ch. 85, F3E.	0940, 1140, 2140.	Weather.
		Ch. 85, F3E.	1003, 1603.	Local navigational warnings in Spanish.
3459.3	Chipiona.	1656 kHz, J3E.	0803, 1233, 1703.	Weather in Spanish.
		1656 kHz, J3E.	0003, 0403, 0803, 1203, 1603, 2003.	Local navigational warnings.
3459.35	Cabo de la Nao.	Ch. 02, F3E.	0940, 1140, 2140.	Weather.
		Ch. 02, F3E.	0833, 1533.	Local navigational warnings in Spanish.
		518 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350.	NAVTEX (X).
3459.37	Valencia.	Ch. 10, F3E.	Every even hour +15m.	Local navigational warnings and weather.
3459.4	Castellon.	Ch. 28, F3E.	0940, 1140, 2140.	Weather.
		Ch. 28, F3E.	0803, 1503.	Local navigational warnings in Spanish.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast		
3459.5	Tarragona.	Ch. 13, F3E.	0530, 0930, 1530, 2030.	Local navigational warnings and weather.		
		Ch. 23, F3E.	0950, 1150, 2150.	Weather.		
		Ch. 23, F3E.	0833, 1533.	Local navigational warnings in Spanish.		
3459.55	Barcelona.	Ch. 10, F3E.	0600, 0900, 1500, 2000.	Weather.		
		Ch. 16, F3E.	0600, 0900, 1500, 2000.	Local navigational warnings.		
		Ch. 60, F3E.	0950, 1150, 2150.	Weather.		
		Ch. 60, F3E.	0803, 1503.	Local navigational warnings in Spanish.		
		3459.6	Malaga.	Ch. 26, F3E.	0940, 1140, 2140.	Weather.
				Ch. 26, F3E.	0803, 1503.	Local navigational warnings in Spanish.
3459.65	Almeria.	Ch. 10, 74, F3E.	Every hour +15m.	Local navigational warnings and weather.		
3459.7	Cabo de Gata.	1767 kHz, J3E.	0833, 1233, 1733.	Weather in Spanish.		
		1767 kHz, J3E.	0833, 2033.	Local navigational warnings.		
		Ch. 27, F3E.	0940, 1140, 2140.	Weather.		
		Ch. 27, F3E.	0903, 1603.	Local navigational warnings in Spanish.		
3460	Tarifa (EAC).	1704 kHz, J3E.	0803, 1233, 1703.	Weather.		
		1704 kHz, J3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.		
		Ch. 10, 74, F3E.	Every even hour +15m.	Weather.		
		Ch. 81, F3E.	0940, 1140, 2140.	Weather.		
		Ch. 81, F3E.	0833, 1533.	Local navigational warnings in Spanish.		
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G).		
		3462	Cartagena.	Ch. 04, F3E.	0940, 1140, 2140.	Weather.
Ch. 04, F3E.	0933, 1633.			Local navigational warnings in Spanish.		
3462.5	Bagur.	Ch. 23, F3E.	0950, 1150, 2150.	Weather.		
		Ch. 23, F3E.	0903, 1603.	Local navigational warnings in Spanish.		
ISLAS BALEARES						
3464	Palma (EAO).	1755 kHz, J3E.	0803, 1203, 1703.	Weather in Spanish.		
		1755 kHz, J3E.	0833, 2033.	Local navigational warnings.		
		Ch. 07, F3E.	0920, 1120, 2120.	Weather.		
		Ch. 07, F3E.	0903, 1603.	Local navigational warnings in Spanish.		
3464.5	Menorca.	Ch. 85, F3E.	0920, 1120, 2120.	Weather.		
		Ch. 85, F3E.	0833, 1533.	Local navigational warnings in Spanish.		
3465	Ibiza.	Ch. 03, F3E.	0920, 1120, 2120.	Weather.		
		Ch. 03, F3E.	1033, 1633.	Local navigational warnings in Spanish.		

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
FRANCE - MEDITERRANEAN				
NOTE: Maritime Safety Information (MSI) broadcasts are announced by CROSS Stations on 2182 kHz or VHF Ch. 16 prior to broadcast on scheduled frequency or channel number.				
3471	La Garde (CROSS) (MRCC).	1696, 2677 kHz, J3E.	0733, 1503.	Local navigational warnings.
		1696, 2677 kHz, J3E.	0550, 1333, 1750.	Weather in French.
		1696, 2677 kHz, J3E.	0003, 0403, 0803, 1203, 1603, 2003.	Weather in French.
		Ch. 79, F3E.	Every hour +03m, 0603, 0615, 1133, 1145, 1803, 1815.	Weather in French.
		Ch. 80, F3E.	Every hour +03m, 0633, 0645, 0703, 1203, 1215, 1233, 1833, 1845, 1903.	Weather in French.
		490 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (S) in French.
		518 kHz, F1B.	0340, 0740, 1140, 1540, 1940, 2340.	NAVTEX (W).
3473	Corse (Sous-CROSS) (MRSC).	Ch. 79, F3E.	Every hour +10m, 0633, 0645, 0703, 0715, 0733, 0745, 1133, 1145, 1203, 1215, 1233, 1245, 1833, 1845, 1903, 1915, 1933, 1945.	Weather in French.
MONACO				
3474	Monaco (3AC) (3AF).	4363 kHz, J3E, Ch. 20, 24, F3E.	0703.	Local navigational warnings in French (in English on request).
		4363, 8806, 13152, 17323, 22768 kHz, J3E.	0930.	Weather in French and English.
		4363 kHz, J3E, Ch. 20, 24, F3E.	0803, 1303, 1815.	Weather in French and English.
		8728, 8806 kHz, J3E.	0715, 1830.	Weather in French and English.
		Ch. 23, F3E.	Continuous.	Weather in French and English.
NOTE: Hours of service: 0600-2200 (Winter), 0500-2100 (Summer).				
ITALY				
3475	Roma (IAR).	521.5 kHz, A1A.	0948, 1318, 1748, 2118.	Local navigational warnings and weather.
		521.5, 4292, 8530, 13011, 17160.8 kHz, A1A.	0830, 2030.	Weather.
		521.5, 4292 kHz, A1A.	0050, 0650, 1250, 1850.	Weather.
		Ch. 25, F3E.	0533, 0933, 1333, 1833, 2333.	Local navigational warnings.
		Ch. 25, F3E.	0135, 0735, 1335, 1935.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
		518 kHz, F1B.	0250, 0650, 1050, 1450, 1850, 2250.	NAVTEX (R).
3476	Cagliari (IDC).	444 kHz, A1A.	0918, 1248, 1648, 2048.	Local navigational warnings and weather.
		2680 kHz, J3E, Ch. 04, 62, 82, F3E.	0303, 0803, 1203, 1603, 2003.	Local navigational warnings.
		2680 kHz, J3E, Ch. 04, 62, 82, F3E.	0135, 0735, 1335, 1935.	Weather.
		2680 kHz, J3E.	0303, 0803, 1203, 1603, 2003.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
		518 kHz, F1B.	0310, 0710, 1110, 1510, 1910, 2310.	NAVTEX (T).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3477.2	Augusta (IQA).	2628 kHz, J3E, Ch. 85, 86, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		2628 kHz, J3E, Ch. 85, 86, F3E.	0135, 0735, 1335, 1935.	Weather.
		2628 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
		518 kHz, F1B.	0330, 0730, 1130, 1530, 1930, 2330.	NAVTEX (V).
3477.3	Porto Cervo.	Ch. 26, F3E.	0303, 0803, 1203, 1603, 2003.	Local navigational warnings.
		Ch. 26, F3E.	0135, 0735, 1335, 1935.	Weather.
3477.4	Porto Torres (IZN).	2719 kHz, J3E, Ch. 26, 28, 85, F3E.	0303, 0803, 1203, 1603, 2003.	Local navigational warnings.
		2719 kHz, J3E, Ch. 26, 28, 85, F3E.	0135, 0735, 1335, 1935.	Weather.
		2719 kHz, J3E.	0303, 0803, 1203, 1603, 2003.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3477.5	Ancona (IPA).	511.5 kHz, A1A.	0948, 1248, 1718, 2118.	Local navigational warnings and weather.
		2656 kHz, J3E, Ch. 02, 25, F3E.	0433, 0933, 1333, 1733, 2133.	Local navigational warnings.
		511.5 kHz, A1A.	0148, 0748, 1348, 1948.	Weather.
		2656 kHz, J3E, Ch. 02, 25, F3E.	0135, 0735, 1335, 1935.	Weather.
		2656 kHz, J3E.	0433, 0933, 1333, 1733, 2133.	Weather.
3477.6	Ravenna.	Ch. 68, F3E.	Continuous.	Weather.
		Ch. 27, F3E.	0433, 0933, 1333, 1733, 2133.	Local navigational warnings.
		Ch. 27, F3E.	0135, 0735, 1335, 1935.	Weather.
3478	Genova (ICB).	Ch. 68, F3E.	Continuous.	Weather.
		447 kHz, A1A.	0848, 1348, 1748, 2148.	Local navigational warnings and weather.
		2722 kHz, J3E, Ch. 07, 25, 27, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
3480	Livorno (IPL).	2722 kHz, J3E, Ch. 07, 25, 27, F3E.	0135, 0735, 1335, 1935.	Weather.
		2722 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
		2591 kHz, J3E, Ch. 26, 61, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
3480	Livorno (IPL).	2591 kHz, J3E, Ch. 26, 61, F3E.	0135, 0735, 1335, 1935.	Weather.
		2591 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3482	Civitavecchia (IPD).	1888 kHz, J3E, Ch. 01, 64, F3E.	0533, 0933, 1333, 1833, 2333.	Local navigational warnings.
		1888 kHz, J3E, Ch. 01, 64, F3E.	0135, 0735, 1335, 1935.	Weather.
		1888 kHz, J3E.	0533, 0933, 1333, 1833, 2333.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3484	Napoli (IQH).	2632 kHz, J3E, Ch. 01, 25, 27, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		2632 kHz, J3E, Ch. 01, 25, 27, F3E.	0135, 0735, 1335, 1935.	Weather.
		2632 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3486	Messina (IDF).	2789 kHz, J3E, Ch. 88, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		2789 kHz, J3E, Ch. 88, F3E.	0135, 0735, 1335, 1935.	Weather.
		2789 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3487	Palermo (IPP).	1852 kHz, J3E, Ch. 27, 61, 81, 84, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		1852 kHz, J3E, Ch. 27, 61, 81, 84, F3E.	0135, 0735, 1335, 1935.	Weather.
		1852 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3489	Mazara del Vallo (IQQ).	2600 kHz, J3E, Ch. 25, 26, 82, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		2600 kHz, J3E, Ch. 25, 26, 82, F3E.	0135, 0735, 1335, 1935.	Weather.
		2600 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3490	Lampedusa (IQN).	1876 kHz, J3E, Ch. 25, 87, 88, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		1876 kHz, J3E, Ch. 25, 87, 88, F3E.	0135, 0735, 1335, 1935.	Weather.
		1876 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3493	Crotone (IPC).	2663 kHz, J3E, Ch. 26, 62, 84, 88, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		2663 kHz, J3E, Ch. 26, 62, 84, 88, F3E.	0135, 0735, 1335, 1935.	Weather.
		2663 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3495	Bari (IPB).	514.5 kHz, A1A.	0848, 1218, 1648, 2048.	Local navigational warnings and weather.
		2579 kHz, J3E, Ch. 01, 05, 27, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		514.5 kHz, A1A.	0125, 0725, 1325, 1925.	Weather.
		2579 kHz, J3E, Ch. 01, 05, 27, F3E.	0135, 0735, 1335, 1935.	Weather.
		2579 kHz, J3E.	0333, 0833, 1233, 1633, 2033.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3496	San Benedetto del Tronto (IQP).	1855 kHz, J3E, Ch. 65, 87, F3E.	0433, 0933, 1333, 1733, 2133.	Local navigational warnings.
		1855 kHz, J3E, Ch. 65, 87, F3E.	0135, 0735, 1335, 1935.	Weather.
		1855 kHz, J3E.	0433, 0933, 1333, 1733, 2133.	Weather.
		Ch. 68, F3E.	Continuous.	Weather.
3498	Trieste (IQX).	512.5 kHz, A1A.	0848, 1218, 1648, 2048.	Local navigational warnings and weather.
		2624 kHz, J3E, Ch. 01, 26, F3E.	0433, 0933, 1333, 1733, 2133.	Local navigational warnings.
		2624 kHz, J3E, Ch. 01, 26, 83, F3E.	0135, 0735, 1335, 1935.	Weather.
		2624 kHz, J3E.	0433, 0933, 1333, 1733, 2133.	Weather.
		Ch. 83, F3E.	0333, 0833, 1233, 1633, 2033.	Local navigational warnings.
		Ch. 68, F3E.	Continuous.	Weather.
3498.05	Malta (9HD).	518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (U).
		MALTA		
		443 kHz, A1A, A2A.	0900, 1700, 2100.	NAVAREA III, local navigational warnings.
		2625 kHz, J3E, R3E, Ch. 04, F3E.	1003, 1603, 2103.	NAVAREA III, local navigational warnings.
		2625 kHz, J3E, R3E, Ch. 04, F3E.	0603, 1003, 1603, 2103.	Weather.
3498.1	Durrës (ZAD).	518 kHz, F1B.	0220, 0620, 1020, 1420, 1820, 2220.	NAVTEX (O).
		ALBANIA		
		460 kHz, A1A.	0818, 1218, 1618.	Local navigational warnings.
		CROATIA		
3499	Split (9AS).	Ch. 07, 21, 81, F3E.	0545, 1245, 1945.	Local navigational warnings and weather.
		518 kHz, F1B.	0240, 0640, 1040, 1440, 1840, 2240.	NAVTEX (Q).
3499.05	Dubrovnik (9AD).	2615 kHz, J3E, Ch. 04, 07, F3E.	0625, 1320, 2120.	Local navigational warnings and weather.
3499.1	Rijeka (9AR).	2771 kHz, J3E, Ch. 24, F3E.	0535, 1435, 1935.	Local navigational warnings and weather.
3499.5	Bar.	YUGOSLAVIA		
		2752 kHz, J3E, Ch. 24, F3E.	0850, 1420, 2050.	Local navigational warnings and weather.
3500	Kerkira (SVK).	GREECE		
		2830 kHz, J3E.	0033, 0633, 1033, 1633.	Local navigational warnings.
		2830 kHz, J3E.	0703, 0903, 1533, 2133.	Weather.
		518 kHz, F1B.	0140, 0540, 0940, 1340, 1740, 2140.	NAVTEX (K).
3502	Iraklion (SVH).	2799 kHz, J3E.	0633, 1133, 1733, 2333.	Local navigational warnings.
		2799 kHz, J3E.	0703, 0903, 1533, 2133.	Weather.
		518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3503	Rodhos (SVR).	2624 kHz, J3E.	0633, 1133, 1733, 2333.	Local navigational warnings.
		2624 kHz, J3E.	0703, 0903, 1533, 2133.	Weather.
3504	Athens (SVN) (SVJ4).	2590 kHz, J3E.	0703, 0933, 1503, 2103.	Weather.
		8743 kHz, J3E.	1215, 2015.	Weather in Greek.
		8743 kHz, J3E.	0633, 1233, 1633, 2233.	Local navigational warnings.
		4481, 8105 kHz, F3C.	0845-0945.	Weather FAX; 120/576.
3506	Hellenic Radio-Television.	729 kHz, A3E.	0450.	Local navigational warnings.
		729, 927, 1008, 1044, 1404, 1485, 1494, 1512, 1602 kHz, A3E, 88.0-97.9, 101.8 MHz, F3E.	1330.	Local navigational warnings.
		729 kHz, A3E.	0430.	Weather.
		729, 927, 1008, 1044, 1404, 1485, 1494, 1512, 1602 kHz, A3E.	1330.	Weather in Greek.
3507	Hellas.	Ch. 01, 02, 04, 23, 25, 27, 60, 63, 82, 83, 85, F3E.	0500, 1100, 1730, 2330.	Local navigational warnings.
		Ch. 01, 02, 04, 23, 25, 27, 60, 63, 82, 83, 85, F3E.	0600, 1000, 1600, 2200.	Weather.
		Ch. 86, F3E.	Continuous.	Local navigational warnings and weather.
3508	Limnos (SVL).	2730 kHz, J3E.	0033, 0633, 1033, 1633.	Local navigational warnings.
		2730 kHz, J3E.	0703, 0903, 1533, 2133.	Weather.
		518 kHz, F1B.	0150, 0550, 0950, 1350, 1750, 2150.	NAVTEX (L).
CYPRUS				
3509	Cyprus (5BA).	2700 kHz, H3E, J3E, R3E.	0733, 1533.	Local navigational warnings.
		518 kHz, F1B.	0200, 0600, 1000, 1400, 1800, 2200.	NAVTEX (M).
BULGARIA				
3510	Varna (LZW).	3740 kHz, J3E.	0703, 1903.	Local navigational warnings and weather.
		4212.5 kHz, F1B.	0630, 1830.	Weather.
		12635.5 kHz, F1B.	0630, 1230, 1830.	Weather.
		Ch. 26, F3E.	0733, 1933.	Local navigational warnings and weather.
		518 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (J).
ROMANIA				
3512	Constanta (YQI).	446.5 kHz, A1A.	0650, 1850.	Local navigational warnings and weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
UKRAINE				
3514	Odessa (UDE) (UFB).	510.5 kHz, A1A.	1718, 2318.	Local navigational warnings.
		510.5, 6341.5 kHz, A1A.	0518, 1118.	Local navigational warnings.
		3310 kHz, R3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		510.5, 6341.5 kHz, A1A.	0520, 1500, 2105.	Weather and ice (in Russian at 0520, 1500).
		6353, 8520, 12947, 17155 kHz, A1A.	0100.	Weather (Apr. 15 - Sept. 30 on 17155 kHz).
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (C).
3516	Sevastopol (URL-8).	476 kHz, A1A.	0018, 0618, 1218, 1818.	Local navigational warnings.
		2695 kHz, H3E.	0033, 0733, 1133, 1533, 1933, 2233.	Local navigational warnings.
3517	Mariupol (USU) (UTW).	473 kHz, A1A.	0218, 0818, 1418, 2018.	Local navigational warnings.
		2805 kHz, H3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		473, 4265 kHz, A1A.	0500, 1700.	Weather and ice in Russian (ice at 1700).
		2805 kHz, H3E.	0330, 0930.	Weather and ice in Russian (ice at 0930).
		6326.5, 8422.5, 12615, 16829 kHz, F1B.	1440.	Local navigational warnings in Russian and Ukrainian (selected warnings repeated in English).
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (B).
3518	Kiev.	12828.7 kHz, F3C.	1857 (on 1, 6, 11, 16, 21, 26 of each month).	Ice FAX; 120/576.
GEORGIA				
3519	Batumi (UFA).	484 kHz, A1A.	0118, 0718, 1318, 1918.	Local navigational warnings.
		3630 kHz, H3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings.
		484 kHz, A1A.	0507, 1307, 2030.	Weather in Russian.
RUSSIA - BLACK SEA				
	LONG-RANGE WARNINGS: NAVIP: World-wide navigational warnings. LOCAL WARNINGS: PRIP.			
3520	Novorossiysk (UDN) (UDF).	4245, 8571 kHz, A1A.	0930, 2130.	Weather and PRIP warnings in Russian.
		518 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (A).
TURKEY				
3528	Mersin (TAM).	2820 kHz, J3E.	0133, 0533, 0933, 1333, 1733, 2133.	Local navigational warnings in Turkish.
		516 kHz, A1A.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
3528.1	Antalya (TAL).	Ch. 67, F3E.	0700, 1000, 1300, 1600, 1900.	Weather.
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3529	Izmir (TAN).	524 kHz, A1A, 1850, 2670 kHz, A3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings (in Turkish on 1850, 2670 kHz).
		Ch. 67, F3E.	0700, 1000, 1300, 1600, 1900.	Weather.
		518 kHz, F1B.	0120, 0520, 0920, 1320, 1720, 2120.	NAVTEX (I).
3530	Turkish Radio-Television Corporation.	200, 245, 630, 891, 927, 1017, 1062, 1467 kHz, A3E.	0430, 1000, 1600, 2000.	Local navigational warnings in Turkish.
3531	Samsun (TAF).	416, 516 kHz, A1A, 1760, 2670 kHz, H3E, J3E, R3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings (in Turkish on 1760, 2670 kHz).
		Ch. 67, F3E.	0700, 1000, 1300, 1600, 1900.	Weather.
		518 kHz, F1B.	0040, 0440, 0840, 1240, 1640, 2040.	NAVTEX (E).
3532	Bandirma (YMB20).	478 kHz, A1A.	0700, 0720, 1900, 1920.	Weather.
		3636 kHz, A1A.	0800, 1330, 1730, 2200.	Weather.
		6965 kHz, A1A.	0950, 2150.	Weather.
		6965 kHz, A3E.	0625, 1655.	Weather.
		4560 kHz, F1B.	Every hour +10m, +30m.	Weather.
3533	Istanbul (TAH).	513 kHz, A1A.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings.
		2670 kHz, J3E.	0033, 0433, 0833, 1233, 1633, 2033.	Local navigational warnings.
		4405, 8812, 13128 kHz, J3E.	1000, 1800.	Weather.
		4560, 8431, 12654 kHz, F1B.	0800, 2000.	Weather.
		Ch. 67, F3E.	0700, 1900.	Weather.
		518 kHz, F1B.	0030, 0430, 0830, 1230, 1630, 2030.	NAVTEX (D).
		ISRAEL		
3534	Haifa (4XO).	2649 kHz, J3E, Ch. 25, F3E.	0303, 0703, 1103, 1503, 1903, 2303.	Local navigational warnings and weather.
		518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (P).
EGYPT - MEDITERRANEAN				
3536	Port Said (SUP).	433 kHz, A1A.	0518, 0718, 0918, 1118, 1318, 1518, 1718, 1918, 2118.	Local navigational warnings.
3537	Alexandria (SUH).	444 kHz, A1A.	0018, 0248, 0448, 0648, 0848, 1048, 1218, 1448, 1648, 1848, 2048, 2248.	Local navigational warnings.
		444 kHz, A1A.	0100, 1300.	Weather.
		518, kHz, F1B.	0210, 0610, 1010, 1410, 1810, 2210.	NAVTEX (N).
LIBYA				
3538	Tripoli (5AT).	500 kHz, A1A, A2A.	0948, 1748.	Local navigational warnings.
		2182 kHz, H3E, J3E.	0903, 1903.	Local navigational warnings.
TUNISIA				
3540	La Goulette Port (3VW).	2182 kHz, A3E.	0003, 0403, 0603, 1003, 1303, 1803, 1903, 2103.	Local navigational warnings in French.
		1743 kHz, A3E.	0405, 1905.	Weather in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3542	Tunis (3VT) (3VX).	1820, 2670 kHz, A3E.	0803, 1203, 2003.	Local navigational warnings in French.
		487 kHz, A2A.	0848, 2048.	Local navigational warnings in French.
		410, 487, 515 kHz, A2A.	0830, 1730.	Weather in French.
		1820, 2670 kHz, A3E.	0805, 1705.	Weather in French.
ALGERIA				
3550	Annaba (7TB).	2775 kHz, A3E.	0833, 2033.	Local navigational warnings in French.
		1745 kHz, A3E.	0920, 1033, 1720, 1833.	Weather in French.
3552	Alger (7TA).	416 kHz, A1A, A2A, 1792 kHz, A3E.	0918, 2118.	Local navigational warnings in French.
		1792 kHz, A3E.	0903, 1703.	Weather in French.
		416 kHz, A1A, A2A, 2691 kHz, A3E.	0918, 2118.	Weather in French.
3554	Oran (7TO).	1735 kHz, A3E.	0833, 2033.	Local navigational warnings and weather in French.
		1735, 2586, 2719 kHz, A3E.	0920, 1033, 1720, 1735.	Weather in French.
MOROCCO				
NOTE: Vessels observing dangers to navigation are requested to transmit observations to the nearest coast radio station and other vessels in the vicinity. Message should be preceded by the signal "TTT" and addressed to Commander, Royal Navy, Casablanca, giving observing vessel's name and owner.				
3560	Tanger (CNW).	447 kHz, A1A, A2A.	0918, 1648.	Local navigational warnings in French.
		1911 kHz, A3E.	0915, 1635.	Weather in French.
		447 kHz, A1A, A2A.	Every hour +18m, +48m.	Weather in French.
		2182, 2635 kHz, A3E.	Every hour +03m.	Weather in French.
3570	Agadir (CND).	461 kHz, A1A, A2A.	0948, 2148.	Local navigational warnings in French.
		1911 kHz, A3E.	1048, 1648.	Local navigational warnings in French.
		1911 kHz, A3E.	0935, 1615.	Weather in French.
		461 kHz, A1A, A2A.	Every hour +18m, +48m.	Weather in French.
		2182 kHz, A3E.	Every hour +33m.	Weather in French.
3572	Casablanca (CNP).	441 kHz, A1A, A2A.	0818, 2018.	Local navigational warnings in French.
		2586 kHz, A3E.	0918, 2028.	Local navigational warnings in French.
		2586 kHz, A3E.	0945, 1645.	Weather in French.
		441 kHz, A1A, A2A.	Every hour +18m, +48m.	Weather in French.
		2182 kHz, A3E.	Every hour +33m.	Weather in French.
3574	Safi (CND-3).	1743 kHz, A3E.	0928, 1648.	Local navigational warnings in French.
		1743 kHz, A3E.	0915, 1635.	Weather in French.
		2182 kHz, A3E.	Every hour +03m.	Weather in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
ISLAS CANARIAS				
3579	Arrecife.	1644 kHz, J3E.	0903, 1233, 1803.	Weather in Spanish.
		1644 kHz, J3E.	0003, 0403, 0803, 1203, 1603, 2003.	Local navigational warnings.
		Ch. 25, F3E.	0903, 1803.	Weather in Spanish.
		Ch. 25, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3579.5	Fuerteventura.	Ch. 22, F3E.	0903, 1603.	Local navigational warnings in Spanish.
3580	Las Palmas (EAL).	1689 kHz, J3E.	0903, 1203, 1803.	Weather in Spanish.
		1689 kHz, J3E.	0003, 0403, 0803, 1203, 1603, 2003.	Local navigational warnings
		Ch. 26, F3E.	0840, 1040, 2040.	Weather.
		Ch. 26, F3E.	0903, 1603.	Local navigational warnings in Spanish.
		518 kHz, F1B.	0120, 0520, 0920, 1320, 1720, 2120.	NAVTEX (I).
3581	Tenerife.	Ch. 11, 18, 67, F3E.	0015, 0415, 0815, 1215, 1615, 2015.	Weather.
		Ch. 11, F3E.	0215, 0615, 1015, 1415, 1815, 2215.	Local navigational warnings.
		Ch. 27, F3E.	0840, 1040, 2040.	Weather.
		Ch. 27, F3E.	0833, 1533.	Local navigational warnings in Spanish.
3581.3	Gomera.	Ch. 24, F3E.	0840, 1040, 2040.	Weather.
		Ch. 24, F3E.	0833, 1533.	Local navigational warnings in Spanish.
3581.6	Hierro.	Ch. 23, F3E.	0840, 1040, 2040.	Weather.
		Ch. 23, F3E.	0833, 1533.	Local navigational warnings in Spanish.
3581.9	La Palma.	Ch. 22, F3E.	0840, 1040, 2040.	Weather.
		Ch. 22, F3E.	0833, 1533.	Local navigational warnings in Spanish.
MAURITANIA				
3583	Nouadhibou (5TA).	8572 kHz, A1A.	1033, 1233, 1633.	Local navigational warnings.
		1881 kHz, A3E.	0833.	Weather in French.
SENEGAL				
3584	Dakar (6VA).	416 kHz, A2A, 1813 kHz, A3E.	0848, 1248, 1948.	Local navigational warnings in French.
		6383, 8690 kHz, A1A.	1000, 2200.	Weather in French.
GAMBIA				
3585	Banjul (C5G).	438 kHz, A1A, A2A, 500 kHz, A1A.	0818, 1018, 1218, 1418, 1618, 1818.	Local navigational warnings.
GUINEA-BISSAU				
3586	Bissau (J5M).	421 kHz, A1A.	0048, 1018.	Local navigational warnings in Portuguese.
GUINEA				
3590	Conakry (3XC).	484 kHz, A2A, 1813 kHz, A3E.	0818.	Local navigational warnings in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
SIERRA LEONE				
3595	Freetown (9LL).	421 kHz, A1A, A2A.	0900, 1318, 1700.	Local navigational warnings.
		6411 kHz, A1A.	1318.	Local navigational warnings.
		8710 kHz, A1A.	0900.	Local navigational warnings.
IVORY COAST				
3600	Abidjan (TUA).	487 kHz, A2A, 2586 kHz, H3E.	0848, 1248, 1948.	Local navigational warnings in French.
BENIN				
3610	Cotonou (TYA).	418 kHz, A2A, 1813 kHz, H3E.	0818, 1218, 1718.	Local navigational warnings in French.
		1813 kHz, H3E.	1003, 1603.	Weather in French.
NIGERIA				
3615	Lagos (5OW).	447 kHz, A1A, A2A.	Every even hour +18m.	Local navigational warnings.
		2755 kHz, J3E.	0833, 1303.	Local navigational warnings.
3617	Port Harcourt (5OZ).	520 kHz, A1A, A2A.	Every even hour +35m.	Local navigational warnings.
		2630 kHz, J3E.	0820, 1220.	Local navigational warnings.
CAMEROON				
3620	Douala (TJC).	500, 519 kHz, A1A.	Every hour +48m.	Local navigational warnings in French.
		8449 kHz, A1A.	0800.	Local navigational warnings and weather in French.
		13069.5 kHz, A1A.	1650.	Weather in French.
NAMIBIA				
3627	Luderitz (V5L).	Ch. 23, G3E.	0905, 1605.	NAVAREA VII and local navigational warnings.
		Ch. 23, G3E.	0935, 1235, 1635.	Weather.
3628	Walvis Bay (V5W).	1764, 4357 kHz, J3E, Ch. 26, 27, G3E.	0905, 1605.	NAVAREA VII and local navigational warnings.
		1764, 4357 kHz, J3E, Ch. 26, 27, G3E.	0935, 1235, 1635.	Weather.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).
ANGOLA				
3629	Luanda (D3E).	4143.6, 8291.1 kHz, J3E, Ch. 24, F3E.	0233, 0633, 1033, 1433, 1833, 2233.	Local navigational warnings in Portuguese.
CONGO				
3630	Pointe Noire (TNA).	524 kHz, A1A, 2705 kHz, R3E.	0610, 0810, 1010, 1410, 1610.	Local navigational warnings in French.
ZAIRE				
3635	Banana (9PA).	489, 500 kHz, A1A, 8714 kHz, F1B.	0620, 0820, 1220, 1620.	Local navigational warnings in French.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
SOUTH AFRICA				
LONG-RANGE WARNINGS: NAVAREA VII: Includes waters of the South Atlantic and Indian Oceans, bound on the west by a line running from the African Coast at 6°S to 20°W, thence south to Antarctica, and on the east by a line running from the east African coast at 10°30'S to 55°E, thence south to 30°S, east to 80°E and south to Antarctica. Original reports to NAVAREA VII Coordinator, Hydrographer, S.A. Navy, Maritime Headquarters, Cape Town.				
3641	Port Elizabeth (ZSQ).	4435, 8800, 13146 kHz, J3E, Ch. 23, 24, 25, 27, 28, 83, G3E.	1015, 1333, 1815.	NAVAREA VII, local navigational warnings and weather (weather only at 1333).
		518 kHz, F1B.	0120, 0520, 0920, 1320, 1720, 2120.	NAVTEX (I).
NOTE: HF and VHF voice broadcasts remotely controlled from Cape Town.				
3643	Durban (ZSD).	4435, 8800, 13146 kHz, J3E, Ch. 01, 03, 25, 26, 27, 28, G3E.	1015, 1333, 1815.	NAVAREA VII, local navigational warnings and weather (weather only at 1333).
		518 kHz, F1B.	0220, 0620, 1020, 1420, 1820, 2220.	NAVTEX (O).
NOTE: HF and VHF voice broadcasts remotely controlled from Cape Town.				
3644	Cape Town (ZSC) (ZSJ).	4435, 8800, 13146 kHz, J3E, Ch. 01, 03, 04, 23, 25, 26, 27, 84, 85, 86, G3E.	1015, 1333, 1815.	NAVAREA VII, local navigational warnings and weather (weather only at 1333).
		4214, 6322, 8431.5, 12601, 16816, 19692.5 kHz, F1B.	0930, 1730.	Marine Safety Information (MSI) (HF NBDP) (NAVAREA VII, local navigational warnings and weather).
		4014 kHz, F3C.	1600-0600.	Weather FAX*; 120/576.
		7508, 13538 kHz, F3C.	0000-2400.	Weather FAX*; 120/576.
		18238 kHz, F3C.	0600-1600.	Weather FAX*; 120/576.
		518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (C).
*NOTE: Broadcast schedule at 0430.				
3645	East London (ZSA).	Ch. 26, G3E.	1015, 1333, 1815.	NAVAREA VII, local navigational warnings and weather (weather only at 1333).
NOTE: VHF voice broadcasts remotely controlled from Cape Town.				
CHILE				
LONG-RANGE WARNINGS: NAVAREA XV: Includes the waters of the eastern South Pacific from 18°21'S to Antarctica, bound on the west by 120°W and on the east by 67°16'W. Original reports to Director del Servicio Hidrografico y Oceanografico de la Armada de Chile, Valparaiso.				
3645.4	Puerto Montt (CBP).	2738, 4146 kHz, J3E.	0045, 1425.	Local navigational warnings and weather.
		Ch. 10, G3E.	0145, 1445.	Weather.
		518 kHz, F1B.	0430, 1230, 2030.	NAVTEX (D).
		518 kHz, F1B.	0030, 0830, 1630.	NAVTEX (K) in Spanish.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3645.5	Valparaiso Playa Ancha (CBV).	4214.5, 4217.5, 8420.5, 8424, 12583.5, 12587, 16811, 16814.5 kHz, F1B.	0215, 1430, 2210.	NAVAREA XV warnings; local navigational warnings in Spanish at 0215, 1430.
		4214.5, 4217.5, 8420.5, 8424, 12583.5, 12587, 16811, 16814.5 kHz, F1B.	0110, 1210, 1610, 1845.	Weather.
		2738, 4357 kHz, J3E, Ch. 10, G3E.	0135, 1435.	Weather in Spanish.
		Ch. 10, G3E.	0215, 1415.	Weather in Spanish.
		4228, 8677, 17146.4 kHz, F3C.	1115, 1630, 1915, 2315.	Weather FAX; 120/576.
		518 kHz, F1B.	0410, 1210, 2010.	NAVTEX (B).
		518 kHz, F1B.	0010, 0810, 1610.	NAVTEX (I) in Spanish.
3645.6	Talcahuano (CBT).	2738 kHz, J3E.	0210, 1410.	Weather in Spanish.
		Ch. 10, G3E.	0215, 1415.	Weather in Spanish.
		518 kHz, F1B.	0420, 1220, 2020.	NAVTEX (C).
		518 kHz, F1B.	0020, 0820, 1620.	NAVTEX (J) in Spanish.
3645.7	Magallanes (CBM).	2738, 4146 kHz, J3E.	0235, 1435.	Weather in Spanish.
		Ch. 10, G3E.	0210, 1410.	Weather in Spanish.
		518 kHz, F1B.	0440, 1240, 2040.	NAVTEX (E).
		518 kHz, F1B.	0040, 0840, 1640.	NAVTEX (L) in Spanish.
3645.75	Antofagasta (CBA).	2738 kHz, J3E.	0205, 1405.	Weather in Spanish.
		Ch. 10, G3E.	0215, 1415.	Weather in Spanish.
		518 kHz, F1B.	0400, 1200, 2000.	NAVTEX (A).
		518 kHz, F1B.	0000, 0800, 1600.	NAVTEX (H) in Spanish.
3645.76	Isla de Pascua (Easter Island) (CBY).	2738 kHz, J3E.	0225, 1425.	Weather.
		Ch 10, G3E.	0215, 1415.	Weather.
		518 kHz, F1B.	0450, 1250, 2050.	NAVTEX (F).
		518 kHz, F1B.	0050, 0850, 1650.	NAVTEX (G) in Spanish.
3645.77	Centro Meteorologico Presidente Eduardo Frei, King George Island (South Shetland Islands) (CAN6D).	5302.5, 11662.5, 15470 kHz, F1B.	0030, 0330, 0930, 1230, 1530, 2130, 2230.	Weather.
		5302.5, 11662.5 kHz, F1B.	1445, 2245.	Ice.
3645.8	Base Prat, Greenwich Island (South Shetland Islands) (CCZ).	6439 kHz, F1B.	1400, 2200.	Weather.

ECUADOR

NOTE: Original reports to Guayaquil (HCG) Naval Radio, preceded by the word "HIDRO", or mail to Institute of the Navy, Guayaquil.

3646	Guayaquil Naval (HCG).	8474 kHz, A2A.	0000, 1200, 1700.	Local navigational warnings.
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RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
PERU				
LONG-RANGE WARNINGS: NAVAREA XVI: Includes the waters of the eastern South Pacific between 3°24'S and 18°21'S, west to 120°W. Original reports to Direccion de Hidrografia y Navegacion de la Marina, Callao.				
3646.1	Callao (OBC).	485, 12307 kHz, A1A.	0200, 1600, 2100.	Local navigational warnings and weather in Spanish, NAVAREA XVI.
		518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (U).
3646.2	Paíta (OBY-2).	485, 6436 kHz, A1A.	0230, 1630, 2130.	Local navigational warnings.
		518 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (S).
3646.3	Mollendo (OBF-4).	156.8 MHz, F3E.	0245, 1645, 2145.	Local navigational warnings and weather.
		518 kHz, F1B.	0340, 0740, 1140, 1540, 1940, 2340.	NAVTEX (W).
UNITED STATES - PACIFIC				
LONG-RANGE WARNINGS: NAVAREA XII: Original reports to NAVAREA XII Coordinator, National Imagery and Mapping Agency, Attn: PTNM (Mail stop D-44). HYDROPAC: Original reports to National Imagery and Mapping Agency. LOCAL WARNINGS: Local Notice to Mariners: Original reports to nearest Coast Guard Station for relay to District Commander (oan).				
3646.5	Long Beach, CA (NMC) (NMQ-9) U.S. Coast Guard.	2670 kHz, J3E.	0503, 1303, 2103.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	0200, 1800.	Local Notice to Mariners and weather.
3646.6	Cambria, CA (NMQ) U.S. Coast Guard.	518 kHz, F1B.	0045, 0445, 0845, 1245, 1645, 2045.	NAVTEX (Q).
3657	Point Reyes, CA (NMC) (NMC-17) U.S. Coast Guard.	2670 kHz, J3E.	0203, 1403.	Local Notice to Mariners and weather.
		8416.5, 16806.5 kHz, F1B.	0005, 1800.	Maritime Safety Information (MSI) (HF NBDP) (NAVAREA XII, HYDROPAC and weather).
		4426, 8764, 13089 kHz, J3E.	0430, 1030.	Maritime Safety Information (MSI).
		8764, 13089, 17314 kHz, J3E.	1630, 2230.	Maritime Safety Information (MSI).
		Ch. 22A, F3E.	1630, 1900, 2330.	Local Notice to Mariners and weather.
		4346 kHz, F3C.	0230, 0750, 1100, 1430.	Weather FAX*; 120/576.
		8682, 12730, 17151.2 kHz, F3C.	0230, 0750, 1100, 1430, 1930, 2300.	Weather FAX*; 120/576.
		22527 kHz, F3C.	1930, 2300.	Weather FAX*; 120/576.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (C).
*NOTE: Broadcast schedule at 1104, 2324.				
3661	Humboldt Bay, CA (NMC-11) U.S. Coast Guard.	2670 kHz, J3E.	0303, 1503.	Local Notice to Mariners and weather.
		Ch. 22A, F3E.	1615, 2315.	Local Notice to Mariners and weather.
3664	North Bend, OR (NOE) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	0603, 1803.	Local Notice to Mariners and weather.
3665	Astoria, OR (NMW) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	0533, 1733.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (W).
3666	Portland, OR (NMW-44) U.S. Coast Guard.	Ch. 22A, F3E.	1745.	Local Notice to Mariners and weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3667	Port Angeles, WA (NOW) U.S. Coast Guard.	2670 kHz, J3E, Ch. 22A, F3E.	0615, 1815.	Local Notice to Mariners and weather.
3668	Seattle, WA (NMW-43) U.S. Coast Guard.	Ch. 22A, F3E.	0630, 1830.	Local Notice to Mariners and weather.
CANADA - PACIFIC				
3671	Victoria, B.C. (VAK).	162.475 MHz, Ch. 21B, F3E.	Continuous (interrupted during live broadcasts at 0510, 1510, 2110).	Local navigational warnings and weather.
3672	Comox, B.C. (VAC).	162.475, 162.55 MHz, Ch. 21B, F3E.	Continuous (interrupted during live broadcasts at 0420, 1520, 2120).	Local navigational warnings and weather.
3675	Tofino, B.C. (VAE).	2054 kHz, J3E, 162.4, 162.475, 162.55 MHz, Ch. 21B, F3E.	0050, 0650, 1250, 1850.	Local navigational warnings and weather.
		162.4, 162.475, 162.55 MHz, Ch. 21B, F3E.	Continuous (interrupted during live broadcasts).	Local navigational warnings and weather.
		518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
3677	Prince Rupert, B.C. (VAJ).	2054 kHz, J3E.	0105, 0705, 1305, 1905.	Local navigational warnings and weather.
		162.4, 162.475, 162.55 MHz, Ch. 21B, F3E.	Continuous.	Local navigational warnings and weather.
		518 kHz, F1B.	0030, 0430, 0830, 1230, 1630, 2030.	NAVTEX (D).
UNITED STATES - ALASKA				
LONG-RANGE WARNINGS: NAVAREA XII: Original reports to NAVAREA XII Coordinator, National Imagery and Mapping Agency, Attn: PTNM (Mail stop D-44). HYDROPAC: Original reports to National Imagery and Mapping Agency. LOCAL WARNINGS: Local Notice to Mariners: Original reports to nearest Coast Guard Station for relay to District Commander (oan).				
3692.5	Juneau, AK (NMJ) U.S. Coast Guard.	Ch. 22A, F3E.	0103, 0203, 0303, 0403, 1403, 1433, 1503, 1533.	Local Notice to Mariners and weather.
3695	Kodiak, AK (NOJ) U.S. Coast Guard.	6501 kHz, J3E.	0203, 1645.	Maritime Safety Information (MSI).
		Ch. 22A, F3E.	0133, 0233, 0533, 1433, 1603, 1803.	Local Notice to Mariners and weather.
		2054 kHz, F3C.	1000, 1600.	Weather and ice FAX*; 120/576.
		4298, 8459 kHz, F3C.	0400, 1000, 1600, 2200.	Weather and ice FAX*; 120/576.
		12412.5 kHz, F3C.	0400, 2200.	Weather and ice FAX*; 120/576.
		518 kHz, F1B.	0300, 0700, 1100, 1500, 1900 2300.	NAVTEX (J).
		518 kHz, F1B.	0340, 0740, 1140, 1540, 1940 2340.	NAVTEX (X). (Weather products previously broadcast from Adak.)
*NOTE: Broadcast schedule at 1727.				
3696.5	Valdez, AK U.S. Coast Guard.	Ch. 22A, F3E.	0115, 0133, 0715, 0733, 1315, 1333, 2115, 2133.	Local Notice to Mariners and weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
UNITED STATES - HAWAII				
LONG-RANGE WARNINGS: NAVAREA XII: Original reports to NAVAREA XII Coordinator, National Imagery and Mapping Agency, Attn: PTNM (Mail stop D-44). HYDROPAC: Original reports to National Imagery and Mapping Agency. LOCAL WARNINGS: Local Notice to Mariners: Original reports to nearest Coast Guard Station for relay to District Commander (oan).				
3703	Honolulu, HI (NMO) (NMO-2) U.S. Coast Guard.	8416.5, 12579, 22376 kHz, F1B.	0130, 2030.	Maritime Safety Information (MSI) (HF NBDP) (NAVAREA XII, HYDROPAC and weather).
		8416.5, 12579 kHz, F1B.	0730, 1330.	Maritime Safety Information (MSI) (HF NBDP) (NAVAREA XII, HYDROPAC and weather).
		6501, 8764 kHz, J3E.	0600, 1200.	Maritime Safety Information (MSI).
		8764, 13089 kHz, J3E.	0005, 1800.	Maritime Safety Information (MSI).
		2670 kHz, J3E.	0545, 1145, 1745, 2345.	Local Notice to Mariners.
		Ch. 22A, F3E.	0500, 0900, 1700, 2100.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0040, 0440, 0840, 1240, 1640, 2040.	NAVTEX (O).
3703.5	Honolulu, HI (KVM70).	9982.5 kHz, F3C.	1132.	Weather FAX*; 120/576.
		11090 kHz, F3C.	0533, 1132, 1733.	Weather FAX*; 120/576.
		16135 kHz, F3C.	0533, 1733, 2320.	Weather FAX*; 120/576.
		23331.5 kHz, F3C.	2320.	Weather FAX*; 120/576.
*NOTE: Broadcast schedule at 1132, 2320.				
MADAGASCAR				
3706	Toliara (5RT).	416 kHz, A1A, A2A.	0440, 1640.	Local navigational warnings and weather in French.
		416 kHz, A1A, A2A.	0200, 0600, 1000, 1400, 1800, 2200.	Weather in French.
3707	Mahajanga (5RO).	476 kHz, A1A, A2A.	0500, 1630.	Local navigational warnings and weather in French.
		476 kHz, A1A, A2A.	0000, 0400, 0800, 1200, 1600, 2000.	Weather.
3708	Antseranana (5RL).	447 kHz, A1A, A2A.	0430, 1700.	Local navigational warnings and weather in French.
		447 kHz, A1A, A2A.	0200, 0600, 1000, 1400, 1800, 2200.	Weather.
3709	Taomasina (5RS).	476, 519 kHz, A1A, A2A.	0510, 0810, 1610.	Local navigational warnings and weather in French.
		8465 kHz, A1A.	0510, 0810.	Local navigational warnings in French.
		8734 kHz, A1A, 8767 kHz, A3E.	0510, 0810.	Weather in French.
		476, 519 kHz, A1A, A2A.	0000, 0400, 0800, 1200, 1600, 2000.	Weather in French.
MAURITIUS				
3710	Mauritius (3BM).	518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (C).
3710.5	Port Louis (3BB).	4402 kHz, J3E.	0115, 0730, 1315, 1930.	Weather.
		4402 kHz, J3E.	0433, 1233, 1603.	Local navigational warnings.
		Ch. 14, F3E.	0205, 1405.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
SOMALIA				
3712	Mogadiscio (6OR).	450 kHz, A1A.	0448, 0848, 1248, 1648.	Local navigational warnings.
DJIBOUTI				
3713	Djibouti (J2A).	464, 8682 kHz, A1A.	0430, 1700.	Local navigational warnings and weather.
		464, 12728 kHz, A1A.	0900.	Local navigational warnings and weather.
EGYPT - RED SEA				
3713.2	Quseir (SUK).	435.5 kHz, A1A.	0018, 0418, 0818, 1218, 1618, 2018.	Local navigational warnings.
		435.5 kHz, A1A.	1230.	Weather.
		518 kHz, F1B.	0330, 0730, 1130, 1530, 1930, 2330.	NAVTEX (V).
3713.4	Ismailia (Serapeum) (SUZ).	515.5 kHz, A1A.	0648, 1048, 1448, 1848.	Local navigational warnings.
		4255 kHz, A1A.	0648, 1848.	Local navigational warnings.
		8450, 12670.5 kHz, A1A.	1048, 1448.	Local navigational warnings.
		4209.5 kHz, F1B.	0750, 1150.	NAVTEX (X).
		518 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350.	NAVTEX (X) (Red Sea and Gulf of Suez broadcasts).
SAUDI ARABIA - RED SEA				
3713.6	Jiddah (HZH).	436 kHz, A1A.	0118, 0518, 0918, 1318, 1718, 2118.	Local navigational warnings.
		1726 kHz, J3E.	0333, 0733, 1133, 1533, 1933, 2333.	Local navigational warnings.
		436 kHz, A1A.	0518, 0520, 1118, 1718, 1720, 2318.	Weather.
		1726 kHz, J3E.	0503, 0533, 1133, 1703, 1733, 2333.	Weather.
		518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
OMAN				
3713.8	Muscat (A4M).	442.5 kHz, A1A.	0518, 1618.	Local navigational warnings.
		518 kHz, F1B.	0200, 0600, 1000, 1400, 1800, 2200.	NAVTEX (M).
QATAR				
3713.9	Doha (A7D).	439 kHz, A1A.	0418, 0818, 1218, 1618.	Local navigational warnings and weather.
		2768 kHz, J3E, Ch. 24, F3E.	0433, 0833, 1233, 1633.	Local navigational warnings and weather.
		439 kHz, A1A.	0500, 1000, 1600.	Weather.
		2768 kHz, J3E, Ch. 24, F3E.	0503, 1003, 1603.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
SAUDI ARABIA - PERSIAN GULF				
LOCAL WARNINGS: MENAS: Original reports to Middle Eastern Navigational Service, P.O. Box 66, Manama, Bahrain.				
3714.2	Dammam (HZG).	444 kHz, A1A, A2A.	0148, 0548, 0948, 1348, 1748, 2148.	Local navigational warnings.
		1780 kHz, J3E.	0303, 0703, 1103, 1503, 1903, 2303.	Local navigational warnings.
		444 kHz, A1A, A2A.	0525, 0548, 1148, 1725, 1748, 2348.	Weather.
		1780 kHz, J3E.	0503, 1103, 1703, 2303.	Weather.
		1780 kHz, J3E, Ch. 25, F3E.	0533, 1733.	Weather.
		8651, 12792 kHz, A1A.	0630, 1830.	Weather.
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G).
KUWAIT				
3714.4	Kuwait (9KK).	450 kHz, A1A, A2A.	0515, 1715.	Local navigational warnings.
		450 kHz, A1A, A2A, 2750 kHz, H3E.	0530, 1730.	Weather.
IRAN				
3715	Bandar Khomeyni (EQN).	Ch. 18, F3E.	0530, 1230.	Local navigational warnings and weather.
3715.1	Bushehr (EQM).	Ch. 18, F3E.	0530, 1230.	Local navigational warnings and weather.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A).
3715.2	Bandar Abbas (EQI).	460, 8469 kHz, A1A.	0530, 1230.	Local navigational warnings and weather.
		Ch. 18, F3E.	0530, 1230.	Local navigational warnings.
		4210 kHz, F1B.	0730, 1430.	Maritime Safety Information (MSI) (HF NBDP).
		8416.5 kHz, F1B.	0330, 0530, 1230.	Maritime Safety Information (MSI) (HF NBDP).
		12579 kHz, F1B.	0830, 1030.	Maritime Safety Information (MSI) (HF NBDP).
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).
3715.3	Chah Bahar (EQJ).	Ch. 18, F3E.	0530, 1230.	Local navigational warnings and weather.
BAHRAIN				
3716	Bahrain (A9M).	487 kHz, A1A, A2A.	0518, 0918, 1318, 1718.	Local navigational warnings.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
PAKISTAN				
LONG-RANGE WARNINGS: NAVAREA IX: Includes the waters of the Red Sea, Persian Gulf, Suez Canal, Gulf of Oman and the Arabian Sea from Somalia to the India-Pakistan frontier. Original reports to Area Coordinator, NAVAREA IX, Hydrographer of the Pakistan Navy, Naval Headquarters, Karachi. The Middle East Navigational Aid Service is Subarea Coordinator. LOCAL WARNINGS: For the coast of Pakistan. Original reports to the Hydrographer of the Pakistan Navy.				
3720	Karachi (ASK).	500 kHz, A2A.	0030, 0430, 1230, 2030.	Local navigational warnings and weather.
		466, 484, 13024 kHz, A1A, 500 kHz, A2A.	0830.	Local navigational warnings and weather (weather only on 484 kHz).
		466, 484, 8694 kHz, A1A, 500 kHz, A2A.	1630.	Local navigational warnings and weather (weather only on 484 kHz).
		500 kHz, A2A.	Every hour +00m.	Weather.
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
3721	Karachi Naval (AQP).	2457.5, 6390, 8490, 13011, 17093.6 kHz, A1A.	0400, 1200.	NAVAREA IX.
		2457.5, 6390, 8490, 13011, 17093.6 kHz, A1A.	0200, 0600, 1000, 1400, 1800, 2200.	Navigational warnings and weather.
INDIA				
LONG-RANGE WARNINGS: NAVAREA VIII: Includes the waters of the Indian Ocean from 10°30'S on the African coast to 55°E, thence south to 30°S and east to 95°E. Original reports to NAVAREA VIII Coordinator, Chief Hydrographer to the Government of India, Dehra Dun.				
3722	Bombay Naval (VTG).	2072, 4268, 6467, 8634, 12808.5, 16938, 22378 kHz, A1A.	0500, 0900, 1500.	NAVAREA VIII.
		2072, 4268, 6467, 8634, 12808.5, 16938, 22378 kHz, A1A.	1215 (Sun.).	NAVAREA VIII.
		4268, 8634, 12808.5, 16938, 22378 kHz, A1A.	0900.	Weather.
		2072, 4268, 6467, 8634, 12808.5 kHz, A1A.	1500.	Weather.
3722.05	Bombay (VWB).	521, 8630, 12710 kHz, A1A.	0648, 1548.	Local navigational warnings.
		521, 8630, 12710 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		500 kHz, A2A, 8630, 12710 kHz, A1A.	0448, 0848, 1248, 1648, 2048, 2348.	Weather.
		521 kHz, A1A.	0618, 0848, 1518, 1648.	Weather.
		500 kHz, A2A, 8630, 12710 kHz, A1A.	Every hour +00m.	Weather.
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G).
3722.1	Vishakhapatnam (VWV).	474 kHz, A1A.	0548, 1548.	Local navigational warnings.
		474, 500 kHz, A1A.	0050, 0550, 0950, 1350, 1850, 2150.	Weather.
		474 kHz, A1A.	Every hour +00m.	Weather.
3722.2	Vishakhapatnam Naval (VTP).	2295, 4238, 6418, 8646, 12840, 16695 kHz, A1A.	0500, 0900, 1500.	NAVAREA VIII.
		2295, 4238, 6418, 8646, 12840, 16695 kHz, A1A.	1215 (Sun.).	NAVAREA VIII.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3723	Kandla (VWK).	440 kHz, A1A.	0648, 1548.	Local navigational warnings.
		440 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		440 kHz, A1A.	Every hour +00m.	Weather.
3725	Ratnagiri (VWZ).	420.5 kHz, A1A.	0648, 1548.	Local navigational warnings.
		420.5 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		420.5 kHz, A1A.	Every hour +00m.	Weather.
3726	Goa (VWG).	417.5 kHz, A1A.	0648, 1548.	Local navigational warnings.
		417.5 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		417.5 kHz, A1A.	Every hour +00m.	Weather.
3727	Mangalore (VWL).	438 kHz, A1A.	0648, 1548.	Local navigational warnings.
		438 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		438 kHz, A1A.	Every hour +00m.	Weather.
3728	Cochin (VWN).	460 kHz, A1A.	0648, 1548.	Local navigational warnings.
		460 kHz, A1A.	0420, 0820, 1220, 1620, 2020, 2320.	Weather.
		460 kHz, A1A.	Every hour +00m.	Weather.
3728.1	Tuticorin (VWT).	487 kHz, A1A.	0648, 1548.	Local navigational warnings.
		487 kHz, A1A.	0050, 0550, 0950, 1350, 1850, 2150.	Weather.
		487 kHz, A1A.	Every hour +00m.	Weather.
3728.2	Madras (VWM).	515 kHz, A1A.	0548, 1548.	Local navigational warnings.
		515 kHz, A1A.	0050, 0550, 0950, 1350, 1850, 2150.	Weather.
		500 kHz, A2A, 4301, 8674.4 kHz, A1A.	0050, 1350, 1850, 2150.	Weather.
		500 kHz, A2A, 8674.4, 12718.5 kHz, A1A.	0550, 0950.	Weather.
		500 kHz, A2A.	Every hour +00m.	Weather.
		518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
		500 kHz, A2A.	Every hour +00m.	Weather.
3728.3	Calcutta (VWC).	470, 8526 kHz, A1A.	0548.	Local navigational warnings.
		470, 4286 kHz, A1A.	1548.	Local navigational warnings.
		500 kHz, A2A, 8526 kHz, A1A.	0018, 0518, 0848, 1318, 1818, 2118.	Weather.
		470 kHz, A1A.	0050, 0550, 0950, 1350, 1850, 2150.	Weather.
		470 kHz, A1A.	0848, 0918, 1418, 1818.	Weather.
		4286 kHz, A1A.	1818.	Weather.
		500 kHz, A2A, 8526 kHz, A1A.	Every hour +00m.	Weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3729	Port Blair (VWP).	442 kHz, A1A.	0548, 1548.	Local navigational warnings.
		442 kHz, A1A.	0100, 0600, 1000, 1400, 1900, 2200.	Weather.
		442 kHz, A1A.	Every hour +00m.	Weather.
SRI LANKA				
3730	Colombo (4PB).	482 kHz, A1A, A2A, 8473 kHz, A1A.	0600, 0900, 1300.	Local navigational warnings (weather at 0600, 1300).
		482 kHz, A1A, A2A, 8473 kHz, A1A.	0530, 1300.	Weather.
BANGLADESH				
3731	Chittagong (S3D).	466, 484, 500 kHz, A1A.	0850, 1650.	Local navigational warnings.
		466, 484, 500, 8694, 13056 kHz, A1A, 2182 kHz, A3E.	0050, 0450, 0850, 1250, 1650, 2050.	Weather.
		466, 484, 500, 8694, 13056 kHz, A1A, 2182 kHz, A3E.	Every hour +00m.	Weather.
BURMA				
3733	Rangoon (XYR).	460, 500, 8710 kHz, A1A, A2A.	0500, 0900, 1700.	Local navigational warnings (weather at 0900, 1700).
		460, 500, 8710 kHz, A1A, A2A.	Every hour +00m.	Weather.
MALAYSIA - PENINSULAR				
3734	Pinang (9MG).	522.5 kHz, A1A.	0148, 0548, 0948, 1348, 1748, 2148.	Local navigational warnings and weather.
		518 kHz, F1B.	0320, 0720, 1120, 1520, 1920, 2320.	NAVTEX (U).
3735	Singapore (9VG).	Ch. 09, F3E.	0100, 0300, 0500, 0700, 0900, 1100, 1300, 1500, 1700, 1900, 2100, 2300.	Local navigational warnings and weather.
		518 kHz, F1B.	0020, 0420, 0820, 1220, 1620, 2020.	NAVTEX (C).
THAILAND				
3736	Bangkok (HSA) (HSJ).	526 kHz, A1A.	0118, 0448, 0848, 1218.	Local navigational warnings.
		526, 7955, 8573.5, 8686 kHz, A1A.	0150, 0750, 1150.	Weather.
		6765 kHz, J3E.	0000, 0300, 0600, 0900, 1200, 1500, 1800, 2100.	Weather.
		518 kHz, F1B.	0050, 0450, 0850, 1250, 1650, 2050.	NAVTEX (F).
VIETNAM				
3737	Hai Phong (XVG).	8470 kHz, A1A.	0018, 0618, 1218.	Local navigational warnings.
		8470 kHz, A1A.	0018, 1218.	Weather.
		6230 kHz, J3E.	0048, 1248.	Weather in Vietnamese.
3737.5	Da Nang (XVT).	518 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
3738	Ho Chi Minh City (XVS).	460, 8590 kHz, A1A.	0148, 0748, 1148, 2148.	Local navigational warnings.
		500 kHz, A1A.	0018, 0418, 0818, 1218.	Local navigational warnings.
		460, 8590 kHz, A1A.	0048, 1148.	Weather.
		518 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350.	NAVTEX (X).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
HONG KONG (CHINA)				
3739	Hong Kong.	518 kHz, F1B.	0150, 0550, 0950, 1350, 1750, 2150.	NAVTEX (L).
CHINA				
3740	Guangzhou (XSQ).	445, 4288, 6382, 8458, 12973 kHz, A1A.	0248, 0548, 0848, 1148, 1748, 2048, 2348.	Local navigational warnings.
		445, 6382, 8458, 12973 kHz, A1A.	0230, 0730.	Local navigational warnings in Chinese.
		445, 4288, 8458, 12973 kHz, A1A.	1400.	Local navigational warnings in Chinese.
		6316, 8435, 16880, 22420 kHz, F1B.	0200, 0630.	Local navigational warnings in Chinese.
		4212, 8435, 12613, 16880 kHz, F1B.	1330.	Local navigational warnings in Chinese.
		445, 6382, 8458, 12973 kHz, A1A.	0700.	Local navigational warnings.
		445, 6382, 8458, 12973 kHz, A1A.	0030.	Weather.
		445, 4288, 8458, 12973 kHz, A1A.	1230.	Weather.
		445, 6382, 8458, 12973 kHz, A1A.	0100.	Weather in Chinese.
		445, 4288, 8458, 12973 kHz, A1A.	1300.	Weather in Chinese.
		445, 4288, 6382, 8458, 12973 kHz, A1A.	0248, 0448, 1048, 1448, 1648, 2048, 2248.	Weather.
		518 kHz, F1B.	0210, 0610, 1010, 1410, 2210.	NAVTEX (N).
3740.1	Sanya (XSI).	518 kHz, F1B.	0200, 0600, 1000, 1400, 2200.	NAVTEX (M).
3740.2	Tianjin (XSV).	445, 8600 kHz, A1A.	Every even hour +18m.	Local navigational warnings.
		445, 8600, 12969 kHz, A1A.	0600, 2200.	Ice.
		445, 4283, 8600, 12969 kHz, A1A.	1300.	Ice.
3740.3	Dalian (XSZ).	462 kHz, A1A, A2A, 6333.5, 8694 kHz, A1A.	0050, 1050.	Weather.
		518 kHz, F1B.	0250, 0650, 1050, 1450, 2250.	NAVTEX (R).
3740.4	Fuzhou (XSL).	518 kHz, F1B.	0220, 0620, 1020, 1420, 2220.	NAVTEX (O).
3741	Shanghai (XSG).	522.5, 4290, 6454, 8487, 12954, 17002.4 kHz, A1A.	0200.	Local navigational warnings.
		522.5, 4290, 6454, 8487, 12954, 17002.4 kHz, A1A.	0300, 0900.	Weather.
		458 kHz, A1A, A2A, 522.5, 4290, 6454, 8487, 12954 kHz, A1A.	0000, 0300, 0500, 0900, 1200, 1500, 1800, 2100.	Weather.
		518 kHz, F1B.	0240, 0640, 1040, 1440, 2240.	NAVTEX (Q).
REPUBLIC OF KOREA				
3742	Inchon (HLC).	464 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
		2284 kHz, A3E.	0003.	Local navigational warnings.
3742.5	Cheju (HLE).	2583 kHz, A1A, 2299 kHz, J3E.	0902, 1702.	Local navigational warnings.
3743	Mokpo (HLM).	470 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3744	Kunsan (HLN).	484 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
		2507 kHz, A3E.	0403.	Local navigational warnings.
3744.5	Pyonsan.	490 kHz, F1B.	0140, 0540, 0940, 1340, 1740, 2140.	NAVTEX (K) in Korean.
		518 kHz, F1B.	0340, 0740, 1140, 1540, 1940, 2340.	NAVTEX (W).
3745	Kangnung (HLK).	476 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
		2836 kHz, J3E.	0903.	Local navigational warnings.
3746	Busan (HLP).	434 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
3746.5	Chukpyon.	490 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (J) in Korean.
		518 kHz, F1B.	0330, 0730, 1130, 1530, 1930, 2330.	NAVTEX (V).
3747	Ullung (HLU).	458 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
3747.5	Yeosu (HLY).	447 kHz, A2A.	0018, 0818.	Local navigational warnings and weather.
RUSSIA - PACIFIC				
LONG-RANGE WARNINGS: NAVAREA XIII: Includes the waters of the Sea of Okhotsk, North Pacific and Bering Sea north of 45°N and east to the International Date Line. Original reports to NAVAREA XIII Coordinator, Chief, Head Department of Navigation and Oceanography, St. Petersburg. NAVIP: World-wide navigational warnings. LOCAL WARNINGS: PRIP.				
3748	Vladivostok (UFL) (UKA) (UFZ).	4241, 12870 kHz, A1A.	0030.	Local navigational warnings in Russian (selected warnings are repeated in English).
		4241, 12870 kHz, A1A.	0630, 2200.	Weather in Russian.
		3630, 8595, 12729, 22656.5 kHz, A1A, F1B.	0900, 2300.	NAVAREA XIII warnings; local navigational warnings in Russian (selected coastal warnings are repeated in English) and weather.
		3630, 8595, 12729, 22656.5 kHz, A1A, F1B.	0900.	Ice in Russian.
		4241, 6430 kHz, A1A.	1730.	Local navigational warnings in Russian (selected warnings are repeated in English).
3749.5	Petropavlovsk-Kamchatskiy (UBE) (UBE-2).	4216.5, 12601.5, 16837 kHz, F1B.	0000.	NAVAREA XIII warnings; local navigational warnings in Russian (selected warnings are repeated in English), weather and ice in Russian.
		4216.5, 8421.5, 12601.5, 16837 kHz, F1B.	0900.	Local navigational warnings in Russian (selected warnings are repeated in English), weather and ice in Russian.
		4271, 6370, 13000 kHz, A1A.	1000.	Local navigational warnings in Russian (selected warnings are repeated in English), weather and ice in Russian.
		6370, 13000 kHz, A1A.	2300.	NAVAREA XIII warnings; local navigational warnings in Russian (selected warnings are repeated in English), weather and ice in Russian.
3750	Kholmsk (UDB-2) (UFO).	416, 4212, 8422.5, 12598 kHz, F1B.	0825.	Weather and ice in Russian.
		8422.5, 12598 kHz, F1B.	2230.	NAVAREA XIII warnings; weather and ice in Russian.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
JAPAN				
LONG-RANGE WARNINGS: NAVAREA XI: Includes the waters of the western North Pacific from the Equator to 45°N, east to 180°. Original reports to NAVAREA XI Coordinator, Chief Hydrographer, Japan Coast Guard, Tokyo. Maritime Safety Information broadcasts--Storm warnings, weather messages and navigational warnings are announced by Japan Coast Guard (JCG) CRS on VHF Ch. 16, before being broadcast on the scheduled VHF channel number.				
3753	Kushiro (JNX).	Ch. 12, 16, F3E.	0125, 0725.	Local navigational warnings.
		Ch. 12, 16, F3E.	0103, 0703.	Local navigational warnings.
		424 kHz, F1B.	0108, 0508, 0908, 1308, 1708, 2108.	NAVTEX (K) in Japanese.
		518 kHz, F1B.	0140, 0540, 0940, 1340, 1740, 2140.	NAVTEX (K).
3754	Shiogama (JNN).	Ch. 12, 16, F3E.	0125, 0725.	Local navigational warnings.
		Ch. 12, 16, F3E.	0133, 0733.	Local navigational warnings.
3757	Yokohama (JGC).	Ch. 12, 16, F3E.	0120, 0720.	Local navigational warnings.
		424 kHz, F1B.	0034, 0434, 0834, 1234, 1634, 2034.	NAVTEX (I) in Japanese.
		518 kHz, F1B.	0120, 0520, 0920, 1320, 1720, 2120.	NAVTEX (I).
3760	Nagoya (JNT).	Ch. 12, 16, F3E.	0110, 0710.	Local navigational warnings.
3764	Kobe (JGD).	Ch. 12, 16, F3E.	0133, 0733.	Local navigational warnings.
3766	Hiroshima (JNE).	Ch. 12, 16, F3E.	0115, 0715.	Local navigational warnings.
3767	Kagoshima (JNJ).	Ch. 12, 16, F3E.	0120, 0720.	Local navigational warnings.
3769	Ishigaki (JNG).	Ch. 12, 16, F3E.	0133, 0733.	Local navigational warnings.
3772	Tanabe (JNH).	Ch. 12, 16, F3E.	0103, 0703.	Local navigational warnings.
3772.2	Kochi (JNO).	Ch. 12, 16, F3E.	0125, 0725.	Local navigational warnings.
3772.4	Moji (JNR).	Ch. 12, 16, F3E.	0103, 0703.	Local navigational warnings.
		424 kHz, F1B.	0017, 0417, 0817, 1217, 1617, 2017.	NAVTEX (H) in Japanese.
		518 kHz, F1B.	0110, 0510, 0910, 1310, 1710, 2110.	NAVTEX (H).
3772.5	Sasebo (JNK).	Ch. 12, 16, F3E.	0115, 0715.	Local navigational warnings.
3772.8	Niigata (JNV).	Ch. 12, 16, F3E.	0115, 0715.	Local navigational warnings.
3773	Maizuru (JNC).	Ch. 12, 16, F3E.	0120, 0720.	Local navigational warnings.
3775	Otaru (JNL).	Ch. 12, 16, F3E.	0133, 0733.	Local navigational warnings.
		Ch. 12, 16, F3E.	0110, 0710.	Local navigational warnings.
		424 kHz, F1B.	0051, 0451, 0851, 1251, 1651, 2051.	NAVTEX (J) in Japanese.
		518 kHz, F1B.	0130, 0530, 0930, 1330, 1730, 2130.	NAVTEX (J).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3777	Naha (JNB).	Ch. 12, 16, F3E.	0110, 0710.	Local navigational warnings.
		424 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (G) in Japanese.
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (G).
TAIWAN				
3785	Chi-lung (XSX).	420, 8445, 8506 kHz, A1A, 8428* kHz, F1B.	0430, 1030, 1630, 2230.	Weather.
		438 kHz, A1A.	Every even hour +18m, +48m.	Local navigational warnings.
		490 kHz, F1B.	0330, 0730, 1130, 1530, 1930, 2330.	NAVTEX (P) in Chinese.
		490 kHz, F1B.	0350, 0750, 1150, 1550, 1950, 2350.	NAVTEX (P) in Chinese.
		4209.5 kHz, F1B.	0350, 0730, 1150, 1530, 1950, 2330.	NAVTEX (P) in Chinese.
		518, 4209.5 kHz, F1B.	0230, 0630, 1030, 1430, 1830, 2230.	NAVTEX (P).
*NOTE: Broadcast announced through DSC 8414.5 kHz.				
3787	Hua-lien (XSY).	523, 8546, 8700 kHz, A1A.	Every even hour +18m, +48m.	Local navigational warnings.
		523, 8546, 8700 kHz, A1A.	0530, 1130, 1730, 2330.	Weather.
3790	Kao-Hsiung (XSW).	448, 8582, 8632 kHz, A1A.	Every odd hour +18m, +48m.	Local navigational warnings.
		448, 8582, 8632 kHz, A1A.	0500, 1100, 1700, 2300.	Weather.
3790.5	Tai-Chung (XSW2).	476, 8511 kHz, A1A.	Every even hour +18m, +48m.	Local navigational warnings.
PHILIPPINES				
3792	Polo (DZCA).	1170 kHz, A3E.	0030, 0930.	Local navigational warnings.
3792.5	Caloocan (DWWW).	630 kHz, A3E.	0900, 2100.	Local navigational warnings.
3793	Malolos (DZRP).	918 kHz, A3E.	0000, 1200, 1400, 2000.	Local navigational warnings.
3794	Valenzuela (DZFM).	738 kHz, A3E.	0900, 2100.	Local navigational warnings.
3795	Manila (DZS-4).	8776.8 kHz, A3E.	0030, 0330, 0630, 0930, 1230.	Local navigational warnings and weather.
		Ch. 09, 16, 20, F3E.	0030, 0330, 0630, 0930, 1230.	Weather.
3795.5	Mandaluyong (DWAD).	1098 kHz, A3E.	0900, 2100.	Local navigational warnings.
3796	Lucena (DZLT).	1188 kHz, A3E.	1030, 2230.	Local navigational warnings.
3797	Laoag (DZJC).	900 kHz, A3E.	0900, 2100.	Local navigational warnings.
3798	Puerto Princesa (DYPR).	783 kHz, A3E.	0900, 2100.	Local navigational warnings.
3799	Davao (DXMC).	819 kHz, A3E.	1030, 2230.	Local navigational warnings.
3801	Iloilo (DYRP).	1017 kHz, A3E.	1030, 2230.	Local navigational warnings.
3802	Daet (DZMD).	1161 kHz, A3E.	1030, 2230.	Local navigational warnings.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
MALAYSIA - SABAH				
3803	Sandakan.	518 kHz, F1B.	0300, 0700, 1100, 1500, 1900, 2300.	NAVTEX (S).
MALAYSIA - SARAWAK				
3805	Miri (9WW-21).	485 kHz, A1A.	0000, 0100, 0400, 0500, 0800, 0900, 2300.	Local navigational warnings.
		518 kHz, F1B.	0310, 0710, 1110, 1510, 1910, 2310.	NAVTEX (T).
3810	Kuching (9WW-2).	485, 8522 kHz, A1A.	0148, 0548, 0948, 1348, 1748, 2148.	Local navigational warnings and weather.
INDONESIA - SUMATERA				
3816	Dumai (PKP).	448, 500 kHz, A1A..	Continuous.	Local navigational warnings.
		6337 kHz, A1A.	0400, 0800, 1200.	Local navigational warnings.
		8457 kHz, A1A.	0100, 0600, 1000, 1300.	Local navigational warnings.
		12682.5 kHz, A1A.	0230, 0700.	Local navigational warnings.
		17184.8 kHz, A1A.	0500, 0900.	Local navigational warnings.
		2182, 3180, 6215.5, 6515.7 kHz, R3E.	Continuous.	Local navigational warnings.
		8765.4 kHz, R3E.	0100, 0800.	Local navigational warnings.
		13125.6 kHz, R3E.	0400, 1000.	Local navigational warnings.
3817	Belawan (PKB).	474, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		4295 kHz, A1A.	0100, 0400, 0700, 1500.	Local navigational warnings.
		8686 kHz, A1A.	0300, 0600, 0900, 1230.	Local navigational warnings.
		12970.5 kHz, A1A.	0000, 0600.	Local navigational warnings.
		16861.7 kHz, A1A.	0200, 1100.	Local navigational warnings.
		2182, 3180, 6215.5 kHz, R3E.	Continuous.	Local navigational warnings.
		6515.7 kHz, R3E.	0730.	Local navigational warnings.
		8746.8 kHz, R3E.	0300, 0930.	Local navigational warnings.
3819	Palembang (PKC).	448, 500 kHz, A1A.	0000.	Local navigational warnings.
		6491.5 kHz, A1A.	0000, 0500, 0800, 1230.	Local navigational warnings.
		8437 kHz, A1A.	0100, 0500, 0900, 1130.	Local navigational warnings.
		2182, 2690 kHz, R3E.	0230, 0430, 0700, 1200.	Local navigational warnings.
		6215.5 kHz, R3E.	0100, 0500, 0900, 1300.	Local navigational warnings.
		8808.8 kHz, R3E.	0200, 0600, 1000.	Local navigational warnings.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
INDONESIA - JAVA				
3820	Jakarta (PKX).	470, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		8542, 12970.5 kHz, A1A.	0200, 1000, 1800.	Local navigational warnings.
		16861.7 kHz, A1A.	0400, 1200, 2000.	Local navigational warnings.
		22431 kHz, A1A.	0000, 0600, 1400, 2200.	Local navigational warnings.
		2182, 2690, 6215.5, 6506.4, 6218.6 kHz, R3E.	Continuous.	Local navigational warnings.
		8753, 13128.7 kHz, R3E.	0000.	Local navigational warnings.
		22698.3 kHz, R3E.	2000.	Local navigational warnings.
		8542, 12970.5 kHz, A1A, 2690 kHz, R3E.	1100.	Weather.
518 kHz, F1B.	0040, 0440, 0840, 1240, 1640, 2040.	NAVTEX (E).		
3824	Surabaya (PKD).	430, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		4238 kHz, A1A.	0230.	Local navigational warnings.
		8461 kHz, A1A.	0200, 0730.	Local navigational warnings.
		12704.5 kHz, A1A.	0000, 1100.	Local navigational warnings.
		16861.7 kHz, A1A.	0100, 1000.	Local navigational warnings.
		2182 kHz, R3E.	Continuous.	Local navigational warnings.
		4379.5, 6215.5 kHz, R3E.	0000.	Local navigational warnings.
		8796.4 kHz, R3E.	0100, 0630, 0900.	Local navigational warnings.
		13134.9 kHz, R3E.	0100, 0500, 1000.	Local navigational warnings.
INDONESIA - SULAWESI				
3830	Makasar (PKF).	465, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		4295 kHz, A1A.	0200, 0900.	Local navigational warnings.
		8686 kHz, A1A.	0100, 0400, 0630, 1030, 1200.	Local navigational warnings.
		12682.5 kHz, A1A.	0430, 1000, 1230.	Local navigational warnings.
		4397.7 kHz, R3E.	0030, 0300.	Local navigational warnings.
		6215.5 kHz, R3E.	0330, 1100.	Local navigational warnings.
		8802.6 kHz, R3E.	0000, 0600.	Local navigational warnings.
		13100.8 kHz, R3E.	0730, 1330.	Local navigational warnings.
		518 kHz, F1B.	0030, 0430, 0830, 1230, 1630, 2030.	NAVTEX (D).
3832	Bitung (PKM).	438, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		6428.5 kHz, A1A.	0600, 1100.	Local navigational warnings.
		8694 kHz, A1A.	0100, 0500, 0900, 1300.	Local navigational warnings.
		12704.5 kHz, A1A.	0200, 1000, 1400.	Local navigational warnings.
		2182, 2690 kHz, R3E.	0000, 0400, 0800, 1200, 1400.	Local navigational warnings.
		2182 kHz, R3E.	1000.	Local navigational warnings.
		6215.5 kHz, R3E.	0100, 0500, 0900, 2000.	Local navigational warnings.
		8808.8 kHz, R3E.	0230, 0700, 1100.	Local navigational warnings.

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
INDONESIA - MOLUCCAS				
3836	Amboina (PKE).	470, 500 kHz, A1A.	Continuous.	Local navigational warnings.
		8473 kHz, A1A.	0200, 0900.	Local navigational warnings.
		12682.5 kHz, A1A.	0000, 0800.	Local navigational warnings.
		17184.8 kHz, A1A.	0600, 1200.	Local navigational warnings.
		2182, 2690 kHz, R3E.	0000.	Local navigational warnings.
		6215 kHz, R3E.	0700, 1200.	Local navigational warnings.
		8794 kHz, R3E.	0300, 2300.	Local navigational warnings.
		518 kHz, F1B.	0010, 0410, 0810, 1210, 1610, 2010.	NAVTEX (B).
INDONESIA - IRIAN JAYA				
3840	Jayapura (PNK).	465, 500 kHz, A1A.	2200, 0000 (Mon.-Sat.), 0000, 0700 (Sun., hol.).	Local navigational warnings.
		8694 kHz, A1A.	0000, 0300 (Mon.-Sat.), 0000, 0700 (Sun., hol.).	Local navigational warnings.
		12682.5 kHz, A1A.	0100, 0530, 0900 (Mon.-Sat.), 0100, 0900 (Sun., hol.).	Local navigational warnings.
		17074.4 kHz, A1A.	0200, 0700 (Mon.-Sat.), 0200 (Sun., hol.).	Local navigational warnings.
		2182 kHz, R3E.	2200, 0000.	Local navigational warnings.
		3180 kHz, R3E.	2200, 0000 (Mon.-Sat.), 0200 (Sun., hol.).	Local navigational warnings.
		6215.5 kHz, R3E.	2200 (Mon.-Sat.), 2300, 0700 (Sun., hol.).	Local navigational warnings.
		6227 kHz, R3E.	2200, 0000, 0700 (Mon.-Sat.), 0000, 0700, 0900 (Sun., hol.).	Local navigational warnings.
		6510 kHz, R3E.	2200, 0000, 0700.	Local navigational warnings.
		8800 kHz, R3E.	0100, 0400, 0700, 1000 (Mon.-Sat.), 0200, 0800 (Sun., hol.).	Local navigational warnings.
		13110 kHz, R3E.	0000, 0300, 0600, 0900.	Local navigational warnings.
		518 kHz, F1B.	0000, 0400, 0800, 1200, 1600, 2000.	NAVTEX (A).
PAPUA NEW GUINEA				
3866	Port Moresby (P2M).	484 kHz, A2A, 6351.5, 13042 kHz, A1A.	0100, 0900.	Local navigational warnings and weather.
		4407, 6515.7 kHz, J3E.	0603, 2203.	Local navigational warnings and weather.
		484 kHz, A2A, 6351.5, 13042 kHz, A1A.	Every odd hour +00m.	Weather.
		4407, 6515.7 kHz, J3E.	Every even hour +03m.	Weather.
AUSTRALIA				
LONG-RANGE WARNINGS: NAVAREA X: Includes the waters surrounding Australia and the Solomon Islands south to Antarctica bound on the west by 80°E and on the east by 170°E south to the Tasman Sea and 160°E south to Antarctica. Original reports to RCC Australia, through any Australian Coast Radio Station (CRS). LOCAL WARNINGS: AUSCOAST: Original reports to RCC Australia.				
3876	Cairns.	8176 kHz, J3E.	1257, 2357.	Maritime Safety Information (MSI).
3876.5	Gladstone.	8176 kHz, J3E.	1157, 2257.	Maritime Safety Information (MSI).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
3877	Penta Comstat, Firefly (VZX).	4483, 6522, 8713 kHz, J3E.	0225, 0625, 0925, 0935, 2125, 2335.	Weather.
		4483, 6522, 8713 kHz, J3E.	0935.	NAVAREA X warnings.
		6522, 8713 kHz, J3E.	0635, 0655, 2135.	Weather.
		6522, 8713 kHz, J3E.	0635, 2135.	Local navigational warnings.
		6522, 8713, 13176 kHz, J3E.	0235.	Weather.
		8713, 13716 17365 kHz, J3E.	2335.	NAVAREA X warnings and weather.
		8713, 13716, 17365, 22822 kHz, J3E.	0700, 2200.	Weather.
3882	Sydney.	8176 kHz, J3E.	0057, 1357.	Maritime Safety Information (MSI).
		Ch. 67, F3E.	0733, 2133.	Local navigational warnings and weather.
3883	Melbourne.	8176 kHz, J3E.	0257, 2157.	Maritime Safety Information (MSI).
3884	Hobart.	8176 kHz, J3E.	0557.	Maritime Safety Information (MSI).
3885	Adelaide.	8176 kHz, J3E.	0357, 0757.	Maritime Safety Information (MSI).
3886	Perth.	8176 kHz, J3E.	0657, 1057.	Maritime Safety Information (MSI).
		Ch. 16, 67, F3E.	1118, 2318.	Local navigational warnings and weather.
3892	Port Hedland.	8176 kHz, J3E.	0457, 0857.	Maritime Safety Information (MSI).
3900	Darwin.	8176 kHz, J3E.	0157, 0957.	Maritime Safety Information (MSI).
NEW ZEALAND				
LONG-RANGE WARNINGS: NAVAREA XIV: Includes the waters of the South Pacific from the Equator to Antarctica bound on the west by 170°E south to the Tasman Sea and 160°E south to Antarctica and bound on the east by 120°W. Original reports to the nearest coast radio station or by mail to NAVAREA XIV Coordinator, Hydrographer, RNZN, Auckland.				
3904	Taupo Maritime Radio (ZLM).	2207, 4146, 6224 kHz, J3E.	0133, 0533, 1333, 1733 (1 hr. earlier when daylight savings in effect).	Local navigational warnings and weather.
		6224, 12356 kHz, J3E.	0303, 0903, 1503, 2103 (1 hr. earlier when daylight savings in effect).	NAVAREA XIV and weather.
		8297, 16531 kHz, J3E.	0333, 0933, 1533, 2133 (1 hr. earlier when daylight savings in effect).	NAVAREA XIV and weather.
		2207, 4146, 6224 kHz, J3E.	0803, 1203, 2003 (1 hr. earlier when daylight savings in effect).	Weather.
		Ch. 67, 68, 71, F3E.	0533, 0733, 1033, 1333, 1733, 2133 (1 hr. earlier when daylight savings in effect).	Local navigational warnings and weather.
GUAM				
3913	Guam (NRV) U.S. Coast Guard.	12579, 16806.5, 22376 kHz, F1B.	0230, 0500, 0900, 1500, 1900, 2315.	Maritime Safety Information (MSI) (HF NBDP) (HYDROPAC at 0230, 0900).
		2670 kHz, J3E.	0705, 2205.	Local Notice to Mariners and weather.
		13089 kHz, J3E.	0330, 2130.	Maritime Safety Information (MSI).
		6501 kHz, J3E.	0930, 1530.	Maritime Safety Information (MSI).
		Ch. 22A, F3E.	0900, 2100.	Local Notice to Mariners and weather.
		518 kHz, F1B.	0100, 0500, 0900, 1300, 1700, 2100.	NAVTEX (V).

RADIO NAVIGATIONAL WARNINGS

(1) No.	(2) Name	(3) Frequency	(4) Times	(5) Nature of Broadcast
NEW CALEDONIA				
3940	Noumea (FJP).	2197.5 kHz, J3E.	0805, 2005.	Local navigational warnings in French.
		4366 kHz, J3E.	0900, 1230, 1630, 1800.	Local navigational warnings in French.
		6501 kHz, J3E.	1105, 1505.	Local navigational warnings in French.
		4366 kHz, J3E.	0500, 2000.	Weather in French.
		Ch. 23, 24, 25, 26, 28, 82, 83, 87, F3E.	0830, 1130, 1715, 2030.	Local navigational warnings in French.
		Ch. 23, 24, 25, 26, 28, 82, 83, 87, F3E.	0415, 0730, 1930, 2230.	Weather in French.
ILES DE LA SOCIETE				
3943	Mahina (FJA).	2620 kHz, J3E.	0403, 1803, 1833.	Local navigational warnings.
		8803 kHz, J3E.	0030, 0230, 1845, 2100.	Local navigational warnings.
		2620 kHz, J3E, Ch. 26, 27, F3E.	0403, 0700, 1803, 1833, 2200.	Weather in French.
		8803 kHz, J3E.	0030, 0230, 1845.	Weather in French.
		8803 kHz, J3E, Ch. 26, 27, F3E.	0640, 2100.	Weather in French.
FIJI ISLANDS				
3945	Suva (3DP).	4372, 8746 kHz, J3E.	0003, 0403, 0803, 2003.	Local navigational warnings and weather.
		4372, 8746 kHz, J3E.	Every hour +03m.	Weather.
AMERICAN SAMOA				
3948	Pago Pago (KUQ).	8585 kHz, A1A.	0000, 0400, 1600, 2000.	Local navigational warnings (weather at 0400, 2000).
		6361 kHz, A1A.	0800.	Local navigational warnings.

RADIO NAVIGATIONAL WARNINGS

300M. WorldWide Navigational Warning Service NAVAREA Coordinators

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NAVAREA X (Australia)
Australian Search and Rescue (AusSAR)
Australian Maritime Safety Authority (AMSA)
GPO Box 2181
Canberra Act 2601
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Website: www.hydro.navy.gov.au/aboutus/index2.htm

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RADIO NAVIGATIONAL WARNINGS

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CHAPTER 4

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

PART I

400A. General

The transition period for implementation of the Global Maritime Distress and Safety System (GMDSS) began on 1 February 1992 and continued to 1 February 1999. This event marked the most important change in maritime safety since the advent of radio in 1899. The proven benefits of satellite communications (high reliability, simple operation, and multi-modal capacities) are the cornerstone of this system, which relies heavily on automation and the extensive use of Inmarsat satellites. The result will be a total transformation of the existing maritime distress communications system. For further information on GMDSS see sec. 400G.

Regulations concerning distress, emergency, and safety traffic are contained in the Radio Regulations of the International Telecommunication Union (ITU), Geneva. Pertinent information is extracted below in condensed form from the 2001 edition.

ARTICLE 30, GENERAL PROVISIONS:

Section I - Introduction: This Chapter contains the provisions for the operational use of the Global Maritime Distress and Safety System (GMDSS), which is fully defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. Distress, urgency and safety transmissions may also be made, using Morse telegraphy or radiotelephony techniques, in accordance with the provisions of Radio Regulations for distress and safety communications for non-GMDSS vessels (Appendix 13), and relevant ITU-R Recommendations.

No provision of these Regulations prevents the use by a mobile station or a mobile earth station in distress of any means at its disposal to attract attention, make known its position, and obtain help.

No provision of these Regulations prevents the use by stations on board aircraft, ships engaged in search and rescue (SAR) operations, land stations, or coast earth stations, in exceptional circumstances, of any means at their disposal to assist a mobile station or a mobile earth station in distress.

Section II - Maritime provisions: The provisions specified in this Chapter are obligatory in the maritime mobile service and the maritime mobile-satellite service for all stations using the frequencies and techniques prescribed for the functions set out herein. However, stations of the maritime mobile service, when fitted with

equipment used by stations operating in conformity with Radio Regulations for distress and safety communications for non-GMDSS vessels (Appendix 13), shall comply with the appropriate provisions of those Regulations.

The International Convention for the Safety of Life at Sea (SOLAS), 1974 as amended, prescribes which ships and which of their survival craft shall be provided with radio equipment, and which ships shall carry portable radio equipment for use in survival craft. It also prescribes the requirements which shall be met by such equipment.

Ship earth stations located at RCCs may be authorized by an administration to communicate for distress and safety purposes with any other station using bands allocated to the maritime mobile-satellite service, when special circumstances make it essential, notwithstanding the methods of working provided for in these Regulations.

Mobile stations of the maritime mobile service may communicate, for safety purposes, with stations of the aeronautical mobile service. Such communications shall normally be made on the frequencies authorized, and under the conditions specified in the Radio Regulations.

ARTICLE 31, FREQUENCIES FOR THE GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS):

Section I - General: The frequencies to be used for the transmission of distress and safety information under the GMDSS are shown in the following tables. In addition to the frequencies listed, coast stations should use other appropriate frequencies for the transmission of safety messages.

Any emission causing harmful interference to distress and safety communications on any of the discrete frequencies identified in the following tables is prohibited.

The number and duration of test transmissions shall be kept to a minimum on the frequencies identified below; they should be coordinated with a competent authority, as necessary, and, wherever practicable, be carried out on artificial antennas or with reduced power. However, testing on the distress and safety calling frequencies should be avoided, but where this is unavoidable, it should be indicated that these are test transmissions.

Before transmitting for other than distress purposes on any of the frequencies identified below for distress and safety, a station shall, where practicable, listen on the frequency concerned to make sure that no distress transmission is being sent.

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Table of Frequencies below 30 MHz

Frequency (MHz)	Description of usage	Notes
490	MSI	Used only for maritime safety information (MSI) in a national language through the international NAVTEX system.
518	MSI	Used only for MSI in the English language by the international NAVTEX system.
*2174.5	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.
*2182	RT	A carrier frequency used for distress and safety communications (traffic) by RT. 2182 kHz uses class of emission J3E.
*2187.5	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
3023	AERO-SAR	An aeronautical carrier (reference) frequency which may be used for intercommunication between mobile stations engaged in coordinated SAR operations, and for communication between these stations and participating land stations.
*4125	RT	A ship station carrier frequency for calling on RT. 4125 kHz is authorized for common use by coast and ship stations for SSB RT on a simplex basis for call and reply purposes, provided the peak power does not exceed 1 kW. The use of this frequency for working purposes is not permitted. 4125 kHz is authorized for common use by coast and ship stations for SSB RT on a simplex basis for distress and safety traffic. In the United States, 4125 kHz is authorized for common use by coast and ship stations for SSB RT on a simplex basis, provided the peak power does not exceed 1 kW. Aircraft stations may use this frequency to communicate with stations of the maritime mobile service for distress and safety purposes, including SAR.
*4177.5	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.
*4207.5	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
4209.5	MSI	Used only for NAVTEX-type transmissions.
4210	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
5680	AERO-SAR	An aeronautical carrier (reference) frequency which may be used for intercommunication between mobile stations engaged in coordinated SAR operations, and for communication between these stations and participating land stations.
*6215	RT	A ship station carrier frequency for calling on RT. 6215 kHz is authorized for common use by coast and ship stations for SSB RT on a simplex basis for call and reply purposes, provided the peak power does not exceed 1 kW. The use of this frequency for working purposes is not permitted. 6215 kHz is authorized for common use by coast and ship stations for SSB RT on a simplex basis for distress and safety traffic. Aircraft stations may use this frequency to communicate with stations of the maritime mobile service for distress and safety purposes, including SAR.
*6268	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.

Note: Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited.

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Table of Frequencies below 30 MHz

Frequency (MHz)	Description of usage	Notes
*6312	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
6314	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
*8291	RT	Used only for distress and safety communications (traffic) by RT.
*8376.5	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.
*8414.5	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
8416.5	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
*12290	RT	Used only for distress and safety communications (traffic) by RT.
*12520	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.
*12577	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
12579	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
*16420	RT	Used only for distress and safety communications (traffic) by RT.
*16695	NBDP	Used only for distress and safety communications (traffic) using NBDP telegraphy.
*16804.5	DSC	Used only for distress and safety calls using digital selective calling in accordance with the Radio Regulations.
16806.5	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
19680.5	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
22376	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.
26100.5	MSI-HF	Used only for the transmission of high seas MSI by coast stations to ships, by means of NBDP telegraphy, in the maritime mobile service.

Note: Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited.

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Table of Frequencies above 30 MHz

Frequency (MHz)	Description of usage	Notes
*121.5	AERO-SAR	The aeronautical emergency frequency 121.5 MHz is used for the purposes of distress and urgency for RT by stations of the aeronautical mobile service using frequencies in the band between 117.975 MHz and 137 MHz. This frequency may also be used for these purposes by survival craft stations. EPIRBs use this frequency as indicated in the Radio Regulations. Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated SAR operations, using class A3E emissions for both frequencies. They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.
123.1	AERO-SAR	The aeronautical auxiliary frequency 123.1 MHz, which is auxiliary to the aeronautical emergency frequency 121.5 MHz, is for use by stations of the aeronautical mobile service and by other mobile and land stations engaged in coordinated SAR operations. Mobile stations of the maritime mobile service may communicate with stations of the aeronautical mobile service on the aeronautical emergency frequency 121.5 MHz for the purposes of distress and urgency only, and on the aeronautical auxiliary frequency 123.1 MHz for coordinated SAR operations, using class A3E emissions for both frequencies. They shall then comply with any special arrangement between governments concerned by which the aeronautical mobile service is regulated.
156.3	VHF (Ch. 06)	Used for communication between ship stations and aircraft stations engaged in coordinated SAR operations. It may also be used by aircraft stations to communicate with ship stations for other safety purposes. Ship stations shall avoid harmful interference to such communications on Ch. 06 as well as to communications between aircraft stations, ice-breakers and assisted ships during ice seasons.
*156.525	VHF (Ch. 70)	Used in the maritime mobile service for distress and safety calls using digital selective calling.
156.650	VHF (Ch. 13)	Used on a worldwide basis for ship-to-ship communications relating to the safety of navigation. It may also be used for the ship movement and port operations service subject to the national regulations of the administrations concerned.
*156.8	VHF (Ch. 16)	Used for distress and safety communications by RT. It may also be used by aircraft stations for safety purposes only.
*406-406.1	406-EPIRB	This frequency band is used only by satellite EPIRBs in the Earth-to-space direction.
1530-1544	SAT-COM	In addition to its availability for routine non-safety purposes, this frequency band is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band.
*1544-1545	D&S-OPS	Use of this band (space-to-Earth) is limited to distress and safety operations, including feeder links of satellites needed to relay emissions of satellite EPIRBs to earth stations and narrow-band (space-to-Earth) links from space stations to mobile stations.

Note: Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited.

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Table of Frequencies above 30 MHz

Frequency (MHz)	Description of usage	Notes
1626.5-1645.5	SAT-COM	In addition to its availability for routine non-safety purposes, this frequency band is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band.
*1645.5-1646.5	D&S-OPS	Use of this band (Earth-to-space) is limited to distress and safety operations, including transmissions from satellite EPIRBs and relay of distress alerts received by satellites in low polar Earth orbits to geostationary satellites.
9200-9500	SARTS	Used by radar transponders to facilitate SAR.

Note: Except as provided in these Regulations, any emission capable of causing harmful interference to distress, alarm, urgency or safety communications on the frequencies denoted by an asterisk (*) is prohibited.

Section II - Survival craft stations: Equipment for radiotelephony use in survival craft stations shall, if capable of operating on any frequency in the bands between 156 MHz and 174 MHz, be able to transmit and receive on 156.8 MHz and at least one other frequency in these bands.

Equipment for transmitting locating signals from survival craft stations shall be capable of operating in the 9200-9500 MHz band.

Equipment with DSC facilities for use in survival craft shall, if capable of operating in the bands between:

- 1605 and 2850 kHz, be able to transmit on 2187.5 kHz;
- 4000 and 27500 kHz, be able to transmit on 8414.5 kHz;
- 156 and 174 MHz, be able to transmit on 156.525 MHz.

Section III - Watchkeeping:

(A) - Coast stations: Those coast stations assuming a watch-keeping responsibility in the GMDSS shall maintain an automatic DSC watch on frequencies and for periods of time as indicated in the information published in the List of Coast Stations.

(B) - Coast earth stations: Those coast earth stations assuming a watch-keeping responsibility in the GMDSS shall maintain a continuous automatic watch for appropriate distress alerts relayed by space stations.

(C) - Ship stations: Ship stations, where so equipped, shall, while at sea, maintain an automatic DSC watch on the appropriate distress and safety calling frequencies in the frequency bands in which they are operating. Ship stations, where so equipped, shall also maintain watch on the appropriate frequencies for the automatic reception of transmissions of meteorological and navigational warnings and other urgent information to ships. However, ship stations shall also continue to apply the appropriate watch-keeping provisions of the Radio Regulations for distress and safety communications for non-GMDSS vessels (Appendix 13).

NOTE: Listening watches on 2182 kHz are no longer mandatory. Until 1 February 2005, every ship while at sea shall maintain, when practicable, a continuous listening

watch on VHF Ch. 16; such a watch shall be kept at the position from which the ship is normally navigated.

Ship stations complying with the provisions of the Radio Regulations should, where practicable, maintain a watch on the frequency 156.650 MHz (VHF Ch. 13) for communications related to the safety of navigation.

(D) - Ship earth stations: Ship earth stations complying with the provisions of the Radio Regulations shall, while at sea, maintain watch except when communicating on a working channel.

ARTICLE 32, OPERATIONAL PROCEDURES FOR DISTRESS AND SAFETY COMMUNICATIONS IN THE GMDSS:

Section I - General: Distress and safety communications rely on the use of terrestrial MF, HF and VHF radiocommunications and communications using satellite techniques.

The distress alert shall be sent through a satellite either with absolute priority in general communication channels or on exclusive distress and safety frequencies or, alternatively, on the distress and safety frequencies in MF, HF and VHF bands using DSC.

The distress alert shall be sent only on the authority of the person responsible for the ship, aircraft or other vehicle carrying the mobile station or the mobile earth station.

All stations which receive a distress alert transmitted by DSC shall immediately cease any transmission capable of interfering with distress traffic and shall continue watch until the call has been acknowledged.

DSC shall be in accordance with the relevant ITU-R Recommendations.

Each administration shall ensure that suitable arrangements are made for assigning and registering identities used by ships participating in the GMDSS, and shall make registration information available to RCCs on a 24-hour day, 7-day week basis. Where appropriate, administrations shall notify responsible organizations immediately of additions, deletions and other changes in these assignments. Registration information shall be in accordance with the Radio Regulations (Resolution 340).

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Any GMDSS shipboard equipment which is capable of transmitting position coordinates as part of a distress alert message and which does not have an integral electronic position-fixing system receiver shall be interconnected to a separate navigation receiver, if one is installed, to provide that information automatically.

Transmissions by radiotelephony shall be made slowly and distinctly, each word being clearly pronounced to facilitate transcription.

The Phonetic Alphabet and Figure Code, and the abbreviations and prosigns listed below, in accordance with the Radio Regulations, should be used where applicable. The Standard Marine Communication Phrases (published by the International Maritime Organization (IMO)) and the International Code of Signals (NVPUB102) are also recommended for use. (NOTE: Three-letter signals (Q Code) are also listed in ACP 131, Communications Instructions, Operating Signals.)

AA - All After
AB - All Before
ADS - Address
 $\overline{AR}$ - End of transmission (in telegraphy, a bar over the letters means they are sent as one signal: • – • – •)
 $\overline{AS}$ - Waiting period
BK - Interruption of transmission in progress
BN - All between
BQ - Reply to RQ
 $\overline{BT}$ - Separation between parts of a transmission
C - Affirmative
CFM - Confirm/I confirm
CL - I am closing my station
COL - Collate/I collate
CORRECTION - Cancel last word or group
CP - General call to two or more specified stations
CQ - General call to all stations
CS - Request for call sign
DE - From
DF - Precede time, bearing, possible error
DO - Bearing doubtful, request again at specified time
DSC - Digital selective calling
E - East
ETA - Estimated time of arrival
INTERCO - Signals from International Code will follow
K - Invitation to transmit
 $\overline{KA}$ - Starting signal
KTS - Knots
MIN - Minutes
MSG - Prefix indicating message to or from Master regarding ship's operation or navigation
MSI - Marine safety information
N - North
NBDP - Narrow band direct printing telegraphy
NIL - I have nothing to send you
NO - Negative
NW - Now
NX - Notice to Mariners
OK - It is correct
OL - Ocean letter
P - Prefix indicating private radiotelegram

PBL - Preamble, used after question mark in telegraphy, RQ in telephony, or RPT, to request repetition
PSE - Please
R - Received
RCC - Rescue coordination center
REF - Reference
RPT - Repeat
RQ - Request
S - South
SAR - Search and rescue
SIG - Signature, used after question mark in radiotelegraphy, RQ in telephony, or RPT, to request repetition
SLT - Radiomaritime letter
SVC - Prefix indicating service message
SYS - Refer to your service message
TFC - Traffic
TR - Land station request for position and next port of call; also precedes response
TU - Thank you
TXT - Text
 $\overline{VA}$ - End of work
W - West
WA - Word after
WB - Word before
WD - Word(s) or group(s)
WX - Weather
XQ - Prefix indicating service note
YZ - Plain language

Section II - Distress alerting:

(A) - General: The transmission of a distress alert indicates that a mobile unit (ship, aircraft or other vehicle) or person is threatened by grave and imminent danger and requests immediate assistance. The distress alert is a digital selective call using distress call format in the bands used for terrestrial radiocommunication or a distress message format, in which case it is relayed through space stations. (The format of distress calls and distress messages shall be in accordance with the relevant ITU-R Recommendations.)

The distress alert shall provide the identification of the station in distress and its position. (It may also contain information regarding the nature of the distress, the type of assistance required, the course and speed of the mobile unit, the time that this information was recorded and any other information which might facilitate rescue.)

A distress alert is false if it was transmitted without any indication that a mobile unit or person was in distress and required immediate assistance. Administrations receiving a false distress alert shall report this infringement, if that alert:

- was transmitted intentionally;
- was not cancelled in accordance with the Radio Regulations (Resolution 349);
- could not be verified as a result of either the ship's failure to keep watch on appropriate frequencies in accordance with the Radio Regulations, or its failure to respond to calls from an authorized rescue authority;
- was repeated; or
- was transmitted using a false identity.

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Administrations receiving such a report shall take appropriate steps to ensure that the infringement does not recur. No action should normally be taken against any ship or mariner for reporting and cancelling a false distress alert.

(B) - Transmission of a distress alert:

- (B1) - Transmission of a distress alert by a ship station or a ship earth station: Ship-to-shore distress alerts are used to alert RCCs via coast stations or coast earth stations that a ship is in distress. These alerts are based on the use of transmissions via satellites (from a ship earth station or satellite EPIRB) and terrestrial services (from ship stations and EPIRBs).

Ship-to-ship distress alerts are used to alert other ships in the vicinity of the ship in distress and are based on the use of DSC in the VHF and MF bands. Additionally, the HF band may be used.

- (B2) - Transmission of a shore-to-ship distress alert relay: A station or RCC which receives a distress alert shall initiate the transmission of a shore-to-ship distress alert relay addressed, as appropriate, to all ships, to a selected group of ships or to a specific ship by satellite and/or terrestrial means.

The distress alert relay shall contain the identification of the mobile unit in distress, its position and all other information which might facilitate rescue.

- (B3) - Transmission of a distress alert by a station not itself in distress: A station in the mobile or mobile-satellite service which learns that a mobile unit is in distress shall initiate and transmit a distress alert in any of the following cases:
 - when the mobile unit in distress is not itself in a position to transmit the distress alert;
 - when the Master or person responsible for the mobile unit not in distress considers further help is necessary.

A station transmitting a distress alert relay, in accordance with the Radio Regulations, shall indicate that it is not itself in distress.

(C) - Receipt and acknowledgment of distress alerts:

- (C1) - Procedure for acknowledgment of receipt of distress alerts: Acknowledgment by DSC of receipt of a distress alert in the terrestrial services shall be in accordance with relevant ITU-R Recommendations. (For further information on procedures for DSC distress alerts, acknowledgments and relays see sec. 400J.)

Acknowledgment through a satellite of receipt of a distress alert from a ship earth station shall be sent immediately.

Acknowledgment by radiotelephony of receipt of a distress alert from a ship station or a ship earth station shall be given in the following form:

- the distress signal MAYDAY;
- the call sign or other identification of the station sending the distress message, spoken three times;
- the words THIS IS (or DE spoken as DELTA ECHO in case of language difficulties);
- the call sign or other identification of the station acknowledging receipt, spoken three times;
- the word RECEIVED (or RRR spoken as ROMEO ROMEO ROMEO in case of language difficulties);

- the distress signal MAYDAY.

The acknowledgment by direct printing telegraphy of receipt of a distress alert from a ship station shall be given in the following form:

- the distress signal MAYDAY;
- the call sign or other identification of the station sending the distress alert;
- the word DE;
- the call sign or other identification of the station acknowledging receipt of the distress alert;
- the signal RRR;
- the distress signal MAYDAY.

The acknowledgment by direct printing telegraphy of receipt of a distress alert from a ship earth station shall be given by the coast earth station receiving the distress alert, by retransmitting the ship station identity of the ship transmitting the distress alert.

- (C2) - Receipt and acknowledgment of receipt by a coast station, a coast earth station or a RCC: Coast stations and appropriate coast earth stations in receipt of distress alerts shall ensure that they are routed as soon as possible to a RCC. Receipt of a distress alert is to be acknowledged as soon as possible by a coast station, or by a RCC via a coast station or an appropriate coast earth station.

A coast station using DSC to acknowledge a distress call shall transmit the acknowledgment on the distress calling frequency on which the call was received and should address it to all ships. The acknowledgment shall include the identification of the ship whose distress call is being acknowledged.

- (C3) - Receipt and acknowledgment of receipt by a ship station or ship earth station: Ship or ship earth stations in receipt of a distress alert shall, as soon as possible, inform the Master or person responsible for the ship of the contents of the distress alert.

In areas where reliable communications with one or more coast stations are practicable, ship stations in receipt of a distress alert should defer acknowledgment for a short interval so that receipt may be acknowledged by a coast station.

Ship stations operating in areas where reliable communications with a coast station are not practicable which receive a distress alert from a ship station which is, beyond doubt, in their vicinity, shall, as soon as possible and if appropriately equipped, acknowledge receipt and inform a RCC through a coast station or coast earth station.

However, a ship station receiving an HF distress alert shall not acknowledge it but shall observe the provisions of *D* below, and shall, if the alert is not acknowledged by a coast station within 3 minutes, relay the distress alert.

A ship station acknowledging receipt of a distress alert in accordance with C3 above should:

- in the first instance, acknowledge receipt of the alert by using radiotelephony on the distress and safety traffic frequency in the band used for the alert;
- if acknowledgment by radiotelephony of the distress alert received on the MF or VHF distress alerting frequency is unsuccessful, acknowledge receipt of the

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distress alert by responding with a digital selective call on the appropriate frequency.

A ship station in receipt of a shore-to-ship distress alert should establish communication as directed and render such assistance as required and appropriate.

(D) - Preparations for handling of distress traffic: On receipt of a distress alert transmitted by use of DSC techniques, ship stations and coast stations shall set watch on the radiotelephone distress and safety traffic frequency associated with the distress and safety calling frequency on which the distress alert was received.

Coast stations and ship stations with NBDP equipment shall set watch on the NBDP frequency associated with the distress alert signal if it indicates that NBDP is to be used for subsequent distress communications. If practicable, they should additionally set watch on the radiotelephone frequency associated with the distress alert frequency.

Section III - Distress traffic:

(A) - General and SAR coordinating communications: Distress traffic consists of all messages relating to the immediate assistance required by the ship in distress, including SAR communications and on scene communications. The distress traffic shall as far as possible be on the frequencies contained in Article 31 (see above).

The distress signal consists of the word MAYDAY.

For distress traffic by radiotelephony, when establishing communications, calls shall be prefixed by the distress signal MAYDAY.

Error correction techniques in accordance with relevant ITU-R Recommendations shall be used for distress traffic by direct printing telegraphy. All messages shall be preceded by at least one carriage return, a line feed signal, a letter shift signal and the distress signal MAYDAY.

Distress communications by direct printing telegraphy should normally be established by the ship in distress and should be in the broadcast (forward error correction) mode. The ARQ mode may subsequently be used when it is advantageous to do so.

The RCC responsible for controlling a SAR operation shall also coordinate the distress traffic relating to the incident or may appoint another station to do so.

The RCC coordinating distress traffic, the unit coordinating SAR operations (the On Scene Commander (OSC) or Coordinator Surface Search (CSS)) or the coast station involved may impose silence on stations which interfere with that traffic. This instruction shall be addressed to all stations or to one station only, according to circumstances. In either case, the following shall be used:

- in radiotelephony, the signal SEELONCE MAYDAY;
 - in NBDP telegraphy normally using forward error correcting mode, the signal SILENCE MAYDAY.
- However, the ARQ mode may be used when it is advantageous to do so.

Until they receive the message indicating that normal working may be resumed, all stations which are aware of the distress traffic, and which are not taking part in it, and which are not in distress, are forbidden to transmit on the frequencies in which the distress traffic is taking place.

A station of the mobile service which, while following distress traffic, is able to continue its normal service, may

do so when the distress traffic is well established and on condition that it observes the provisions of the above paragraph and that it does not interfere with distress traffic.

When distress traffic has ceased on frequencies which have been used for distress traffic, the RCC controlling a SAR operation shall initiate a message for transmission on these frequencies indicating that distress traffic has finished.

In radiotelephony, the message referred to in the above paragraph consists of:

- the distress signal MAYDAY;
- the call “Hello all stations” or CQ (spoken as CHARLIE QUEBEC) spoken three times;
- the words THIS IS (or DE spoken as DELTA ECHO in the case of language difficulties);
- the call sign or other identification of the station sending the message;
- the time of handing in of the message;
- the name and call sign of the mobile station which was in distress;
- the words SEELONCE FEENEE.

In direct printing telegraphy, the message referred to in the above paragraph consists of:

- the distress signal MAYDAY;
- the call CQ;
- the word DE;
- the call sign or other identification of the station sending the message;
- the time of handing in of the message;
- the name and call sign of the mobile station which was in distress; and
- the words SILENCE FINI.

(B) - On scene communications: On scene communications are those between the mobile unit in distress and assisting mobile units, and between the mobile units and the unit coordinating SAR operations (the OSC or CSS).

Control of on scene communications is the responsibility of the unit coordinating SAR operations. Simplex communications shall be used so that all on scene mobile stations may share relevant information concerning the distress incident. If direct printing telegraphy is used, it shall be in the forward error correcting mode.

The preferred frequencies in radiotelephony for on scene communications are 156.8 MHz (VHF Ch. 16) and 2182 kHz. The frequency 2174.5 kHz may also be used for ship-to-ship on scene communications using NBDP telegraphy in the forward error correcting mode.

In addition, the frequencies 3023 kHz, 4125 kHz, 5680 kHz, 123.1 MHz, and 156.3 MHz (VHF Ch. 06) may be used for ship-to-aircraft on scene communications.

The selection or designation of on scene frequencies is the responsibility of the unit coordinating SAR operations. Normally, once an on scene frequency is established, a continuous aural or teleprinter watch is maintained by all participating on scene mobile units on the selected frequency.

(C) - Locating and homing signals: Locating signals are radio transmissions intended to facilitate the finding of a mobile unit in distress or the location of survivors. These

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signals include those transmitted by searching units, and those transmitted by the mobile unit in distress, by survival craft, by float-free EPIRBs, by satellite EPIRBs and by SAR radar transponders to assist the searching units.

Homing signals are those locating signals which are transmitted by mobile units in distress, or by survival craft, for the purpose of providing searching units with a signal that can be used to determine the bearing to the transmitting stations.

Locating signals may be transmitted in the following frequency bands:

- 117.975-136 MHz;
- 156-174 MHz;
- 406-406.1 MHz;
- 1645.5-1646.5 MHz; and
- 9200-9500 MHz.

Locating signals shall be in accordance with the relevant ITU-R Recommendations.

ARTICLE 33, OPERATIONAL PROCEDURES FOR URGENCY AND SAFETY COMMUNICATIONS IN THE GMDSS:

Section I - General: Urgency and safety communications include:

- navigational and meteorological warnings and urgent information;
- ship-to-ship safety of navigation communications;
- ship reporting communications;
- support communications for SAR operations;
- other urgency and safety messages;
- communications relating to navigation, movements and needs of ships, and weather observation messages destined for an official meteorological service.

Section II - Urgency communications: In a terrestrial system the announcement of the urgency message shall be made on one or more of the distress and safety calling frequencies as specified using DSC and the urgency call format. A separate announcement need not be made if the urgency message is to be transmitted through the maritime mobile-satellite service.

The urgency signal and message shall be transmitted on one or more of the distress and safety traffic frequencies specified, or via the maritime mobile-satellite service or on other frequencies used for this purpose.

The urgency signal consists of the words PAN PAN.

The urgency call format and the urgency signal indicate that the calling station has a very urgent message to transmit concerning the safety of a mobile unit or a person.

In radiotelephony, the urgency message shall be preceded by the urgency signal (PAN PAN), repeated three times, and the identification of the transmitting station.

In NBDP, the urgency message shall be preceded by the urgency signal (PAN PAN) and the identification of the transmitting station.

The urgency call format or urgency signal shall be sent only on the authority of the Master or the person responsible for the mobile unit carrying the mobile station or mobile earth station.

The urgency call format or the urgency signal may be transmitted by a land station or a coast earth station with the approval of the responsible authority.

When an urgency message which calls for action by the stations receiving the message has been transmitted, the station responsible for its transmission shall cancel it as soon as it knows that action is no longer necessary.

Error correction techniques in accordance with relevant ITU-R Recommendations shall be used for urgency messages by direct printing telegraphy. All messages shall be preceded by at least one carriage return, a line feed signal, a letter shift signal and the urgency signal PAN PAN.

Urgency communications by direct printing telegraphy should normally be established in the broadcast (forward error correction) mode. The ARQ mode may subsequently be used when it is advantageous to do so.

Section III - Medical transports: The term “medical transports,” as defined in the 1949 Geneva Conventions and Additional Protocols, refers to any means of transportation by land, water or air, whether military or civilian, permanent or temporary, assigned exclusively to medical transportation and under the control of a competent authority of a party to a conflict or of neutral States and of other States not parties to an armed conflict, when these ships, craft, and aircraft assist the wounded, the sick and the shipwrecked.

For the purpose of announcing and identifying medical transports which are protected under the above-mentioned Conventions, the procedure of Section II of this Article (urgency communications) is used. The urgency signal (PAN PAN) shall be followed by the addition of the single word MEDICAL in NDBP and by the addition of the single word “MAY-DEE-CAL,” in radiotelephony.

The use of the signals described in the above paragraph indicates that the message which follows concerns a protected medical transport. The message shall convey the following data:

- call sign or other recognized means of identification of the medical transport;
- position of the medical transport;
- number and type of vehicles in the medical transport;
- intended route;
- estimated time enroute and of departure and arrival, as appropriate;
- any other information, such as flight altitude, radio frequencies guarded, languages used and secondary surveillance radar modes and codes.

The identification and location of medical transports at sea may be conveyed by means of appropriate standard maritime radar transponders.

The identification and location of aircraft medical transports may be conveyed by the use of the secondary surveillance radar (SSR) system specified in Annex 10 to the Convention on International Civil Aviation.

The use of radiocommunications for announcing and identifying medical transports is optional; however, if they are used, the provisions of the above Regulations shall apply.

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Section IV - Safety communications: In a terrestrial system the announcement of the safety message shall be made on one or more of the distress and safety calling frequencies as specified using DSC techniques. A separate announcement need not be made if the message is to be transmitted through the maritime mobile-satellite service.

The safety signal and message shall normally be transmitted on one or more of the distress and safety traffic frequencies specified, or via the maritime mobile-satellite service or on other frequencies used for this purpose.

The safety signal consists of the word SECURITE.

The safety call format or the safety signal indicates that the calling station has an important navigational or meteorological warning to transmit.

In radiotelephony, the safety message shall be preceded by the safety signal (SECURITE, spoken SECURITAY) repeated three times, and identification of the transmitting station.

In NBDP, the safety message shall be preceded by the safety signal (SECURITE), and the identification of the transmitting station.

Error correction techniques in accordance with relevant ITU-R Recommendations shall be used for safety messages by direct printing telegraphy. All messages shall be preceded by at least one carriage return, a line feed signal, a letter shift signal and the safety signal SECURITE.

Safety communications by direct printing telegraphy should normally be established in the broadcast (forward error correction) mode. The ARQ mode may subsequently be used when it is advantageous to do so.

Section V - Transmission of Maritime Safety Information (MSI): (MSI includes navigation and meteorological warnings, meteorological forecasts and other urgent messages pertaining to safety normally transmitted to or from ships, between ships and between ship and coast stations or coast earth stations.)

(A) - General: Messages from ship stations containing information concerning the presence of cyclones shall be transmitted, with the least possible delay, to other mobile stations in the vicinity and to the appropriate authorities at the first point of the coast with which contact can be established. These transmissions shall be preceded by the safety signal.

Messages from ship stations containing information on the presence of dangerous ice, dangerous wrecks, or any other imminent danger to marine navigation, shall be transmitted as soon as possible to other ships in the vicinity, and to the appropriate authorities at the first point of the coast with which contact can be established. These transmissions shall be preceded by the safety signal.

The operational details of the stations transmitting MSI in accordance with the provisions of *B*, *C*, *D*, and *E* below shall be indicated in the List of Radiodetermination and Special Service Stations. (In Pub. 117, see station listings in sec. 300J, 300L and 400I.)

The mode and format of the transmissions mentioned in *B*, *C* and *D* below shall be in accordance with the relevant ITU-R Recommendations.

(B) - International NAVTEX system: MSI shall be transmitted by means of NBDP telegraphy with forward error correction using the frequency 518 kHz in accordance with the international NAVTEX system.

(C) - 490 kHz and 4209.5 kHz: The frequency 490 kHz may be used for the transmission of MSI by means of NBDP telegraphy with forward error correction.

The frequency 4209.5 kHz is used exclusively for NAVTEX-type transmissions by means of NBDP telegraphy with forward error correction.

(D) - High seas MSI: MSI is transmitted by means of NBDP telegraphy with forward error correction using the frequencies 4210 kHz, 6314 kHz, 8416.5 kHz, 12579 kHz, 16806.5 kHz, 19680.5 kHz, 22376 kHz and 26100.5 kHz.

(E) - MSI via satellite: MSI may be transmitted via satellite in the maritime mobile-satellite service using the band 1530-1545 MHz.

Section VI - Intership navigation safety communications: Intership navigation safety communications are those VHF radiotelephone communications conducted between ships for the purpose of contributing to the safe movement of ships.

The frequency 156.650 MHz (VHF Ch. 13) is used for intership navigation safety communications.

Section VII - Use of other frequencies for distress and safety: Radiocommunications for distress and safety purposes may be conducted on any appropriate communications frequency, including those used for public correspondence. In the maritime mobile-satellite service, frequencies in the bands 1530-1544 MHz and 1626.5-1645.5 MHz are used for this function as well as for distress alerting purposes.

Section VIII - Medical advice: Mobile stations requiring medical advice may obtain it through any of the land stations shown in the List of Radiodetermination and Special Service Stations. (In Pub. 117, see sec. 500B.)

Communications concerning medical advice may be preceded by the urgency signal.

ARTICLE 34, ALERTING SIGNALS IN THE GMDSS:

Section I - EPIRB and Satellite EPIRB Signals: The EPIRB signal transmitted on 156.525 MHz and satellite EPIRB signals in the band 406-406.1 MHz or 1645.5-1646.5 MHz shall be in accordance with relevant ITU-R Recommendations.

Section II - Digital selective calling (DSC): The characteristics of the "distress call" in DSC system shall be in accordance with relevant ITU-R Recommendations.

400B. Obligations and Responsibilities of U.S. Vessels

It is the accepted normal practice of seamen (and there are obligations upon Masters), to render assistance when a person or persons are in distress at sea. These obligations are set out in Regulation 10 of Chapter V of the 1974 SOLAS Convention (1974), to which the United States is signatory:

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Distress Messages—Obligations and Procedures

- (a) The Master of a ship at sea, on receiving a signal from any source that a ship or aircraft or survival craft thereof is in distress, is bound to proceed with all speed to the assistance of the persons in distress, informing them, if possible, that he is doing so. If he is unable or, in the special circumstances of the case, considers it unreasonable or unnecessary to proceed to their assistance, he must enter in the logbook the reason for failing to proceed to the assistance of the persons in distress.
- (b) The Master of a ship in distress, after consultation, so far as may be possible, with the Masters of the ships which answer his call for assistance, has the right to requisition such one or more of those ships as he considers best able to render assistance, and it shall be the duty of the Master or Masters of the ship or ships requisitioned to comply with the requisition by continuing to proceed with all speed to the assistance of persons in distress.
- (c) The Master of a ship shall be released from the obligation imposed by paragraph (a) of this Regulation when he learns that one or more ships other than his own have been requisitioned and are complying with the requisition.
- (d) The Master of a ship shall be released from the obligation imposed by paragraph (a) of this Regulation, and, if his ship has been requisitioned, from the obligation imposed by paragraph (b) of this Regulation, if he is informed by the persons in distress or by the Master of another ship which has reached such persons that assistance is no longer necessary.
- (e) The provisions of this Regulation do not prejudice the International Convention for the unification of certain rules with regard to Assistance and Salvage at Sea, signed at Brussels on 23 September 1910, particularly the obligation to render assistance imposed by Article 11 of that Convention.

U.S. IMPLEMENTATION OF THE GMDSS: The Federal Communications Commission (FCC) adopted the GMDSS requirements of the SOLAS Convention on 16 January 1992. (The GMDSS revisions to the Radio Regulations were developed by the International Maritime Organization (IMO) and ITU, and adopted by the ITU in 1987. The IMO adopted GMDSS requirements to the 1974 SOLAS Convention in 1988.) GMDSS requirements apply to the following U.S. vessels on international voyages or on the open sea:

- Cargo ships of 300 gross tons and over.
 - Ships carrying more than 12 passengers.
- Compliance will be required according to the following schedule:
- 1 February 1992 - Voluntary compliance by any ships.
 - All ships constructed after 1 February 1992 must carry a radar transponder and two-way VHF radiotelephone for survival craft.
 - 1 August 1993 - Applicable ships must have satellite EPIRB and NAVTEX.

- All ships constructed before 1 February 1992 to carry a radar transponder and two-way VHF radiotelephone for survival craft by 1 February 1995.
- 1 February 1995 - Newly constructed applicable ships must be GMDSS-equipped.
- All applicable ships to carry 9GHz radar by 1 February 1995.
- 1 February 1999 - All applicable ships must be GMDSS-equipped.

The FCC has exempted GMDSS-equipped U.S. ships from the Communications Act of 1934 requirements to carry (and provide operators for) Morse telegraphy equipment. This exemption is effective once the FCC, or its designee, has determined and certified that the vessel has GMDSS equipment installed and in good working condition. This exemption was mandated by the Telecommunications Act of 1996.

FCC rules applicable to the GMDSS include the following:

- Required equipment must be inspected once every 12 months.
- Ships must carry at least two persons with GMDSS Radio Operators licenses, designated as primary and backup(s), to act as dedicated radio operator in case of distress and carry out normal communications watch routines (including selection of HF DSC channels, reception of MSI, and entering ship's position in DSC equipment every 4 hours).
- At-sea maintenance, if employed (the alternatives being system redundancy or shore maintenance), must be provided by licensed GMDSS radio maintainers.
- Ships operating in Sea Area A3 (beyond NAVTEX coverage: see sec. 400H) must carry equipment capable of receiving MSI via Inmarsat Enhanced Group Calling (EGC) (SafetyNET).
- GMDSS equipment must be approved by the FCC and carry labels indicating compliance.
- Inmarsat antennas should be installed so as to minimize masking.
- A dedicated, non-scanning radio installation capable of maintaining a continuous DSC watch on VHF 156.525 MHz (Ch. 70) must be installed.

These changes are found in Parts 13 and 80 of Title 47 of the Code of Federal Regulations.

INFORMATION REQUIRED CONCERNING NAVIGATIONAL DANGERS AND CYCLONES: Vessels encountering imminent dangers to navigation or cyclones should notify all ships in the vicinity and the nearest coast station, using the safety signal. The following information should be provided for navigational dangers:

- The kind of ice, derelict or danger observed.
 - The position of the danger when last observed.
 - The time and date the observation was made.
- The following information should be provided for hurricanes in the Atlantic and eastern Pacific, typhoons in the western Pacific, cyclones in the Indian Ocean, and storms of a similar nature in other regions:
- A statement that a cyclone has been encountered, transmitted whenever the Master has good reason to believe that a cyclone exists in his vicinity.

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- Time, date, and position of ship when the observation was taken.
- As much of the following information as possible should be included in the message:
 - Barometric pressure.
 - Barometric tendency during the past 3 hours.
 - True wind direction and force.
 - Sea state (smooth, moderate, rough, high).
 - Swell (slight, moderate, heavy), with direction and period.
 - Course and speed of ship.

When a Master has reported a dangerous cyclone, it is desirable that subsequent observations be made and transmitted hourly, if possible, but in any case at intervals of not more than 3 hours, so long as the ship remains under the influence of the cyclone.

For winds of Force 10 or above on the Beaufort Scale for which no storm warning has been received (storms other than the cyclones referred to above) a message should be sent containing similar information to that listed above but excluding details concerning sea and swell.

For sub-freezing air temperatures associated with gale force winds, causing severe ice accretion on superstructures, send a message including:

- Time and date.
- Air temperature.
- Sea temperature.
- Wind direction and force.

400C. Reporting Navigational Safety Information to Shore Establishments

Masters should pass navigational safety information to cognizant shore establishments by radio. This information may include, but is not limited to, the following:

- Ice.
- Derelicts, mines, or other floating dangers.
- Casualties to lights, buoys, and other navigational aids.
- The newly discovered presence of wrecks, rocks, shoals, reefs, etc.
- Malfunction of radio navigational aids.
- Hostile action or potential hostile action which may constitute a hazard to shipping.

MESSAGES ADDRESSED TO THE U.S. COAST GUARD: In the waters of the United States and its possessions, defects noted in aids to navigation should be addressed to COAST GUARD and transmitted direct to a U.S. government coast station for relay to the Commander of the nearest Coast Guard District.

Merchant ships should send messages about defects in aids to navigation through commercial facilities only when they are unable to contact a government coast station. Charges for these messages will be paid by the Coast Guard.

Vessels reporting distress, potential distress, groundings, hazards to navigation, medicos, failures of navigational aids, etc. to the Coast Guard, should include the following information in their initial report to expedite action and reduce the need for additional message traffic:

- Particulars regarding the reporting vessel: name, position, course, speed, destination, and estimated time of arrival.
- Particulars concerning the vessel or object reported: position, name, color, size, shape, and other descriptive data.
- Particulars concerning the case: nature of the case, conditions, and action taken, if any.

MESSAGES ADDRESSED TO NIMA (INFORMATION CONCERNING OTHER THAN U.S. WATERS): Messages describing dangers on the high seas or in foreign waters should be addressed to NIMA NAVSAFETY BETHESDA MD, which may decide to issue a safety broadcast. Whenever possible, messages should be transmitted via the nearest government radio station. If that is impractical, a commercial radio station may be used. Navigational warning messages to the U.S. government should always be sent through U.S. radio stations, government or commercial, but never through foreign stations.

Although any coast station in the mobile service will handle without charge messages relative to dangers to navigation or defects in aids to navigation, it is requested that, where practicable, ships address their messages to NIMA and send them through the nearest U.S. station. Ship to shore Coast Guard radio stations are available for long-range communications. The AMVER Bulletin should be consulted for the latest changes to the communications network.

Warning information may also be reported directly to the NIMA NAVSAFETY Radio Broadcast Watch Desk by the following methods:

- Telephone: (1) 301-227-3147.
- Fax: (1) 301-227-3731.
- E-mail: navsafety@nima.mil.

400D. Assistance by SAR Aircraft and Helicopters

SAR aircraft may drop rescue equipment to ships in distress. This may include equipment containers connected in series by a buoyant line. The following may be dropped:

- Individual life rafts or pairs linked by a buoyant line.
- Buoyant radiobeacons and/or transceivers.
- Dye and smoke markers and flame floats.
- Parachute flares for illumination.
- Salvage pumps.

A helicopter may be used to supply equipment and/or evacuate persons. In such cases the following information will be of value:

- An orange smoke signal, signal lamp, or heliograph can be used to attract the attention of the helicopter.
- A clear stretch of deck should be made available as a pickup area, if possible, marked out with a large letter H in white. During the night the ship should be illuminated as brightly as possible, particularly any obstructions (masts, funnels, etc.). Care should be taken that illumination will not blind the helicopter pilot.
- The helicopter will approach from abaft the beam and come to a hover over the cleared area.

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- The ship should, when possible, maintain a constant speed through the water and keep the wind 30° on the port bow. If these conditions are met, the helicopter can hover and use its hoist in the cleared area. If a vessel is on fire or making smoke it is an advantage to have the wind 30° on the bow. The above procedure may be modified on instructions from the pilot.
- An indication of wind direction is useful. Pennants, flags, or a small amount of smoke from the galley funnel may be helpful.
- The length of the helicopter's winch cable is about 15 meters (50 feet) minimum.
- The lifting device on the end of the winch cable should never be secured to any part of the ship or become entangled in the rigging or fixtures. Ships' personnel should not attempt to grasp the lifting device unless requested to do so by the helicopter. In this case, a metal part of the lifting device should first be allowed to touch the deck in order to avoid possible shock due to static electricity.
- If the above conditions cannot be met, the helicopter may be able to lift a person from a boat or life raft secured on a long painter. Cases have occurred of life rafts being overturned by the downdraft from a helicopter. It is advisable for all persons in a raft to remain in the center of the raft until they are about to be lifted.
- In cases of injured persons a special stretcher may be lowered by the helicopter. The stretcher should be unhooked while the casualty is being strapped in.

400E. Reports of Hostile Activities

SHIP HOSTILE ACTION REPORT (SHAR): NIMA has established SHAR procedures to disseminate information within the U.S. Government on hostile or potentially hostile actions against U.S. merchant ships. Shipmasters should send a SHAR message to NIMA by whatever means available immediately after they have encountered hostile actions or become aware of potential hostile actions which may constitute danger to U.S. shipping.

The text of a SHAR message should include the acronym SHAR, the location or position of the incident, a brief description of the situation, the Inmarsat identity of the ship transmitting the SHAR, the Inmarsat Ocean Region guarded, and the call sign of the coast radio station being guarded, if any. An example of the procedure vessels can use to send a SHAR message to NIMA via either Inmarsat-A or -B telex follows on pg. 4-16.

If circumstances are such that only minimum essential data can be transmitted, a second SHAR message should be sent as soon afterward as possible containing amplifying information, such as:

- Latitude, longitude, course, and speed.
- Bearing and distance from nearest geographic point.
- Description of event.
- Next port of call and ETA.
- Date and time last message sent regarding this incident.

SHAR messages can be transmitted to NIMA via Inmarsat-A, -B, or -C telex:

NIMA NAVSAFETY BETHESDA MD
TELEX 898334

SHAR delivery may also be made by the following methods:

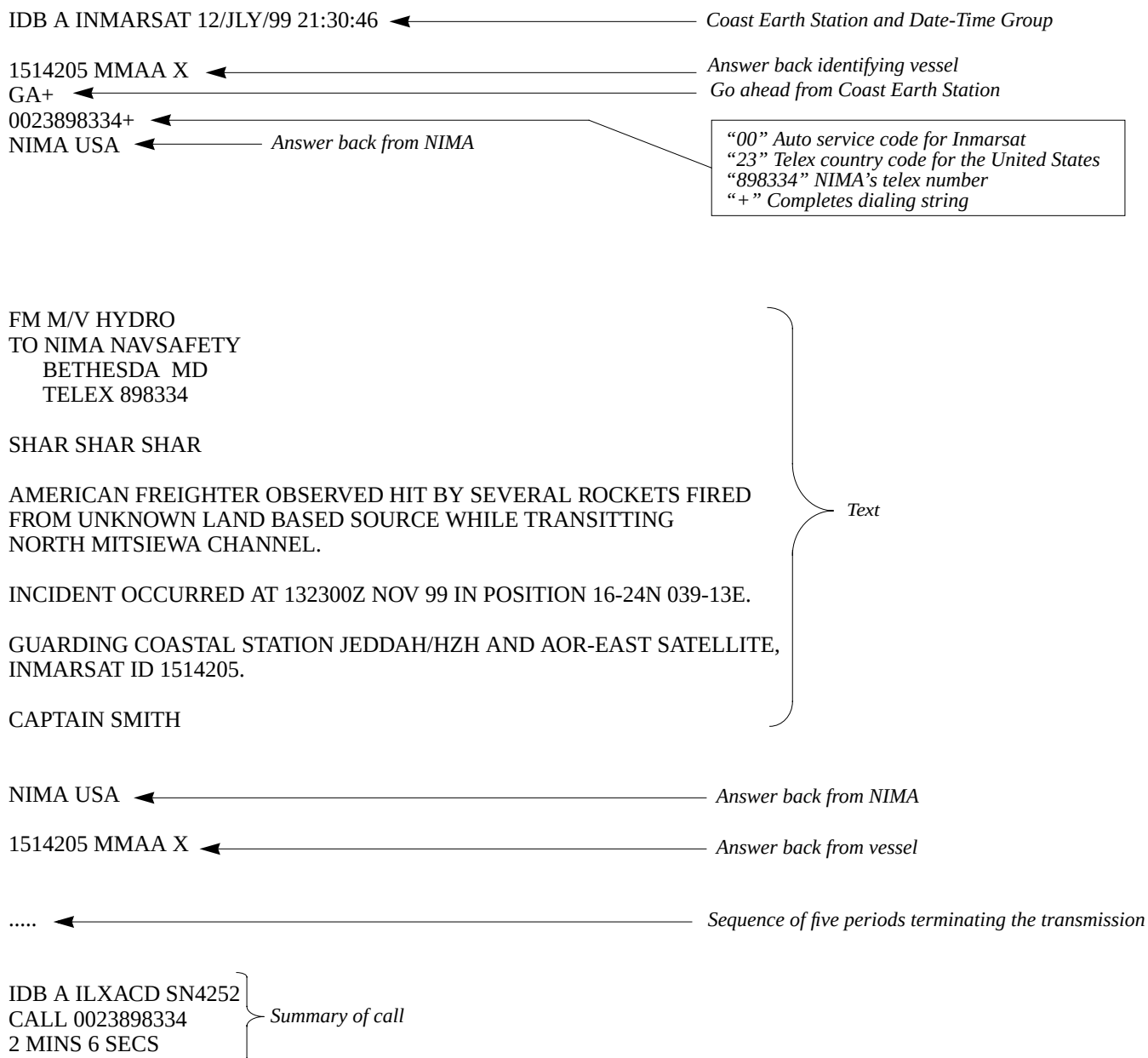
- NBDP via telex.
- Telephone: (1) 301-227-3147.
- E-mail: navsafety@nima.mil.

Rapid dissemination of a SHAR is vital so that a radio broadcast warning, if needed, may be promulgated as soon as possible. When a SHAR is received by NIMA, it is reviewed and (if appropriate) immediately sent to the Department of State and other relevant government authorities and officials for action. A SHAR can result in the promulgation of NAVAREAs, HYDROLANTs, HYDROPACs, and SPECIAL WARNINGS (See chap. 3.) to help ensure the safety of any other U.S. flag vessels in the affected area.

A SHAR is not a distress message. U.S. flag and effective U.S. controlled (EUSC) vessels, under attack or threat of attack, may request direct assistance from the U.S. Navy following the procedures in Part II of this chapter.

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Procedure to Send a SHAR via Inmarsat-A or Inmarsat-B Telex



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PIRACY ATTACK ALERT: The international format for a piracy attack alert includes the following:

- The distressed vessel's name and call sign (and Inmarsat ID, if applicable, with ocean region code).
- Distress signal MAYDAY or SOS (MAYDAY need not be included in the Inmarsat system when distress priority (3) is used).
- The text heading PIRACY ALERT.
- Position and time.
- Nature of event.

This message should be sent to the nearest RCC, national or regional piracy center, or nearest coast radio station.

A follow-up message should be sent when time permits, including the following:

- Reference to the initial Piracy Alert.
- Details of the incident.
- Last observed movements of the pirate vessel.
- Assistance required.
- Preferred methods for future communication.
- Date and time of report.

A regional Piracy Reporting Center in Kuala Lumpur, Malaysia, has been established by the International Maritime Bureau (IMB) in the Southeast Asia Region. The center maintains watch 24-hours a day and, in close collaboration with law enforcement, acts on reports of suspicious shipping movements, piracy, and armed robbery at sea anywhere in the world. Services are provided free of charge to all vessels irrespective of ownership or flag.

Specific tasks of the Piracy Reporting Center are to:

- Report piracy incidents and armed robbery at sea to law enforcement agencies.
- Supply investigating teams that respond to acts of piracy and collect evidence for law enforcement agencies.
- Locate vessels that have been seized by pirates and recover stolen cargoes.
- Help bring pirates to justice.
- Assist owners and crews of ships that have been attacked.
- Collate information on piracy in all parts of the world.

The center broadcasts daily status bulletins by Inmarsat-C (SafetyNET), reporting acts of piracy against shipping in East Africa, the Indian subcontinent, Southeast Asia and the Far East regions.

The IMB also publishes a weekly piracy report, which is a summary of the Piracy Reporting Center's daily status bulletins. Each week's report is posted on Tuesday and may be accessed through the IMB Website at:

http://www.iccwbo.org/ccs/menu_imb_bureau.asp

The center may be contacted by:

- Telephone: 60-3-201-0014.
- Fax: 60-3-238-5769.
- Telex: MA 31880 IMBPCI.
- E-mail: ccskl@imbkl.po.my.

ANTI-SHIPPING ACTIVITY MESSAGES (ASAM) REPORTING: Piracy and other attacks against merchant shipping continue to be a worldwide problem. Information regarding these incidents often takes over a month to reach

U.S. Government authorities. Delays in reporting these incidents can result in an ineffective response by the appropriate Government agency and, more importantly, will undermine the benefit to other mariners who may be transiting the affected geographic area.

At the request of a U.S. Government interagency working group on piracy and maritime terrorism, the Defense Mapping Agency (DMA) [now the National Imagery and Mapping Agency (NIMA)] developed, in 1985, a system to offer the maritime community the most effective means of filing reports about attacks on shipping, storing the data on a computer and disseminating data to mariners and Government entities via telecommunications links.

The NIMA system is the Anti-Shipping Activity Messages (ASAM) database accessed through the Maritime Safety Information Website. This system allows any user to send and record an ASAM or query the database for reported incidents by date, geographic subregion, victim's name or reference number.

All piracy, terrorism, attacks, hostile actions, harassments and threats while at sea, anchor or in port, should be reported. The primary means of reporting is through NIMA's ASAM system, with acceptable secondary methods by telex/fax, telephone, and mail. An ASAM does not need to be filed if a Ship Hostile Action Report (SHAR) has been issued—one will be generated following a SHAR.

This centralized database capability has been designed to be a major step toward monitoring the escalating problem of maritime crimes against life and property. The central location for filing reports of attacks against shipping is the first step in supporting governmental responses, as well as warning the maritime community that they should avoid (or approach with caution) certain geographic areas.

Many ASAM reports are filed each year; however, the number of reports as compared to worldwide incidents is quite low. The long range goal of the ASAM system is to assist Government officials in the deterrence of such activities. Active participation by mariners is vital to the success of future deterrence. The U.S. Maritime Administration (MARAD) and NIMA strongly encourage all mariners to participate and promptly report all incidents, whether against their vessel or observed against other vessels.

Further information pertaining to this system can be obtained by writing to:

MARITIME SAFETY INFORMATION DIVISION
NSS STAFF
STD 44
4600 SANGAMORE ROAD
BETHESDA MD 20816-5003

Or by telephone: (1) 301-227-3147.

ANTI-PIRACY MEASURES: Merchant ships continue to be attacked by pirates in port and underway on the west coast of Africa, in and near the Strait of Malacca, in the

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South and East China Seas, in the Caribbean and in Brazilian and Ecuadorian waters. Pirates usually take money, radios, cameras and other property that is portable, valuable and easily sold. In some cases cargo has been raided. In this section “piracy” means all kinds of violent crimes against ships and small craft, including incidents in ports and in territorial and international waters, except incidents that are clearly political terrorism.

The following is a short checklist of prudent measures that ship’s officers should consider when operating in regions where piracy has been reported:

– BE VIGILANT. ANTICIPATE TROUBLE

- Provide a security general alarm signal and security Station Bill to alert all crew members. Assign a ship’s physical security officer.
 - Anti-piracy measures should be included in the ship’s security plan. These measures should be designed to keep boarders off the ship. Repelling armed pirates already on deck can be dangerous.
 - Piracy countermeasures should be exercised during regular emergency drills when in or approaching dangerous waters.
 - Have water hoses under pressure with nozzles ready at likely boarding places when at sea and in port.
 - Illuminate sides, bows and quarters while navigating in threat areas and in dangerous ports.
 - Restrict access to vessel, close all ports, strong back doors, and secure spaces.
- In port:
- Ensure gangway watch can contact shipboard support if needed, preferably by hand-held radios.
 - Ensure gangway watch can contact local security forces for assistance, if available.
 - Maintain roving patrol on deck in port and at anchor, and ensure that patrol and gangway watch are in contact.
 - Use rat guards on all mooring lines and illuminate the lines.
 - Use covers on chain hawse and keep wash-down water running.
 - Keep bumboats away and vendors off the ship.

Underway:

- Keep good radar and visual lookout, including lookout aft.
 - Have searchlights available to illuminate suspected boarding parties.
 - Have signaling equipment, including emergency rockets, rocket pistols, and EPIRBs, available for immediate use.
- When suspected boarders are detected:
- Sound the general alarm.
 - Establish VHF contact with shore stations and other ships in the vicinity.
 - Increase speed and head into seas if practicable. Take evasive action by working rudder hard right and left if navigation permits.
 - Fire warning rockets.

- Switch on outside lighting.
- Use searchlights to illuminate and dazzle suspects.
- CONTINUE TO MAINTAIN GOOD ALL-AROUND WATCH.

After pirates have boarded:

- Barricade engine room and bridge, if practicable.
- Barricade the crew in secure areas, if practicable.
- Report the situation by radio and call for help, if available. Use Emergency Call-up Procedures in Chapter 4.
- DON’T BE HEROIC if the boarders are armed.

MARAD ADVISORIES: The U.S. Maritime Administration utilizes MARAD Advisories to rapidly disseminate information on maritime danger, safety, government policy, and other timely matters pertaining to U.S. flag and U.S. owned vessel operations. MARAD Advisories are issued by the Office of Ship Operations to vessel Masters, operators, and other U.S. maritime interests via message. MARAD Advisories are also published in NIMA’s Notice to Mariners and maintained on NIMA’s Maritime Safety Information Center Website.

MARAD has established an internet Website at:

<http://www.marad.dot.gov>

to disseminate the latest information pertaining to the U.S. maritime industry. The following information is available:

- Ready Reserve Force news.
- Treasury Department’s Office of Foreign Assets Control.
- Maritime Security Act/Program.
- MARAD Advisories.
- Maritime Security Reports.
- Current maritime related legislation.
- Current press releases.
- Cargo preference.
- International and domestic marketing.
- Calendars of trade events.
- General public sales information.

For further information regarding MARAD Advisories contact:

MARITIME ADMINISTRATION
OFFICE OF SHIP OPERATIONS (MAR-613)
400 SEVENTH STREET SW
WASHINGTON DC 20590

Telephone: (1) 202-366-5735.

Fax: (1) 202-366-3954.

E-mail: opcenter1@marad.dot.gov.

400F. Emergency Position Indicating Radio Beacons (EPIRBs)

Emergency position indicating radio beacons (EPIRBs), devices which cost from \$200 to \$2500, are designed to

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save lives by alerting rescue authorities and indicating distress location. EPIRB types are described as follows:

Type	Frequency	Description
Class A	121.5/243 MHz	Float-free, automatically-activating, detectable by aircraft and satellite. Coverage limited (see chart).
Class B	121.5/243 MHz	Manually activated version of Class A.
Class S	121.5/243 MHz	Similar to Class B, except that it floats, or is an integral part of a survival craft.
Category I	406/121.5 MHz	Float-free, automatically activated EPIRB. Detectable by satellite anywhere in the world.
Category II	406/121.5 MHz	Similar to Category I, except manually activated.
Inmarsat -E	1646 MHz	Float-free, automatically activated EPIRB. Detectable by Inmarsat geostationary satellite.

121.5/243 MHz EPIRBs (Class A, B, S): These are the most common and least expensive type of EPIRB, designed to be detected by overflying commercial or military aircraft. Satellites were designed to detect these EPIRBs but are limited for the following reasons:

- Satellite detection range is limited for these EPIRBs (satellites must be within line of sight of both the EPIRB and a ground terminal for detection to occur) (see charts).
- EPIRB design and frequency congestion cause these devices to be subject to a high false alert/false alarm rate (over 99%); consequently, confirmation is required before SAR forces can be deployed.
- EPIRBs manufactured before October 1989 may have design or construction problems (e.g., some models will leak and cease operating when immersed in water) or may not be detectable by satellite.
- Location ambiguities and frequency congestion in this band require two or more satellite passes to determine the location of the EPIRB, delaying rescue by an average of 4 to 6 hours. In some cases, a rescue can be delayed as long as 12 hours.
- COSPAS-SARSAT is expected to cease detecting alerts on 121.5 MHz.

The U.S. Coast Guard does not recommend the purchase of 121.5 MHz EPIRBs and intends to terminate the sale and use of all 121.5 MHz EPIRBs in the United States prior to 2007.

NOTE: The International COSPAS-SARSAT Program has announced plans to terminate satellite processing of

distress signals from 121.5/243 MHz emergency beacons on 1 February 2009. Mariners, aviators and other users of emergency beacons will need to switch to those operating at 406 MHz in order to be detected by satellites. The termination of 121.5/243 MHz processing is planned far enough in advance to allow users adequate time for the transition to the 406 MHz beacon.

The decision to terminate 121.5/243MHz satellite alerting services was made in response to guidance from the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). These two agencies of the United Nations are responsible for regulating the safety of ships and aircraft on international transits and handle international standards and plans for maritime and aeronautical search and rescue. In addition, problems within this frequency band inundate search and rescue authorities with false alerts, adversely impacting the effectiveness of lifesaving services. Although 406 MHz beacons are more costly, they provide search and rescue agencies with more reliable and complete information to do their job more efficiently and effectively.

Individuals who plan on buying a new distress beacon need to be aware and take the COSPAS-SARSAT decision into account.

406 MHz EPIRBs (Category I, II): The 406 MHz EPIRB was designed to operate with satellites. The signal frequency, 406 MHz, has been designated internationally for use only for distress; other communications and interference are not allowed on this frequency. Its signal allows a satellite local user terminal (LUT) to accurately locate the EPIRB (much more accurately than 121.5/243 MHz devices) and identify the vessel (by matching the unique identification code transmitted by the beacon to a registration database) anywhere in the world (there is no range limitation). These devices are detectable not only by COSPAS-SARSAT satellites which are polar orbiting, but also by geostationary GOES weather satellites. EPIRBs detected by GOES or other geostationary satellites provide rescue authorities an instant alert, but without location information unless the EPIRB is equipped with an integral GPS receiver. EPIRBs detected by COSPAS-SARSAT (e.g., TIROS N) satellites provide rescue authorities location of distress, but alerting may be delayed as much as an hour or two. These EPIRBs also include a 121.5 MHz homing signal, allowing aircraft and rescue craft to quickly find the vessel in distress. These are the only type of EPIRBs which must be certified by Coast Guard approved independent laboratories before they can be sold in the United States.

An automatically activated, float free version of this EPIRB is designated for use in the GMDSS and has been required on SOLAS vessels (cargo ships over 300 tons and passenger ships on international voyages) since 1 August 1993. Coast Guard regulations require U.S. commercial fishing vessels to carry this device. The U.S. Coast Guard Navigation and Vessel Inspection Circular (NVIC) No. 3-99 provides a complete summary of EPIRB equipment requirements for U.S. flag vessels, including those vessels operating on the Great Lakes. This circular is available from the U.S. Coast Guard Homepage at:

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<http://www.uscg.mil/hq/g-m/nvic/>

A new type of 406 MHz EPIRB, having an integral GPS navigation receiver, became available in 1998. This EPIRB provides accurate location, as well as identification information, to rescue authorities immediately upon activation through both geostationary and polar orbiting satellites.

Mariners should be aware of the differences between capabilities of 121.5/243 MHz and 406/121.5 MHz EPIRBs, as they have implications for alerting and locating of distress sites, as well as response by SAR forces. The advantages of 406/121.5 MHz devices are substantial, and are further enhanced by EPIRB-transmitted registration data on the carrying vessel. Owners of 406/121.5 MHz EPIRBs furnish registration information on their vessel, onboard survival gear, and emergency points of contact ashore, all of which greatly enhance both timely and tailored SAR response. The database for U.S. vessels is maintained by the National Oceanic and Atmospheric Administration (NOAA), and is accessed worldwide by SAR authorities to facilitate SAR response.

FCC regulations require that all 406 MHz EPIRBs carried on U.S. vessels be registered with NOAA. The U.S. Coast Guard is enforcing the FCC registration rule. FCC fines, of up to \$10,000, may be incurred for false activation of an unregistered EPIRB (i.e., as a hoax, or through gross negligence, carelessness, or improper storage and handling). If changes occur in the vessel's ownership, owner's address or primary telephone number the EPIRB must be re-registered with NOAA. Registration forms may be obtained from:

NOAA SARSAT
E/SP3, RM 3320, FB-4
5200 AUTH ROAD
SUITLAND MD 20746-4304

For additional information on registering EPIRBs contact NOAA at:

- Telephone: (1) 888-212-SAVE (toll free), (1) 301-457-5678.
- Fax (1) 301-568-8649.

TESTING EPIRBs: The Coast Guard urges EPIRB owners to periodically check for water tightness, battery expiration date, and signal presence. FCC rules allow Class A, B, and S EPIRBs to be turned on briefly (for three audio sweeps, or 1 second only) during the first 5 minutes of any hour. Signal presence can be detected by an FM radio tuned to 99.5 MHz, or an AM radio tuned to any vacant frequency and located close to an EPIRB. All 406/121.5 MHz EPIRBs have a self-test function that should be used in accordance with manufacturers' instructions at least monthly.

406 MHz EPIRBs use a special type of lithium battery designed for long-term low-power consumption operation. Batteries must be replaced by the date indicated on the EPIRB label using the model specified by the manufacturer. It should be replaced by a dealer approved by the manufacturer. If the replacement battery is not the proper type, the EPIRB will not operate for the duration specified in a distress.

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Summary Comparison of 406/121.5 MHz and 121.5/243 MHz EPIRBs

Feature	406/121.5 MHz EPIRB	121.5/243 MHz EPIRB
Frequencies	406.025 MHz (locating); 121.500 MHz (homing).	121.500 MHz (civilian); 243.000 MHz (military).
Primary Function	Satellite alerting, locating, identification of distressed vessels.	Transmission of distress signal to passing aircraft and ships.
Distress Confirmation	Positive identification of coded beacon; each beacon signal is a coded, unique signal with registration data (vessel name, description, and telephone number ashore, assisting in confirmation).	Virtually impossible; no coded information, beacons often incompatible with satellites; impossible to know if signals are from EPIRB, ELT, or non-beacon source.
Signal	Pulsed digital, providing accurate beacon location and vital information on distressed vessel.	Continuous signal allows satellite locating at reduced accuracy; close range homing.
Signal Quality	Excellent; exclusive international use of 406 MHz for distress beacons; no problems with false alerts from non-beacon sources.	Relatively poor; high number of false alarms caused by other transmitters in the 121.5 MHz band.
Satellite Coverage	Global coverage, world-wide detection; satellite retains beacon data until next earth station comes into view.	Both beacon and LUT must be within coverage of satellite; detection limited to line of sight.
Operational Time	48 hrs. at -20°C.	48 hrs. at -20°C.
Output Power	5 watts at 406 MHz, .025 watts at 121.5 MHz.	0.1 watts average.
Strobe Light	High intensity strobe helps in visually locating search target.	None.
Location Accuracy (Search Area) and Time Required	1 to 3 nm (10.8 sq. nm); accurate (non-GPS) position on first satellite overflight enables rapid SAR response, often within 30 minutes.	12 to 16 nm (450 sq. nm); SAR forces must wait for second system alert to determine final position before responding (1 to 3 hr. delay).
GPS Location	100 meter accuracy with GPS-equipped beacon; reduces search area to negligible area.	No GPS capability.
Average Cost	\$750 - \$1000 (EPIRB); \$2500 (GPS-equipped EPIRB).	\$200 - \$500 (EPIRB).

INMARSAT-E EPIRBs: Inmarsat-E EPIRBs operate on 1.6 GHz (L-band) and transmit a distress signal to Inmarsat geostationary satellites, which includes a registered identity similar to that of the 406 MHz EPIRB, and a location derived from a GPS navigational satellite receiver inside the EPIRB. Inmarsat-E EPIRBs may be detected anywhere in the world between 70°N and 70°S. Since geostationary satellites are used, alerts are transmitted almost instantly to a RCC associated with the Inmarsat

Coast Earth Station (CES) receiving the alert. The distress alert transmitted by an Inmarsat-E EPIRB is received by two CESs in each ocean region, giving 100 percent duplication for each ocean region in case of failures or outages associated with any of the CESs. Alerts received over the Inmarsat Atlantic Ocean Regions are routed to the Coast Guard Atlantic Area command center in Portsmouth, and alerts received over the Inmarsat Pacific Ocean Region are routed to the Coast Guard Pacific Area command

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center in Alameda. This type of EPIRB is designated for use in the GMDSS, but it is not sold in the United States or approved for use by U.S. flag vessels.

THE COSPAS-SARSAT SYSTEM: COSPAS-SARSAT (COSPAS is a Russian acronym for “Space System for Search of Distress Vessels”; SARSAT signifies “Search and Rescue Satellite-Aided Tracking”) is an international satellite-based search and rescue system established by the U.S., Russia, Canada, and France to locate emergency radiobeacons transmitting on the frequencies 121.5, 243, and 406 MHz. Since its inception, the COSPAS-SARSAT system has contributed to the saving of over 12,740 lives in approximately 3,740 SAR events.

When an emergency beacon is activated, the signal is received by the COSPAS-SARSAT polar orbiting satellites and relayed to an international network of ground stations (Local User Terminals (LUTs)). The ground station processes the alert data to determine the geographical location of the distress and forwards it to a national mission control center (MCC). The alert message is then relayed to either a national rescue coordination center (RCC), another MCC, or to the appropriate SAR authority, depending on the geographic location of the beacon.

The USCG receives data from international sources via the USMCC. See the following table:

LIST OF COSPAS-SARSAT MCCs AND LEOLUTs

Country	MCC			LEOLUT		Associated RCC
	Location	Designator	Status	Location	Status	
Algeria	Algiers	ALMCC	Operational	Ouargla	Operational	RCC Algiers
Australia	Canberra	AUMCC	Operational	Albany Bundaberg	Operational	RCC Australia
Brazil	Brasilia	BRMCC	Operational	Brasilia	Under Test	Salvamar/Salvaero
	Sao Jose dos Campos	BRMCC (back-up)	Operational	Manaus Recife	Operational	
Canada	Trenton	CMCC	Operational	Churchill Edmonton Goose Bay	Operational	
Chile	Santiago	CHMCC	Operational	Easter Island Santiago Punta Arenas	Operational	MRCC Chile
China	Beijing	CNMCC	Operational	Beijing	Operational	
France	Toulouse	FMCC	Operational	Toulouse	Operational	MRCC Gris Nez MRCC La Garde
Hong Kong	Hong Kong	HKMCC	Operational	Hong Kong	Operational	MRCC Hong Kong
India	Bangalore	INMCC	Operational	Bangalore Lucknow	Operational	
Indonesia	Jakarta	IDMCC	Operational	Ambon	Not currently in operation	RCC I; Soekarta-Hatta Airport, Jakarta RCC II; Djuanda Airport, Suraybaya RCC III; Hasanudin Airport, Ujung Pandang RCC IV; Frans Karseifo Airport, Biak
				Jakarta	Operational	
Italy	Bari	ITMCC	Operational	Bari	Operational	MRCC Roma
ITDC ¹	Taipei	TAMCC	Operational	Chi-lung (Keelung)	Operational	

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LIST OF COSPAS-SARSAT MCCs AND LEOLUTs

Country	MCC			LEOLUT		Associated RCC
	Location	Designator	Status	Location	Status	
Japan	Tokyo	JAMCC	Operational	Yokohama	Operational	RCC Otaru RCC Shiogama RCC Yokohama RCC Nagoya RCC Kobe RCC Hiroshima RCC Kitakyushu RCC Maizuru RCC Niigata RCC Kagoshima RCC Naha
Republic of Korea	Taejon	KOMCC	Operational	Taejon	Operational	RCC Incheon RCC Kimpo
New Zealand	Canberra ²	AUMCC	Operational	Wellington	Operational	RCC Lower Hutt
Norway	Bodø	NMCC	Operational	Tromsø	Operational	MRCC Bodø MRCC Stavanger
Pakistan	Lahore	PAMCC	Under Test	Lahore	Operational	CAA Lahore MSA Karachi
Peru	Callao	PEMCC	Operational	Callao	Operational	MRCC Callao
Russian Federation	Moscow	CMC	Operational	Arkhangelsk Moscow Nakhodka	Operational	
				Novosibirsk	Not currently in operation	
Saudi Arabia	Jiddah	SAMCC	Operational	Jiddah	Operational	RCC Jiddah
Singapore	Singapore	SIMCC	Operational	Singapore	Operational	Singapore Port Operations Control Center
South Africa	Cape Town	ASMCC	Operational	Cape Town	Operational	
Spain	Maspalomas	SPMCC	Operational	Maspalomas	Operational	RCC Madrid RCC Baleares RCC Canarias
United Kingdom	Kinloss	UKMCC	Operational	Combe Martin	Operational	MRCC Falmouth ARCC Kinloss

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LIST OF COSPAS-SARSAT MCCs AND LEOLUTs

Country	MCC			LEOLUT		Associated RCC
	Location	Designator	Status	Location	Status	
United States	Suitland	USMCC	Operational	Alaska California Guam Hawaii Puerto Rico Texas	Operational	RCC Boston RCC Norfolk RCC Miami RCC New Orleans RSC San Juan RCC Cleveland RCC Seattle RCC Honolulu RSC Guam RCC Juneau RCC Alameda Langley AFB, VA Ft Richardson, AK

Notes:

¹ The International Telecommunication Development Corporation.

² The NZ LUT is directly connected to the Australian MCC (AUMCC).

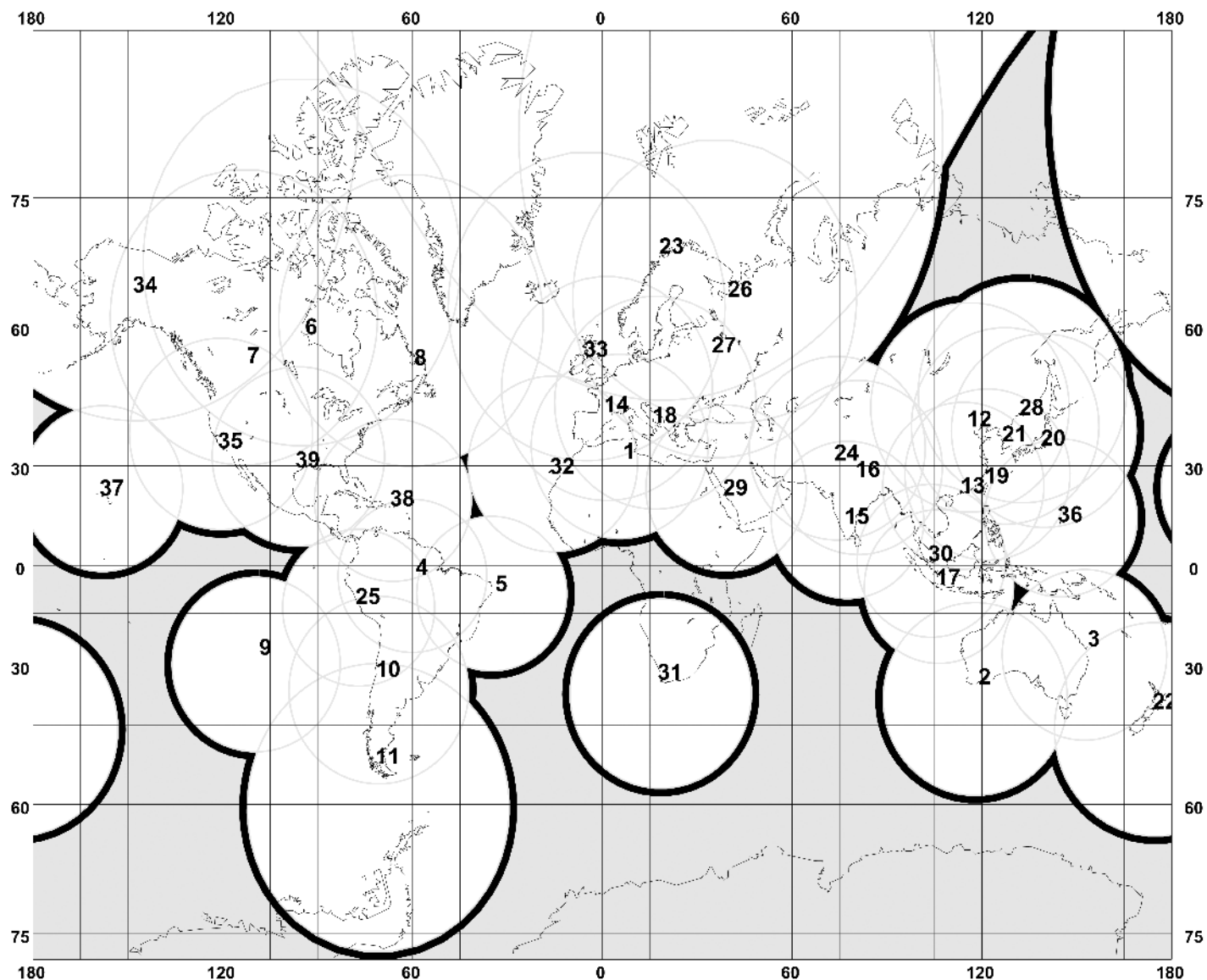
LIST OF COSPAS-SARSAT GEOLUTs

Country	GEOLUT	
	Location	Status
Brazil	Brasilia	Functional (a) (b)
Canada	Trenton (1) Trenton (2)	Functional (b) Functional (b)
Chile	Santiago	Functional (b)
India	Bangalore	Functional (b)
New Zealand	Wellington	Operational
Spain	Maspalomas	Functional (b)
United Kingdom	Combe Martin	Operational

Notes:

(a) Combined LEO/GEOLUT operates part-time as a GEOLUT and part-time as a LEOLUT.

(b) Functional GEOLUTs have not been commissioned, however, alert data are used operationally.



NOTES

LUTS:

- 1 OUARGLA, ALGERIA
- 2 ALBANY, AUSTRALIA
- 3 BUNDABERG, AUSTRAL
- 4 MANAUS, BRAZIL
- 5 RECIFE, BRAZIL
- 6 CHURCHILL, CANADA
- 7 EDMONTON, CANADA
- 8 GOOSE BAY, CANADA
- 9 EASTER ISL, CHILE
- 10 SANTIAGO, CHILE
- 11 PUNTA ARENAS, CHILE
- 12 BEIJING, CHINA
- 13 HONG KONG, CHINA
- 14 TOULOUSE, FRANCE
- 15 BANGALORE, INDIA
- 16 LUCKNOW, INDIA
- 17 JAKARTA, INDONESIA
- 18 BARI, Italy
- 19 KEELUNG, ITDC
- 20 YOKOHAMA, JAPAN
- 21 TAEJON, KOREA
- 22 WELLINGTON, N.Z.
- 23 TROMSOE, NORWAY
- 24 LAHORE, PAKISTAN
- 25 CALLAO, PERU
- 26 ARKHANGELSK, RUSS.
- 27 MOSCOW, RUSSIA
- 28 NAKHODKA, RUSSIA
- 29 JEDDAH, SAUDI ARAB
- 30 SINGAPORE
- 31 CAPE TOWN, SOUTH A
- 32 MASPALOMAS, SPAIN
- 33 COMBE MARTIN, UK
- 34 ALASKA, USA
- 35 CALIFORNIA, USA
- 36 GUAM
- 37 HAWAII, USA
- 38 PUERTO RICO
- 39 TEXAS, USA

SATELLITE:

ALTITUDE 850 km
ELEVATION 5 deg
ANGLE

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400G. Global Maritime Distress and Safety System (GMDSS)

The Global Maritime Distress and Safety System (GMDSS) represents a significant improvement in marine safety over the previous system of short range and high seas radio transmissions. Its many parts include satellite as well as advanced terrestrial communications systems. Operational service of the GMDSS began on 1 February 1992, with full implementation achieved on 1 February 1999.

The GMDSS was adopted by amendments in 1988 by the Conference of Contracting Governments to the International Convention for the Safety of Life at Sea (SOLAS), 1974. The GMDSS offers the greatest advancement in maritime safety since the enactment of regulations following the Titanic disaster in 1912. It is an automated ship-to-ship, shore-to-ship and ship-to-shore system covering distress alerting and relay, the provision of Maritime Safety Information (MSI) and basic communication links. Satellite and advanced terrestrial systems are incorporated into a modern communications network to promote and improve safety of life and property at sea throughout the world. The equipment required on board ships will depend not on their tonnage, but rather on the sea area in which the vessel operates. This is fundamentally different from the previous system, which based requirements on vessel size alone. The greatest benefit of the GMDSS is that it vastly reduces the chances of ships sinking without a trace and enables search and rescue (SAR) operations to be launched without delay.

SHIP CARRIAGE REQUIREMENTS: By the terms of the SOLAS Convention, the GMDSS provisions apply to cargo ships of 300 gross tons and over and ships carrying more than 12 passengers on international voyages. Unlike previous shipboard carriage regulations that specified equipment according to size of vessel, the GMDSS carriage requirements stipulate equipment according to the area the vessel operates in. These areas are designated as follows:

- Sea Area A1 - An area within the radiotelephone coverage of at least one VHF coast station in which continuous Digital Selective Calling (DSC - a radio receiver that performs distress alerting and safety calling on HF, MF and VHF frequencies) is available, as may be defined by a Contracting Government to the 1974 SOLAS Convention. This area extends from the coast to about 20 miles offshore.
- Sea Area A2 - An area, excluding sea area A1, within the radiotelephone coverage of at least one MF coast station in which continuous DSC alerting is available, as may be defined by a Contracting Government. The general area is from the A1 limit out to about 100 miles offshore.
- Sea Area A3 - An area, excluding sea areas A1 and A2, within the coverage of an Inmarsat geostationary satellite in which continuous alerting is available. This area is from about 70°N to 70°S.
- Sea Area A4 - All areas outside sea areas A1, A2 and A3. This area includes the polar regions, where geostationary satellite coverage is not available.

The GMDSS rules are found in subpart W of Part 80 (Code of Federal Regulations, Title 47, Part 80). Carriage requirements for GMDSS radio equipment can be summarized as follows:

- Sea Area A1 ships will carry VHF equipment and either a satellite or VHF EPIRB.
- Sea Area A2 ships will carry VHF and MF equipment and a satellite EPIRB.
- Sea Area A3 ships will carry VHF, MF, a satellite EPIRB and either HF or satellite communication equipment.
- Sea Area A4 ships will carry VHF, MF and HF equipment and a satellite EPIRB.
- All ships will carry equipment for receiving MSI broadcasts and equipment for survival craft.

Ships at sea must be capable of the following functional GMDSS requirements:

- Ship-to-shore distress alerting (by two independent means, each using a different communication service).
- Shore-to-ship distress alerting.
- Ship-to-ship distress alerting.
- SAR coordination.
- On-scene communications.
- Transmission and receipt of emergency locating signals.
- Transmission and receipt of MSI.
- General radio communications.
- Bridge-to-bridge communications.

To meet the requirements of the functional areas above the following is a list of the minimum communications equipment needed for all ships:

- VHF radio capable of transmitting and receiving DSC on channel 70 and radiotelephony on channels 6, 13, and 16.
- Radio receiver capable of maintaining a continuous DSC watch on VHF channel 70.
- Search and rescue transponders (SART) (two on every passenger vessel and cargo vessels of 500 gross tons and over and at least one on every cargo vessel 300 gross tons and over but less than 500 gross tons) operating in the 9 GHz band.
- Receiver capable of receiving NAVTEX broadcasts anywhere NAVTEX service is available.
- Receiver capable of receiving either SafetyNET or HF NBDP (if service is provided) anywhere NAVTEX is not available
- Satellite EPIRB capable of being activated manually or float-free self-activated.
- Two-way hand held VHF radios (two sets minimum on 300-500 gross tons cargo vessels and three sets minimum on cargo vessels of 500 gross tons and upward and on all passenger ships).

Additionally, each sea area has its own requirements under GMDSS which are as follows:

– Sea Area A1:

Vessels that operate only in Sea Area A1 must meet the above requirements for all ships and the following:

- 1. General VHF radiotelephone capability.
- 2. Capability of initiating a distress alert from a navigational position by using either:
 - (a) VHF DSC; or
 - (b) Category I 406 MHz EPIRB (this requirement may be met by either installing the 406 MHz

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EPIRB required for all ships near the navigational position or by having remote activation capability); or

- (c) MF DSC; or
- (d) HF DSC; or
- (e) an Inmarsat Ship Earth Station (SES).

– Sea Areas A1 and A2:

Vessels that operate in Sea Areas A1 and A2 must meet the above requirements for all ships and the following:

- 1. An MF radio installation capable of distress and safety communications from a navigational position on:
 - (a) 2187.5 kHz using DSC; and
 - (b) 2187.5 kHz using radiotelephony.
- 2. Equipment capable of maintaining a continuous DSC watch on 2187.5 kHz (may be combined with MF installation in paragraph (1)(a) of this section, but must have separate receiver).
- 3. Capability of initiating a distress alert from a navigational position by using either:
 - (a) Category I 406 MHz EPIRB (this requirement may be met by installing the 406 MHz EPIRB near the navigational position or by having remote activation capability); or
 - (b) HF DSC; or
 - (c) an Inmarsat SES.
- 4. Capability of transmitting and receiving general radio communications using radiotelephony or direct-printing telegraphy by either:
 - (a) an MF or HF radio installation operating on working frequencies in the bands 1605-4000 kHz, or 4000-27500 kHz (this capability may be added to the MF installation in paragraph (1) of this section); or
 - (b) an Inmarsat SES.

– Sea Areas A1, A2 and A3:

Vessels that operate in Sea Areas A1, A2 and A3 must meet the above requirements for all ships and either, paragraphs (1) - (4) or (5) - (8) of the following:

- 1. An Inmarsat SES capable of:
 - (a) transmitting and receiving distress and safety communications by means of direct-printing telegraphy;
 - (b) transmitting and receiving distress priority calls;
 - (c) maintaining watch for shore-to-ship distress alerts including those directed to specifically defined geographical areas;
 - (d) transmitting and receiving general radio communications using either radiotelephony or direct-printing telegraphy.
- 2. An MF radio installation capable of distress and safety communications on:
 - (a) 2187.5 kHz using DSC;
 - (b) 2187.5 kHz using radiotelephony.
- 3. Equipment capable of maintaining a continuous DSC watch on 2187.5 kHz (may be combined with MF installation in paragraph (2)(a) of this section, but must have separate receiver).

- 4. Capability of initiating a distress alert by either of the following:

- (a) Category I 406 MHz EPIRB (this requirement may be met by installing the 406 MHz EPIRB near the navigational position or by having remote activation capability); or
- (b) HF DSC; or
- (c) an Inmarsat SES.

- 5. An MF/HF radio installation capable of transmitting and receiving on all distress and safety frequencies in the bands between 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct-printing telegraphy.

- 6. Equipment capable of maintaining DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the distress and safety DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 kHz, although it must be possible to select any of these DSC distress and safety frequencies at any time (the watch-maintaining receiver may be separate from or combined with the MF/HF installation in paragraph (5) of this section).

- 7. Capability of initiating a distress alert by either of the following:

- (a) Category I 406 MHz EPIRB (this requirement may be met by installing the 406 MHz EPIRB near the navigational position or by having remote activation capability); or
- (b) a separate Inmarsat SES.

- 8. Capability of transmitting and receiving general radio communications using radiotelephony or direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands 1605-4000 kHz and 4000-27500 kHz (this capability may be added to the MF/HF installation in paragraph (5) of this section).

NOTE: It must be possible to initiate transmission of distress alerts by the radio installations specified in paragraphs (1), (2), (4), (5), and (7) of this section from the position from which the ship is normally navigated.

– Sea Areas A1, A2, A3 and A4:

Vessels that operate in Sea Areas A1, A2, A3 and A4 must meet the above requirements for all ships and the following:

- 1. An MF/HF radio installation capable of transmitting and receiving on all distress and safety frequencies in the bands between 1605-27500 kHz using DSC, radiotelephony, and narrow-band direct-printing telegraphy.

- 2. Equipment capable of maintaining DSC watch on 2187.5 kHz, 8414.5 kHz and on at least one of the distress and safety DSC frequencies 4207.5 kHz, 6312 kHz, 12577 kHz, or 16804.5 kHz, although it must be possible to select any of these DSC distress and safety frequencies at any time (the watch-maintaining receiver may be separate from or combined with the MF/HF installation in paragraph (1) of this section).

- 3. Capability of initiating a distress alert by both of the following:

- (a) Category I 406 MHz EPIRB (this requirement may be met by installing the 406 MHz EPIRB

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- near the navigational position or by having remote activation capability); and
- (b) the MF/HF installation using DSC on any of the above DSC distress alerting frequencies. It must be possible to initiate the distress alert by this means from the position from which the ship is normally navigated.
- 4. Capability of transmitting and receiving general radio communications using radiotelephony and direct-printing telegraphy by an MF/HF radio installation operating on working frequencies in the bands 1605-4000 kHz and 4000-27500 kHz (this capability may be added to the MF/HF installation in paragraph (1) of this section).

GMDSS information, provided by the U.S. Coast Guard Navigation Center, is internet accessible through the World Wide Web at:

<http://www.navcen.uscg.gov/marcomms/default.htm>

The information available includes worldwide NAVTEX and Inmarsat SafetyNET schedules, U.S. NAVTEX service areas, U.S. SAR areas, status of shore-side implementation, regulatory information, NAVAREA chart, HF narrow band direct printing and radiotelephone channels used for distress and safety calling, information on GMDSS coast stations, AMVER and International Ice Patrol information, information concerning radiofacsimile and other maritime safety broadcasts, and digital selective calling information.

400H. The Inmarsat System

Inmarsat, a limited private company of more than 600 partners worldwide, is an important element within GMDSS providing maritime safety communications for ships at sea. In accordance with its convention, Inmarsat provides the space segment necessary for improving distress communications, efficiency and management of ships, and maritime correspondence services.

The basic components of the Inmarsat system include the Inmarsat space segment, Land Earth Stations (LES), and mobile Ship Earth Stations (SES).

The Inmarsat space segment is comprised of four communications satellites in geostationary orbit that provide primary coverage. Five additional satellites in orbit serve as spares.

The higher polar regions are not visible to the operational satellites and coverage is available between 70°N and 70°S. Satellite coverage is divided into four ocean regions, which are:

- Atlantic Ocean Region - East (AOR-E).
- Atlantic Ocean Region - West (AOR -W).
- Pacific Ocean Region (POR).
- Indian Ocean Region (IOR).

The LESs provide the interface between the satellite network and the public switched telephone network (PSTN), public data network (PDN), and various private line services. These networks link registered information providers to the LES. The data then travels from the LES to the Inmarsat Network Coordination Station (NCS) and

then down to the SESs on ships at sea. Communications between the LES and the Inmarsat satellite are in the 6 GHz band (C-band). The satellite routes ship to shore traffic to the LES in the 4 GHz band (C-band). The SESs provide two-way communications between ship and shore. Communications between the SES and the satellite are in the 1.6 GHz band (L-band), while the satellite routes shore to ship traffic to the SES in the 1.5 GHz band (L-band).

Inmarsat provides four satellite communications systems:

- Inmarsat-A, the original Inmarsat system, operates at a transfer rate of up to 9600 bits per second and provides two-way direct-dial phone, telex, facsimile (fax), electronic mail and data communications. Although Inmarsat-A is approved for fitting in ships as part of their GMDSS equipment, it is not mandatory and does not contribute any unique functionality that is not also provided by other equipment in the full GMDSS suite. NOTE: The scheduled withdrawal of Inmarsat-A services will take effect on 31 December 2007.
 - The Inmarsat-B system also provides two-way direct-dial phone, telex, fax and data communications at a transfer rate of up to 9600 bits per second, but uses digital technology to provide high quality, reliable and cost effective communication services.
 - Inmarsat-C provides a store and forward data messaging capability (but no voice) at 600 bits per second, and is qualified by the IMO to comply with the GMDSS requirements for receiving MSI data on board ship. Various equipment manufacturers produce this type of SES, which is small, lightweight, and utilizes an omnidirectional antenna.
 - Inmarsat Fleet F77 is a fully integrated satellite communication service incorporating voice and data applications. It meets the latest distress and safety requirements, as specified in IMO Resolution A.888 (21), for voice pre-emption and prioritization within the GMDSS. Inmarsat Fleet F77 recognizes four levels of priority:
 - distress,
 - urgency,
 - safety, and
 - other routine communicationsand provides access to emergency communications in both ship-to-shore and shore-to-ship directions for distress, urgency and safety traffic originated by RCCs or other SAR authorities.
- NOTE: Inmarsat-A and -B terminals are used for voice and high speed data capability. These terminals must be used in conjunction with a SafetyNET receiver or an Inmarsat-C transceiver. The Inmarsat-C/A and -C/B is the preferred combination for the following reasons:
- A satellite-option vessel must have a transmit capability on either Inmarsat-C/A or -C/B. If the vessel is Inmarsat-A or -B equipped, then the Inmarsat-C provides redundancy.
 - The USCG and the National Weather Service strongly encourage vessels which participate in the voluntary AMVER position reporting and weather observing programs to equip with Inmarsat-C since its data

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reporting capability enables a much less costly report than does the Inmarsat-A or -B, or HF radioteletype formats. These voluntary ship reports will be accepted by the government at no cost to the ship. The data reporting service is also available at very low cost for other brief reports which can be compressed to 32 bytes of data or less.

- Redundancy in selective equipment is not only very desirable but, under GMDSS rules, gives the vessel greater options in how GMDSS equipment is maintained. Ship owners/operators must generally provide shore-based maintenance, onboard maintenance, and limited equipment duplication.
- Vessels are tracked automatically when a navigation receiver is connected to an Inmarsat terminal by programming an automatic transmission of ship position at specified times or by random polling from shore. This is done with the owner/operator's permission. When a navigation receiver is available, it should be connected to the Inmarsat-C, since the Coast Guard distress alerts are broadcast to all ships within a specified distance from a distress scene. The Inmarsat-C processor will print the alert if the ship's position is within the specified area. Alternatively, the ship's position must be entered manually every four hours to facilitate this safety service.

If a ship will accommodate an Inmarsat-C or SafetyNET receiver in addition to an Inmarsat-A or -B receiver, the separate omnidirectional antenna should be used rather than the stabilized, tracking antenna of the Inmarsat-A or -B. The reason for this is to have a completely separate system in case of an Inmarsat-A or -B antenna failure. There is also a primary designated satellite for SafetyNET broadcasts in each of 16 NAVAREAs worldwide, and the Inmarsat-C should guard that designated satellite when in areas of overlapping coverage (i.e., the Inmarsat-C can track the satellite designated for MSI broadcasts and the Inmarsat-A or -B can track the other satellite, if preferred). Ships with both Inmarsat -A/B and -C terminals should designate one as the primary GMDSS terminal. In most cases the Inmarsat-C will be selected to minimize the emergency power requirements.

INMARSAT SERVICES: Enhanced Group Call (EGC) is a message broadcast service within the Inmarsat-C Communications System. It allows terrestrial registered information providers to pass messages or data to mobile Enhanced Group Call (EGC) receivers, class 2 or class 3 SESs, or Inmarsat-A and Inmarsat-B SESs equipped with EGC receivers. EGC messages are sent to the LES by registered shore-based information providers using terrestrial facilities, such as Telex. The messages are processed at the LES and forwarded to a Network Coordination Station (NCS) which transmits them on an NCS common channel. There are two basic services offered by EGC: SafetyNET and FleetNET. SafetyNET is a service provided primarily for the dissemination of MSI, such as ship to shore distress alerts, weather forecasts, and coastal warnings. FleetNET is a commercial communication service which allows registered terrestrial information providers to send messages to predefined groups of subscribers (see EGC Receiver Addressing).

INMARSAT SES CAPABILITY: An EGC receiver is defined as a single channel receiver with a dedicated message processor. SES classes 2 and 3 provide an EGC capability in addition to shore to ship and ship to shore messaging capabilities. The mandatory capabilities of an EGC receiver are defined as:

- Continuous reception of an NCS common channel and processing the information according to EGC protocol.
- Automatic recognition of messages directed to a fixed geographic area, and service codes as selected by the receiver operator.

Additional optional capabilities are required for the reception of FleetNET:

- Automatic recognition of uniquely addressed messages directed to a particular receiver.
- Automatic recognition of messages directed to a group to which the receiver operator subscribes.
- Automatic response to group ID updates directed to that EGC receiver, adding or deleting group IDs as commanded.

The EGC receiver shall be capable of being tuned to any channel in the band 1530.0 MHz to 1545.0 MHz in increments of 5 kHz. The EGC receiver shall be equipped with facilities for storing up to 20 NCS channel numbers. Four of these will be permanently assigned global beam frequencies, which are:

NCS	NCS Common Channel Channel No.	Frequency
AOR-W	11080	1537.7 MHz
AOR-E	12580	1541.45 MHz
POR	12580	1541.45 MHz
IOR	10840	1537.1 MHz

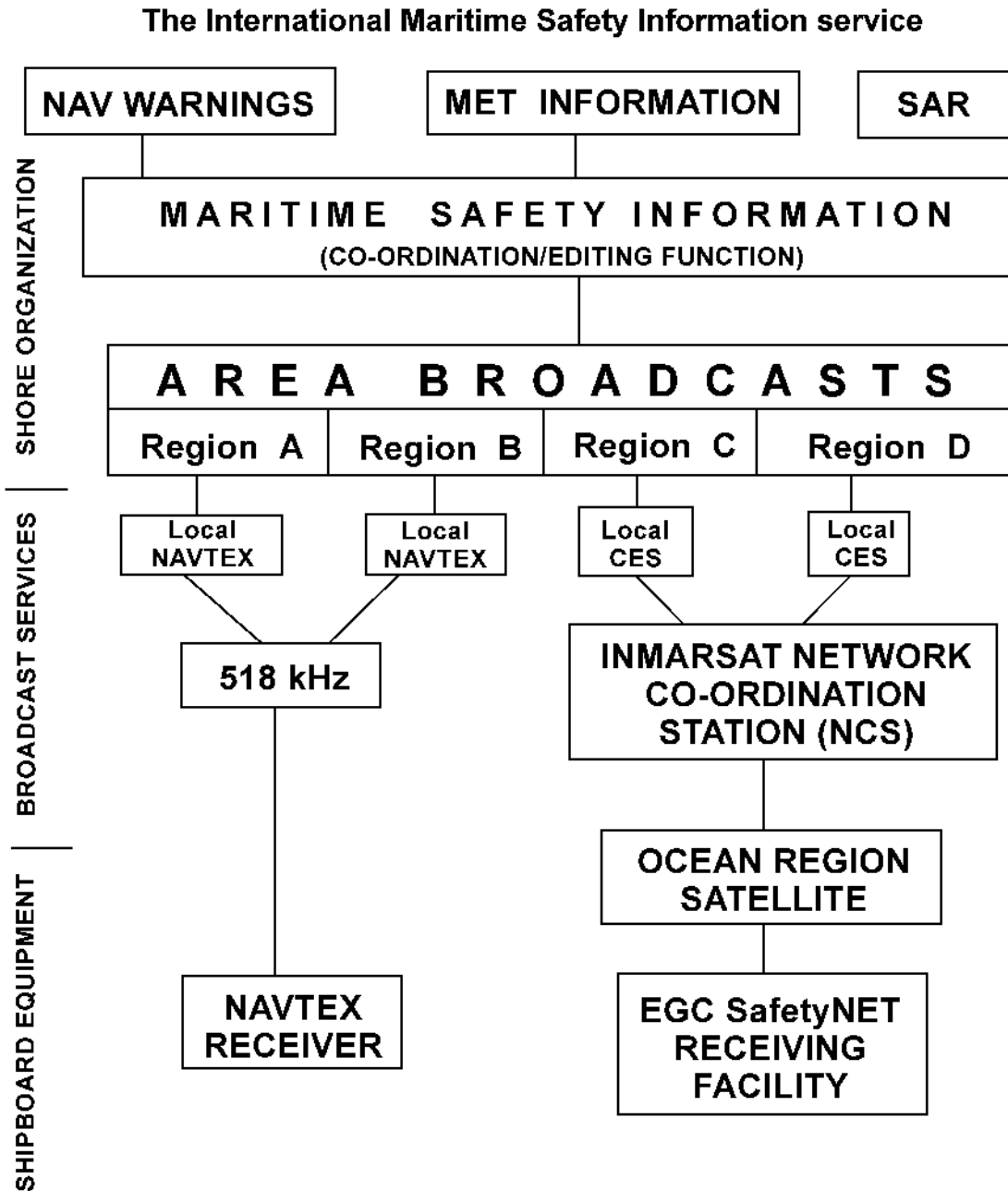
These four numbers shall be stored in ROM and shall not be alterable. The remaining list of NCS Common Channel Frequencies (approximately 16 valid) will be published by Inmarsat and assigned as expansion common channels. These shall be held in non-volatile but alterable storage, and be capable of operator alteration in the event that Inmarsat decides to update the frequency plan by adding, deleting, or changing allocations.

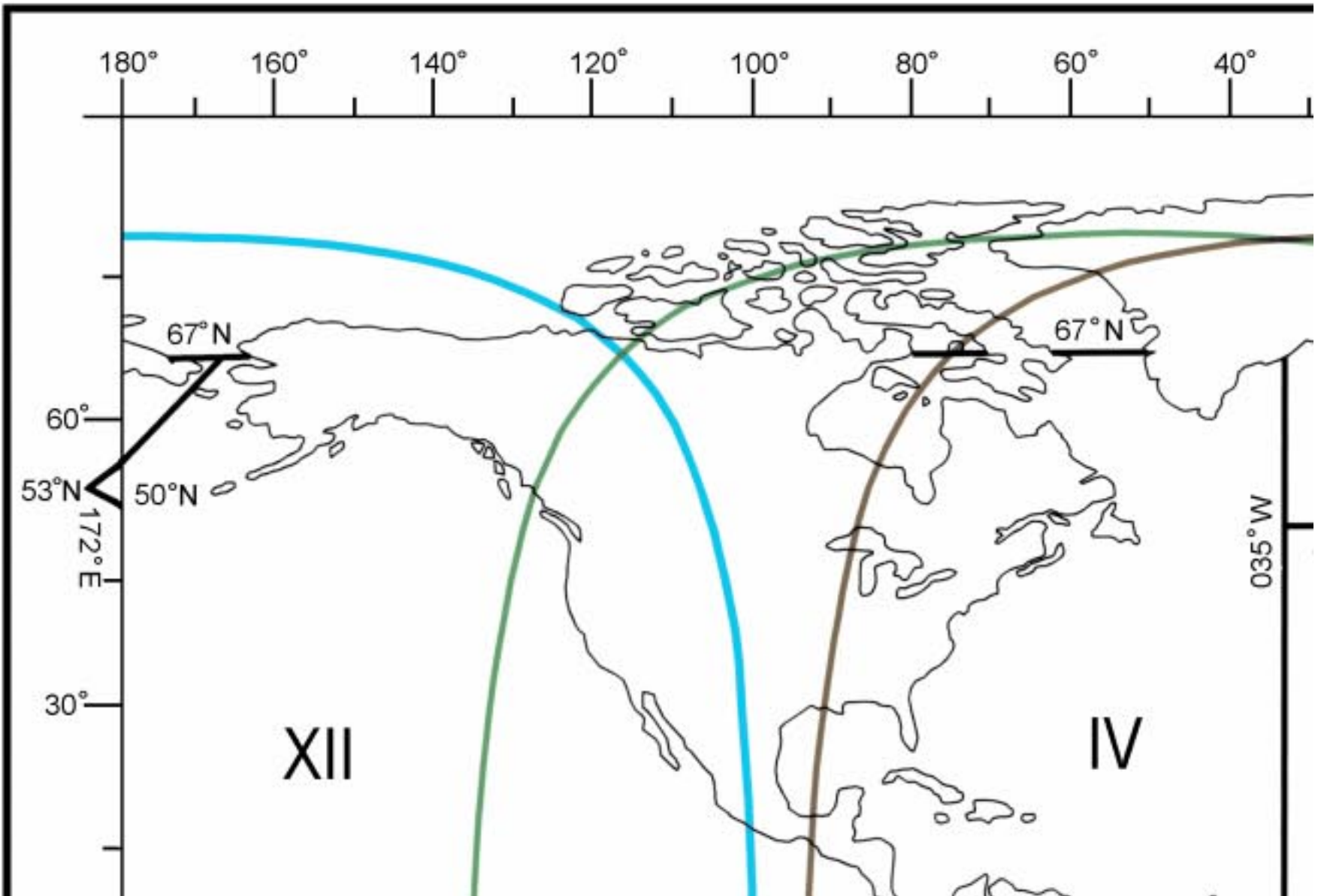
MESSAGE PROCESSING: Message processing will be based on the header field. For messages with a double header, the two packets must be regarded as a single message and will not be printed until completely received, even in the case of multipacket messages. Acceptance or rejection of service code-types shall be under operator control with the following exceptions:

- Receivers shall always receive navigational warnings, meteorological warnings, SAR information, and shore-to-ship distress alerts (which are directed by the geographical area within which the receiver is positioned).
- Unique and group identities shall not be programmable.

EGC RECEIVER ADDRESSING: The five basic methods of addressing EGC receivers are:

- All ships call - urgent marine information.
- Inmarsat System message addressing - receives messages according to type and priority.





COVERAGE OF INMARSAT SATELLITES IN RELATION TO THE EXISTING NAV/MET AREAS

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- Group addressing - FleetNET, group ID stored within receiver, which is accessible only by RF path.
- Unique addressing - FleetNET, allocated by Inmarsat.
- Geographic addressing - messages sent by ship's position.

NOTE: The type of address used in the header of an EGC packet is uniquely determined by the service code field.

Both FleetNET and SafetyNET services make use of a flexible addressing technique to allow the reception of messages from a variety of service providers depending on the particular requirements of the user. The SafetyNET service utilizes geographic area addressing technique to direct messages to ships within a defined boundary.

The FleetNET service employs closer user group and unique receiver addressing to provide secure transmission of a message from the registered terrestrial information provider to the desired recipient(s) (See sec. 400I.).

MESSAGE SEQUENCING: All messages will be transmitted with a unique sequence number and originating LES ID. Each subsequent transmission of the message will contain the original sequence number. When a message has been received error-free and a permanent record made, the unique 16 bit sequence number, the LES ID, and the service code field associated with that message are stored in memory and the information used to inhibit the printing of repeated transmissions of the same message. The EGC receiver should be capable of internally storing at least 255 such message identifications. These message identifications should be stored with an indication of the number of hours that have elapsed since the message was received. Subsequent reception of the same message identification shall reset the timer. After between 60 and 72 hours, message identifications may automatically erase. If the number of received message identifications exceeds the capacity of memory allocated for the store, the oldest message identification may be erased.

TEXT PARAMETERS: For the EGC service, the International Reference Version of the International Alphabet, as defined in the Consultative Committee on International Telephony and Telegraphy (CCITT) Red Book Rec. T.50, is used. Characters are coded as eight bits using odd parity. Other character sets according to International Standards Organization (ISO) 2022 or CCITT Red Book Rec. T.61 are used optionally for certain services. Inmarsat recommends that EGC equipment capable of receiving messages composed using International Telegraph Alphabet No. 2 do not make use of national options for Numbers 6, 7, and 8 in figure case to avoid varying interpretations in the Inmarsat-C System.

ERROR DETECTION: The EGC message will employ three levels of error detection:

- An arithmetic checksum is used to detect packet errors.
- An arithmetic checksum is used to detect header errors.
- Parity checking is used to indicate character errors in the information field.

Only packets with header fields received without error shall be processed for local message recording (even if the packet itself contains an error). In the case of double header messages the message may be processed (even if

one header has been received correctly). A parity check on all incoming characters shall be performed, and in the event of a parity error in a received character, the "low line" character shall be displayed and/or printed. Outputs for multi-packet messages which have been received incomplete should provide a positive indication of the position of the missed packet(s). Subsequent receptions of messages printed with mutilated characters shall be output again until received error-free.

DISTRESS PRIORITY MESSAGES: Receipt of a valid distress or urgency priority message will cause the receiver to give an audible alarm. Provision shall be made to extend this alarm to the station from which the ship is normally navigated or other remote stations. This alarm should be reset in manual mode only.

MESSAGE OUTPUT: Inmarsat recommends that the EGC receiver have a printer. The display or printer, if fitted, must be capable of presenting at least 40 characters per line of text. The EGC receiver should ensure that if a word cannot be accommodated in full on its line, it shall be transferred to the next line. Where a printer is fitted, a local low paper audible alarm should be installed to give advance warning of a low paper condition. This alarm should be of a different pitch/tone so as not to confuse this alarm with that of the distress alarm. All SafetyNET messages shall be annotated with the time (UTC) and date received. This information shall be displayed or printed with the message.

NOTE: The time can be deduced from the frame count.

OPERATOR CONTROLS: The following control functions and displays shall be provided as a minimum indication of EGC carrier frame synchronization (or loss of synchronization):

- Selection of an EGC carrier frequency.
- Means of inputting ship's position, current NAVAREA, or current NAVTEX service coverage area.

Receivers shall be fitted with the operator controls to allow the operator to select the desired geographic area and message categories as previously described (see THE INMARSAT SYSTEM, INMARSAT SES CAPABILITY, and EGC RECEIVER ADDRESSING).

NAVIGATIONAL INTERFACE: In order that a receiver's position be automatically updated for geographically addressed messages, SOLAS requires that Inmarsat-C equipment have an integral navigation receiver or be externally connected to a satellite navigation receiver. A suggested standard interface is National Marine Electronics Association (NMEA) 0183 Standard for Interfacing Electronic Marine Navigational Devices.

400I. The SafetyNET System

SafetyNET is a service of Inmarsat-C's Enhanced Group Call (EGC) system. The EGC system is a method used to specifically address particular regions or ships. Its unique addressing capabilities allow messages to be sent to all vessels in both fixed geographical areas or to predetermined groups of ships. SafetyNET is the service designated by the IMO through which ships receive Maritime Safety Information.

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SafetyNET is an international direct-printing satellite-based service for the promulgation of navigational and meteorological warnings, distress alerts, forecasts, and other safety messages. It fulfills an integral role in GMDSS as developed by the IMO. The ability to receive SafetyNET service information will be generally necessary for all ships that sail beyond coverage of NAVTEX (approximately 200 miles offshore) and is recommended to all administrations having the responsibility for marine affairs and mariners who require effective MSI service in waters not served by NAVTEX.

SafetyNET can direct a message to a given geographic area based on EGC addressing. The area may be fixed, as in the case of a NAVAREA or weather forecast area, or it may be uniquely defined by the originator. This is particularly useful for messages such as local storm warnings or a shore-to-ship distress alerts for which it would be inappropriate to alert ships in an entire ocean region.

SafetyNET messages can be originated by a Registered Information Provider anywhere in the world and broadcast to the appropriate ocean area through an Inmarsat-C LES. Messages are broadcast according to their priority (Distress, Urgency, Safety, or Routine).

Virtually all navigable waters of the world are covered by the operational satellites in the Inmarsat System. Each satellite broadcasts EGC traffic on a designated channel. Any ship sailing within the coverage area of an Inmarsat satellite will be able to receive all the SafetyNET messages broadcast over this channel. The EGC channel is optimized to enable the signal to be monitored by SESs that are dedicated to the reception of EGC messages. This capability can be built into other standard SESs. It is a feature of satellite communications that reception is not generally affected by the position of the ship within the ocean region, atmospheric conditions, or time of the day.

Messages can be transmitted either to geographic areas (area calls) or to groups of ships (group calls):

- Area calls can be to a fixed geographic area, such as one of the 16 NAVAREAs, or to a temporary geographic area selected by the originator. Area calls will be received automatically by any ship whose receiver has been set to one or more fixed areas or recognizes a temporary area by geographic position.
- Group calls will be received automatically by any ship whose receiver acknowledges the unique group identity associated with a particular message.

Reliable delivery of messages is ensured by forward error correction techniques. Experience has demonstrated that the transmission link is generally error-free and low error reception is achieved under normal circumstances.

Given the vast ocean coverage by satellite, some form of discrimination and selectivity in printing the various messages is required. Area calls will be received by all ships within the ocean region coverage of the satellite; however, they will be printed only by those receivers that recognize the fixed area or the geographic position in the message. The message format includes a preamble that enables the microprocessor in a ship's receiver to decide to print those MSI messages that relate to the present

position, intended route, or a fixed area programmed by the operator (See sec. 400H: THE INMARSAT SYSTEM; OPERATOR CONTROLS.). This preamble also allows suppression of certain types of MSI that are not relevant to a particular ship. As each message will also have a unique identity, the reprinting of messages already received correctly is automatically suppressed.

MSI is promulgated by various information providers around the world. Messages for transmission through the SafetyNET service will, in many cases, be the result of coordination between authorities. Information providers will be authorized to broadcast through SafetyNET by IMO. Authorized information providers are:

- National hydrographic offices for navigational warnings.
- National weather services for meteorological warnings and forecasts.
- RCCs for shore-to-ship distress alerts and other urgent information.
- International Ice Patrol for North Atlantic ice hazards.

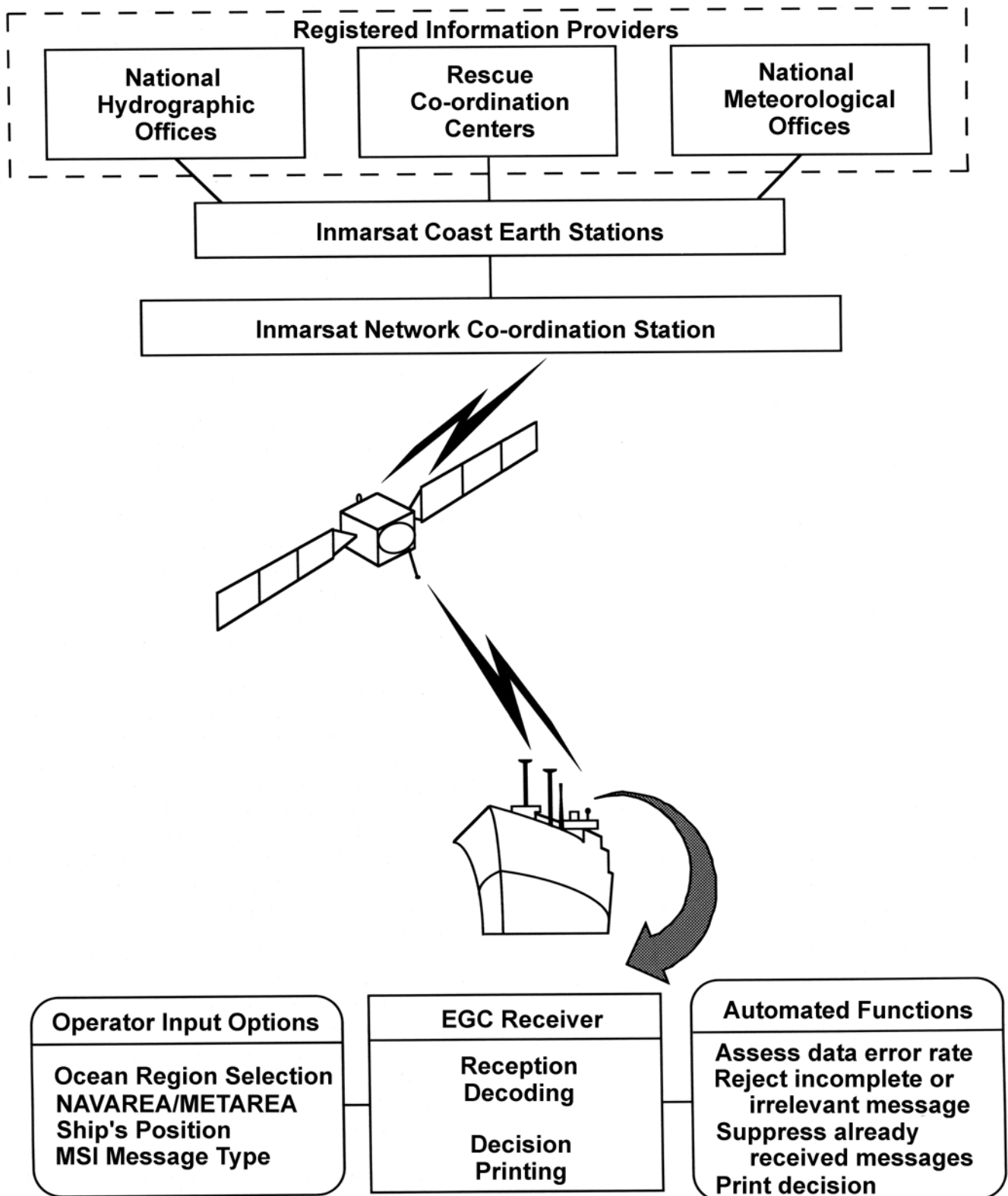
Each information provider prepares their SafetyNET messages with certain characteristics recognized by the EGC service. These characteristics, known as "C" codes, are combined into a generalized message header format as follows: C1:C2:C3:C4:C5. Each "C" code controls a different broadcast criterion and is assigned a numerical value according to available options. A sixth "C" code, "C0," may be used to indicate the ocean region (e.g., AOR-E, AOR-W, POR, IOR) when sending a message to an LES that operates in more than one ocean region. Because errors in the header format of a message may prevent its being released, MSI providers must install an Inmarsat SafetyNET receiver to monitor the broadcasts it originates. This also ensures quality control.

The "C" codes are transparent to the mariner but are used by information providers to identify various transmitting parameters. C1 designates the message priority from distress to urgency, safety, and routine. MSI messages will always be at least at the safety level. C2 is the service code or type of message (for example, long range NAVAREA warning or coastal NAVTEX warning). It also tells the receiver the length of the address (the C3 code) it will need to decode. C3 is the address code. It can be the two digit code for the NAVAREA number for instance, or a 10 digit number to indicate a circular area for a meteorological warning. C4 is the repetition code that instructs the LES in how long and when to send the message to the NCS for actual broadcast. A six minute echo (repeat) may also be used to ensure that an urgency (unscheduled) message has been received by all ships affected. C5 is a constant and represents a presentation code, International Alphabet number 5, "00."

Broadcasts of MSI in the international SafetyNET service are in English. The different types of MSI broadcast over the SafetyNET service include:

- Coastal warnings (broadcast to areas where NAVTEX MSI is not provided):
 - Navigational and meteorological warnings;
 - Ice reports;
 - Search and rescue information;

The International SafetyNET Service system



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STATUS OF MARITIME SAFETY INFORMATION BROADCASTS INTERNATIONAL SafetyNET SERVICE

NAVAREA/ METAREA	NAV WARNINGS	MET FORECASTS & WARNINGS	SAR ALERTS	OCEAN REGION FOR SCHEDULED BROADCASTS
I (UK)	X	X	X	AOR-E
II (France)	X	X	X	AOR-E
III (Spain/Greece)	X	X	X	AOR-E
IV (USA)	X	X	X	AOR-W
V (Brazil)	X	X	X	AOR-E
VI (Argentina)	X	X	X	AOR-W
VII (South Africa)	X	X	X	AOR-E + IOR
VIII (India/Mauritius/La Reunion)	X	X (Note 3)	X	IOR
IX (Pakistan)	X	X	X	IOR
X (Australia)	X	X	X	IOR + POR
XI (Japan/China)	X	X	X	IOR + POR
XII (USA)	X	X	X	POR + AOR-W
XIII (Russian Federation)	X	X	X	POR
XIV (New Zealand)	X	X	X	POR
XV (Chile)	X	X	X	AOR-W
XVI (Peru/USA)	X	X	X	AOR-W

Notes:

1. X = Full Service now available
2. IMO has decided that routine broadcasts of navigational warnings and meteorological forecasts will be made at scheduled times over a single nominated satellite for each NAVAREA/METAREA. Unscheduled broadcasts of SAR Alert Relays and severe weather warnings will be made over all satellites which serve the area concerned. See the Inmarsat Maritime Communications Handbook for further guidance.
3. India provides meteorological forecasts and warnings for METAREA VIII north of the equator through LES Arvi (IOR). Mauritius/La Reunion provide meteorological forecasts and warnings for METAREA VIII south of the equator through LES Burum, Station 12 (IOR).

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- Meteorological forecasts;
- Pilot service messages;
- DECCA, LORAN and SATNAV system messages;
- Other electronic navaid messages;
- Additional navigational messages.
- Meteorological and NAVARIA warnings and meteorological forecasts to ships within specified NAVAREAs/METAREAs.
- Search and rescue coordination to fixed areas.
- Search and rescue coordination to ships within specified circular areas.
- Urgency messages, meteorological and navigational warnings to ships within specified circular areas.
- Shore-to-ship distress alerts to ships within specified circular areas.
- Urgency messages and navigational warnings to ships within specified rectangular.

MSI messages are generally broadcast with a key word in their header indicating the priority of the message, i.e., Distress or MAYDAY for Priority 3, URGENCY or PAN PAN for Priority 2, and SAFETY or SECURITE for Priority 1.

In order to avoid excessive duplication of MSI broadcasts, the IMO has authorized the following arrangements:

- For a given NAVAREA/METAREA which is covered by more than one ocean region satellite, scheduled broadcasts of MSI, such as navigational warnings and meteorological information, are made only through a single nominated satellite/ocean region.
- For a NAVAREA/METAREA which is covered by more than one ocean region satellite, unscheduled broadcasts of MSI, such as gale warnings and distress alert relays, are made through all satellites/ocean regions which cover the area concerned.

SOLAS-compliant vessels must meet the following requirements for receiving MSI broadcasts:

- Watch-keeping - every ship, while at sea, shall maintain a radio watch for broadcasts of Maritime Safety Information on the appropriate frequency or frequencies on which such information is broadcast for the area in which the ship is navigating.
- Logging messages - a written record shall be kept in the radio log of the time and identity of all safety messages received. A printed copy shall be kept of the text of all distress traffic.

In addition to these mandatory requirements, the IMO recommends that all current navigational and meteorological messages be retained on the bridge, for as long as they are applicable, for the use of the person in charge of the navigational watch.

It is recommended that the EGC receiver be updated at least every four hours with the ship's position for the following reasons:

- To decide if the receiver should print a message which it has received addressed to a specific geographic area;
- To print only messages for the required areas (if the ship's position has not been updated for 12 or 24 hours, the receiver will automatically print or store all geographically addressed messages within the entire ocean region);
- To ensure that the correct position is given if a distress alert has to be sent.

SOLAS regulations now require that Inmarsat-C equipment have an integral satellite navigation receiver, or be externally connected to a satellite navigation receiver, e.g., a GPS receiver.

Although an EGC receiver will receive and can print all SafetyNET broadcasts made throughout an entire ocean region, many messages may not be useful to a ship, i.e., those applicable to NAVAREAs beyond the ship's planned voyage, or those on subjects not relevant to the ship's circumstances. Every receiver is supplied with software that stores the geographical boundaries of the NAVAREAs: it can be programmed to print only essential messages applicable to the current area, in addition to any other areas programmed by the operator, and to reject all other messages. The receiver is unable to reject "all ship" messages, such as shore-to-ship distress alerts and MET/NAV warnings.

Under SOLAS requirements, it is mandatory for vessels to receive the following types of SafetyNET MSI messages:

- Shore-to-ship distress alert relays for the current NAVAREA;
- Navigational warnings for the current NAVAREA;
- Meteorological warnings for the current METAREA.

If the ship's EGC receiver does not automatically select these mandatory message types, the operator must program the receiver manually.

In addition, the IMO recommends a ship's EGC receiver be programmed to receive the following messages:

- Meteorological forecasts;
- MSI for any other NAVAREAs in which the ship is expected to sail.

The transmission schedule for the full GMDSS service broadcasts of routine weather bulletins (including warnings) and navigational warnings for the high seas is given in Tables 1 and 2 for the different ocean areas (extracted from ANNEX 8 of the IMO GMDSS Master Plan). The actual ocean region satellites through which these bulletins and warnings are transmitted are also indicated.

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TABLE I - GMDSS TRANSMISSION SCHEDULE FOR INTERNATIONAL SAFETYNET SERVICE BROADCASTS OF ROUTINE WEATHER BULLETINS

NAV/MET AREA	Issuing Country	CES	Broadcast Schedule (UTC)	Ocean Region Satellite
I	United Kingdom	Goonhilly	0930, 2130	AOR-E
II	France	Aussaguel/Goonhilly	0900, 2100	AOR-E/AOR-W
III	Greece ¹	Thermopylae	1000, 2200	AOR-E
IV	United States	Southbury	0430, 1030, 1630, 2230	AOR-W
V	Brazil	Tangua	0130, 0730, 1330, 1930	AOR-E
VI	Argentina	Southbury	0230, 1730	AOR-W
VII	South Africa	Burum	0940, 1940	AOR-E/IOR ²
VIII	India	Arvi	0900, 1800 (N of 0°)	IOR
	Mauritius/La Reunion	Aussaguel	0130, 1330 (S of 0°) 0000 ³ , 0600 ³ , 1200 ³ , 1800 ³ (S of 0°)	IOR IOR/AOR-E
IX	Pakistan	Perth	0700	IOR
X	Australia	Perth	1030, 2330	IOR
			1100, 2300 0550 ⁴ , 1210 ⁴ , 1645 ⁴ , 2300 ⁴ (Bass Strait only)	POR
XI	China	Beijing	0330, 1015, 1530, 2215	IOR
	Japan ⁵	Yamaguchi	0230, 0830, 1430, 2030 (N of 0°) 0815, 2015 (S of 0°)	POR
XII	United States	Southbury/Santa Paula	0545, 1145, 1745, 2345	AOR-W/POR
XIII	Russian Federation	Perth	0930, 2130	POR
XIV	New Zealand	Albany (Auckland)	0930, 2130 0130 ⁴ , 1330 ⁴ (NZ coast only) 0330, 1530 (warnings only)	POR
XV	Chile	Southbury	1845	AOR-W
XVI	United States	Southbury	0515, 1115, 1715, 2315	AOR-W

¹ Scheduled bulletins and warnings for the western Mediterranean Sea are prepared by France.

² Forecast for area 30°S-50°S / 50°E-80°E and tropical cyclone warnings are prepared by La Reunion.

³ Tropical Cyclone warnings if any issued by La Reunion as unscheduled broadcasts.

⁴ Local Time. (The Bass Strait forecasts are Coastal Warnings and Forecasts transmitted only to SafetyNET Coastal Area D in NAVAREA X.)

⁵ Scheduled bulletins and warnings for south of the equator prepared by Australia.

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TABLE II - GMDSS TRANSMISSION SCHEDULE FOR INTERNATIONAL SAFETYNET SERVICE BROADCASTS OF NAVAREA WARNINGS

NAV/MET AREA	Coordinator	CES	Broadcast Schedule (UTC)	Ocean Region Satellite
I	United Kingdom	Goonhilly	1730 & as appropriate	AOR-E
II	France	Aussaguel	1630	AOR-E
III	Spain	Goonhilly	1200, 2400 & on receipt	AOR-E
IV	United States	Southbury	1000, 2200	AOR-W
	French Antilles (C ¹)		0900, 2100	
	French Guiana (A ¹)			
V	Brazil	Tangua	0400, 1230	AOR-E
	French Guiana (A ¹)	Southbury	0900, 2100	
VI	Argentina	Southbury	0200, 1400	AOR-W
VII	South Africa	Burum	1940	AOR-E/IOR
	La Reunion (D ¹)	Aussaguel	0040, 1240	IOR
	Mayotte (V ¹)		0330, 1530	
	Kerguelen (K ¹)		0140, 1340	
VIII	India	Arvi	1000	IOR
	La Reunion (D ¹)	Aussaguel	0040, 1240	IOR
	Mayotte (V ¹)		0330, 1530	
IX	Pakistan	Perth	0800	IOR
X	Australia	Perth	0700, 1900 & on receipt	IOR/POR ²
	New Caledonia (N ¹)	Southbury	0140, 1340	POR
XI	Japan	Yamaguchi	0005, 0805, 1205	IOR/POR
XII	United States	Southbury/Santa Paula	1030, 2230	AOR-W/POR
XIII	Russian Federation	Perth	0930, 2130	POR
XIV	New Zealand	Albany (Auckland)	On receipt & every 12 hrs.	POR
	New Caledonia (N ¹)	Southbury	0140, 1340	POR
	Wallis and Futuna (D ¹)		0030, 1230	
	French Polynesia (R ¹)		0250, 1450	
XV	Chile	Southbury	0210, 1410, 2210	AOR-W
XVI	Peru	Southbury	0519, 1119, 1719, 2319	AOR-W

¹ Coastal area code for Coastal Warnings.

² NAVAREA X Warnings and Australian Coastal Warnings (coastal area codes A to H).

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400J. Digital Selective Calling (DSC)

Digital Selective Calling (DSC) is an integral part of the GMDSS used primarily for transmitting distress alerts from ships and for transmitting the associated acknowledgments from coast stations. DSC is a digital calling system which uses frequencies in the MF, HF or VHF bands. The advantages of DSC include faster alerting capabilities and automatic transmission of information such as ship's identity, time, nature of distress, and position. IMO and ITU regulations both require that the DSC-equipped VHF and MF/HF radios be externally connected to a satellite navigation receiver (e.g. GPS). This connection will ensure that accurate location information is sent to a RCC if a distress alert is transmitted. FCC regulations require that the ship's navigation position is entered, either manually or automatically through a navigation receiver, into all installed DSC equipment at least every four hours while the ship is underway (47 CFR 80.1073).

Since 1 February 1999, the GMDSS provisions to the SOLAS Convention require all passenger ships and most other ships 300 gross tons and over on international voyages, including all cargo ships, to carry DSC-equipped radios. A listening watch aboard GMDSS-equipped ships on 2182 kHz ended on that date. In May 2002, the IMO decided to postpone cessation of a listening watch aboard GMDSS-equipped ships on VHF Channel 16 (156.8 MHz). That listening watch had been scheduled to end on 1 February 2005. Once SOLAS vessels are allowed to disband watchkeeping on VHF radiotelephony, it will not be possible to initiate radio communications with these vessels outside the U.S. territorial limit without DSC-capable radios. The U.S. Coast Guard recommends that VHF, MF and HF radiotelephony equipment carried on ships should include a DSC capability as a matter of safety. To achieve this, the FCC requires that all new VHF and MF/HF maritime radiotelephones type accepted after June 1999 to have at least a basic DSC capability.

The content of a DSC call includes the numerical address of the station (or stations) to which the call is transmitted, the self-identification of the transmitting station, and a message which contains several fields of information indicating the purpose of the call. Various types of DSC calls are available in one of four priorities: Distress, Urgency, Safety or Routine. Routine calls could indicate that a routine communication, e.g., telephony or telegraphy, is required; or they could include calls related to the operation of the ship, e.g., calls to port authorities, pilots, etc.

A receiving station accepting a DSC call receives a display or printout of the address, the self-identification of the transmitting station, and the content of the DSC message, together with an audible or visual alarm (or both) for distress and safety related calls. To increase the probability of a DSC distress call or relay being received, it is repeated several times. The transmission speed of a DSC call is 100 baud at MF and HF and 1200 baud at VHF. Error correction coding is included, involving the transmission of each character twice, together with an

overall message check character which is to ensure the technical integrity of the DSC system.

The following DSC Operational Procedures for Ships were adapted from Annex 3 of ITU Recommendation M.541-8, Operational Procedures for the use of Digital Selective-Calling (DSC) Equipment in the Maritime Mobile Service. Operating procedures may vary somewhat among different radios, depending upon radio design, software configuration, and the DSC processor/radio transceiver connection.

DISTRESS:

Transmission of DSC Distress Alert: A distress alert should be transmitted if, in the opinion of the Master, the ship or a person is in distress and requires immediate assistance. A DSC distress alert should as far as possible include the ship's last known position and the time (in UTC) when it was valid. The position and the time may be included automatically by the ship's navigational equipment or may be inserted manually.

The DSC distress alert is transmitted as follows:

- tune the transmitter to the DSC distress channel (2187.5 kHz on MF, channel 70 on VHF (see Note 1 below));
- if time permits, key in or select on the DSC equipment keyboard (in accordance with the DSC equipment manufacturer's instructions):
 - the nature of the distress;
 - the ship's last known position (latitude and longitude);
 - the time (in UTC) the position was valid;
 - type of subsequent distress communication (telephony).
- transmit the DSC distress alert (see Note 2 below);
- prepare for the subsequent distress traffic by tuning the transmitter and the radiotelephony receiver to the distress traffic channel in the same band, i.e. 2182 kHz on MF, channel 16 on VHF, while waiting for the DSC distress acknowledgment.

NOTE 1: Some maritime MF radiotelephony transmitters shall be tuned to a frequency 1700 Hz lower than 2187.5 kHz, i.e. 2185.8 kHz, in order to transmit the DSC alert on 2187.5 kHz.

NOTE 2: Add to the DSC distress alert, whenever practicable and at the discretion of the person responsible for the ship in distress, the optional expansion in accordance with Recommendation ITU-R M.821, with additional information as appropriate, in accordance with the DSC equipment manufacturer's instructions.

Actions on receipt of a Distress Alert (see Note 1 below): Ships receiving a DSC distress alert from another ship should normally not acknowledge the alert by DSC since acknowledgment of a DSC distress alert by use of DSC is normally made by coast stations only. Only if no other station seems to have received the DSC distress alert, and the transmission of the DSC distress alert continues, the ship should acknowledge the DSC distress alert by use of DSC to terminate the call. The ship should then, in addition, inform a coast station or a coast earth station by any practicable means.

Ships receiving a distress alert from another ship should also defer the acknowledgment of the distress alert by radiotelephony for a short interval, if the ship is within an

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area covered by one or more coast stations, in order to give the coast station time to acknowledge the DSC alert first.

Ships receiving a DSC distress alert from another ship shall:

- watch for the reception of a distress acknowledgment on the distress channel (2187.5 kHz on MF and channel 70 on VHF);
- prepare for receiving the subsequent distress communication by tuning the radiotelephony receiver to the distress traffic frequency in the same band in which the DSC distress alert was received, i.e., 2182 kHz on MF, channel 16 on VHF;
- acknowledge the receipt of the distress alert by transmitting the following by radiotelephony on the distress traffic frequency in the same band in which the DSC distress alert was received, i.e. 2182 kHz on MF, channel 16 on VHF:
 - “MAYDAY;”
 - the 9-digit identity of the ship in distress, repeated 3 times;
 - “this is;”
 - the 9-digit identity or the call sign or other identification of own ship, repeated 3 times;
 - “RECEIVED MAYDAY.”

NOTE 1: Ships out of range of a distress event or not able to assist should only acknowledge if no other station appears to acknowledge the receipt of the DSC distress alert.

Distress Traffic: On receipt of a DSC distress acknowledgment the ship in distress should commence the distress traffic by radiotelephony on the distress traffic frequency (2182 kHz on MF, channel 16 on VHF) as follows:

- “MAYDAY;”
- “this is;”
- the 9-digit identity and the call sign or other identification of the ship;
- the ship’s position in latitude and longitude or other reference to a known geographical location;
- the nature of the distress and assistance wanted;
- any other information which might facilitate the rescue.

Transmission of a DSC Distress Relay Alert: A ship knowing that another ship is in distress shall transmit a DSC distress relay alert if:

- the ship in distress is not itself able to transmit the distress alert;
- the Master of the ship considers that further help is necessary.

The DSC distress relay alert is transmitted as follows:

- tune the transmitter to the DSC distress channel (2187.5 kHz on MF, channel 70 on VHF);
- select the distress relay call format on the DSC equipment;
- key in or select on the DSC equipment keyboard:
 - All Ships Call or the 9-digit identity of the appropriate coast station;
 - the 9-digit identity of the ship in distress, if known;
 - the nature of the distress;
 - the latest position of the ship in distress, if known;
 - the time (in UTC) the position was valid (if known);

– type of subsequent distress communication (telephony).

- transmit the DSC distress relay call;
- prepare for the subsequent distress traffic by tuning the transmitter and the radiotelephony receiver to the distress traffic channel in the same band, i.e. 2182 kHz on MF and channel 16 on VHF, while waiting for the DSC distress acknowledgment.

Acknowledgment of a DSC Distress Relay Alert received from a Coast Station (see Note 1 below): Coast stations, after having received and acknowledged a DSC distress alert, may if necessary, retransmit the information received as a DSC distress relay call, addressed to all ships, all ships in a specific geographical area, a group of ships or a specific ship.

Ships receiving a distress relay call transmitted by a coast station shall not use DSC to acknowledge the call, but should acknowledge the receipt of the call by radiotelephony on the distress traffic channel in the same band in which the relay call was received, i.e. 2182 kHz on MF, channel 16 on VHF.

Acknowledge the receipt of the distress alert by transmitting the following by radiotelephony on the distress traffic frequency in the same band in which the DSC distress relay alert was received:

- “MAYDAY;”
- the 9-digit identity or the call sign or other identification of the calling coast station;
- “this is;”
- the 9-digit identity or call sign or other identification of own ship;
- “RECEIVED MAYDAY.”

NOTE 1: Ships out of range of a distress event or not able to assist should only acknowledge if no other station appears to acknowledge the receipt of the DSC distress alert.

Acknowledgment of a DSC Distress Relay Alert received from another Ship: Ships receiving a distress relay alert from another ship shall follow the same procedure as for acknowledgment of a distress alert, given above.

Cancellation of an inadvertent Distress Alert (Distress Call): A station transmitting an inadvertent distress alert shall cancel the distress alert using the following procedure:

- Immediately transmit a DSC “distress cancellation” if provided in accordance with Recommendation ITU-R M.493, paragraph 8.3.2, e.g. with own ship’s MMSI inserted as identification of ship in distress. In addition cancel the distress alert aurally over the telephony distress traffic channel associated with each DSC channel on which the “distress call” was transmitted.
- Monitor the telephony distress traffic channel associated with the DSC channel on which the distress was transmitted, and respond to any communications concerning that distress alert as appropriate.

URGENCY:

Transmission of Urgency Messages: Transmission of urgency messages shall be carried out in two steps:

- announcement of the urgency message;

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- transmission of the urgency message.

The announcement is carried out by transmission of a DSC urgency call on the DSC distress calling channel (2187.5 kHz on MF, channel 70 on VHF). The urgency message is transmitted on the distress traffic channel (2182 kHz on MF, channel 16 on VHF). The DSC urgency call may be addressed to all stations or to a specific station. The frequency on which the urgency message will be transmitted shall be included in the DSC urgency call.

The transmission of an urgency message is thus carried out as follows:

Announcement:

- tune the transmitter to the DSC distress calling channel (2187.5 kHz on MF, channel 70 on VHF);
- key in or select on the DSC equipment keyboard (in accordance with the DSC equipment manufacturer's instructions):
 - All Ship's Call or the 9-digit identity of the specific station;
 - the category of the call (urgency);
 - the frequency or channel on which the urgency message will be transmitted;
 - the type of communication in which the urgency message will be given (e.g. radiotelephony).
- transmit the DSC urgency call.

Transmission of the urgency message:

- tune the transmitter to the frequency or channel indicated in the DSC urgency call;
- transmit the urgency message as follows:
 - "PAN PAN," repeated 3 times;
 - "ALL STATIONS" or called station, repeated 3 times;
 - "this is;"
 - the 9-digit identity and the call sign or other identification of own ship;
 - the text of the urgency message.

Reception of an Urgency Message: Ships receiving a DSC urgency call announcing an urgency message addressed to all ships shall NOT acknowledge the receipt of the DSC call, but should tune the radiotelephony receiver to the frequency indicated in the call and listen to the urgency message.

SAFETY:

Transmission of Safety Messages: Transmission of safety messages shall be carried out in two steps:

- announcement of the safety message;
- transmission of the safety message.

The announcement is carried out by transmission of a DSC safety call on the DSC distress calling channel (2187.5 kHz on MF, channel 70 on VHF). The safety message is normally transmitted on the distress and safety traffic channel in the same band in which the DSC call was sent, i.e. 2182 kHz on MF, channel 16 on VHF. The DSC safety call may be addressed to all ships, all ships in a specific geographical area or to a specific station. The frequency on which the safety message will be transmitted shall be included in the DSC call.

The transmission of a safety message is thus carried out as follows:

Announcement:

- tune the transmitter to the DSC distress calling channel (2187.5 kHz on MF, channel 70 on VHF);
 - select the appropriate calling format on the DSC equipment (all ships, area call or individual call);
 - key in or select on the DSC equipment keyboard (in accordance with the DSC equipment manufacturer's instructions):
 - specific area or 9-digit identity of specific station, if appropriate;
 - the category of the call (safety);
 - the frequency or channel on which the safety message will be transmitted;
 - the type of communication in which the safety message will be given (e.g. radiotelephony).
 - transmit the DSC safety call.
- Transmission of the safety message:
- tune the transmitter to the frequency or channel indicated in the DSC safety call;
 - transmit the safety message as follows:
 - "SECURITE," repeated 3 times;
 - "ALL STATIONS" or called station, repeated 3 times;
 - "this is;"
 - the 9-digit identity and the call sign or other identification of own ship;
 - the text of the safety message.

Reception of a Safety Message: Ships receiving a DSC safety call announcing a safety message addressed to all ships shall NOT acknowledge the receipt of the DSC safety call, but should tune the radiotelephony receiver to the frequency indicated in the call and listen to the safety message.

PUBLIC CORRESPONDENCE:

DSC Channels for Public Correspondence:

- VHF: The VHF DSC channel 70 is used for DSC for distress and safety purposes as well as for DSC for public correspondence.
- MF: International and national DSC channels separate from the DSC distress and safety calling channel 2187.5 kHz are used for digital selective-calling on MF for public correspondence. Ships calling a coast station by DSC on MF for public correspondence should preferably use the coast station's national DSC channel. The international DSC channel for public correspondence may as a general rule be used between ships and coast stations of different nationality. The ships transmitting frequency is 2189.5 kHz, and the receiving frequency is 2177 kHz. The frequency 2177 kHz is also used for digital selective-calling between ships for general communication.

Transmission of a DSC Call for Public Correspondence to a Coast Station or another Ship: A DSC call for public correspondence to a coast station or another ship is transmitted as follows:

- tune the transmitter to the relevant DSC channel;
- select the format for calling a specific station on the DSC equipment;
- key in or select on the DSC equipment keyboard (in accordance with the DSC equipment manufacturer's instructions):
 - the 9-digit identity of the station to be called;

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- the category of the call (routine);
- the type of subsequent communication (normally radiotelephony);
- a proposed working channel if calling another ship. (A proposal for a working channel should NOT be included in calls to a coast station; the coast station will in its DSC acknowledgment indicate a vacant working channel.)
- transmit the DSC call.

Repeating a Call: A DSC call for public correspondence may be repeated on the same or another DSC channel, if no acknowledgment is received within 5 minutes. Further call attempts should be delayed at least 15 minutes, if acknowledgment is still not received.

Acknowledgment of a received Call and Preparation for Reception of the Traffic: On receipt of a DSC call from a coast station or another ship, a DSC acknowledgment is transmitted as follows:

- tune the transmitter to the transmit frequency of the DSC channel on which the call was received;
- select the acknowledgment format on the DSC equipment;
- transmit an acknowledgment indicating whether the ship is able to communicate as proposed in the call (type of communication and working frequency);
- if able to communicate as indicated, tune the transmitter and the radiotelephony receiver to the indicated working channel and prepare to receive the traffic.

Reception of Acknowledgment and further Actions: When receiving an acknowledgment indicating that the called station is able to receive the traffic, prepare to transmit the traffic as follows:

- tune the transmitter and receiver to the indicated working channel;
- commence the communication on the working channel by:
 - the 9-digit identity or call sign or other identification of the called station;
 - “this is;”
 - the 9-digit identity or call sign or other identification of own ship.

It will normally rest with the ship to call again a little later in case the acknowledgment from the coast station indicates that the coast station is not able to receive the traffic immediately. In case the ship, in response to a call to another ship, receives an acknowledgment indicating that the other ship is not able to receive the traffic immediately, it will normally rest with the called ship to transmit a call to the calling ship when ready to receive the traffic.

TESTING THE EQUIPMENT USED FOR DISTRESS AND SAFETY:

Testing on the exclusive DSC distress and safety calling frequency 2187.5 kHz should be avoided as far as possible by using other methods. No test transmission should be made on VHF DSC calling channel 70. Test calls should be transmitted by the ship station and acknowledged by the called coast station. Normally there would be no further communication between the two stations involved.

A test call to a coast station is transmitted as follows:

- tune the transmitter to the DSC distress and safety calling frequency 2187.5 kHz;
- key in or select the format for the test call on the DSC equipment (in accordance with the DSC equipment manufacturer’s instructions);
- key in the 9-digit identity of the coast station to be called;
- transmit the DSC call after checking as far as possible that no calls are in progress on the frequency;
- wait for acknowledgment.

SPECIAL CONDITIONS AND PROCEDURES FOR DSC COMMUNICATION ON HF:

General: The procedures for DSC communication on HF are - with some additions described below - equal to the corresponding procedures for DSC communications on MF/HF. Due regard to the special conditions described below should be given when making DSC communications on HF.

DISTRESS:

Transmission of DSC Distress Alert: DSC distress alert should be sent to coast stations - e.g. in A3 and A4 sea areas on HF - and on MF and/or VHF to other ships in the vicinity. The DSC distress alert should as far as possible include the ship’s last known position and the time (in UTC) it was valid. If the position and time is not inserted automatically from the ship’s navigational equipment, it should be inserted manually.

Ship-to-shore Distress Alert (Choice of HF band): Propagation characteristics of HF radio waves for the actual season and time of the day should be taken into account when choosing HF bands for transmission of DSC distress alert. As a general rule the DSC distress channel in the 8 MHz maritime band (8414.5 kHz) may in many cases be an appropriate first choice. Transmission of the DSC distress alert in more than one HF band will normally increase the probability of successful reception of the alert by coast stations.

DSC distress alert may be sent on a number of HF bands in two different ways:

- (1) either by transmitting the DSC distress alert on one HF band, and waiting a few minutes for receiving acknowledgment by a coast station;
 - if no acknowledgment is received within 3 minutes, the process is repeated by transmitting the DSC distress alert on another appropriate HF band etc.;
- (2) or by transmitting the DSC distress alert at a number of HF bands with no, or only very short, pauses between the calls, without waiting for acknowledgment between the calls.

It is recommended to follow procedure (1) in all cases, where time permits to do so; this will make it easier to choose the appropriate HF band for commencement of the subsequent communication with the coast station on the corresponding distress traffic channel.

Transmitting the DSC Alert (see Note 1 below):

- tune the transmitter to the chosen HF DSC distress channel (4207.5, 6312, 8414.5, 12577, 16804.5 kHz) (see Note 2);

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- follow the instructions for keying in or selection of relevant information on the DSC equipment keyboard as described earlier;
- transmit the DSC distress alert.

In special cases, for example in tropical zones, transmission of DSC distress alert on HF may, in addition to ship-to-shore alerting, also be useful for ship-to-ship alerting.

NOTE 1: Ship-to-ship distress alert should normally be made on MF and/or VHF, using the procedures for transmission of DSC distress alert on MF/HF described earlier.

NOTE 2: Some maritime HF transmitters shall be tuned to a frequency 1700 Hz lower than the DSC frequencies given above in order to transmit the DSC alert on the correct frequency.

Preparation for the subsequent Distress Traffic: After having transmitted the DSC distress alert on appropriate DSC distress channels (HF, MF and/or VHF), prepare for the subsequent distress traffic by tuning the radiocommunication set(s) (HF, MF and/or VHF as appropriate) to the corresponding distress traffic channel(s).

If method (2) described above has been used for transmission of DSC distress alert on a number of HF bands:

- take into account in which HF band(s) acknowledgment has been successfully received from a coast station;
- if acknowledgments have been received on more than one HF band, commence the transmission of distress traffic on one of these bands, but if no response is received from a coast station then the other bands should be used in turn.

The distress traffic frequencies are:

HF (kHz):

Telephony	Telex
4125	4177.5
6215	6268
8291	8376.5
12290	12520
16420	16695

MF (kHz):

Telephony	Telex
2182	2174.5

VHF:

Channel 16 (156.800 MHz)

Distress Traffic: The procedures described earlier are used when the distress traffic on MF/HF is carried out by radiotelephony.

The following procedures shall be used in cases where the distress traffic on MF/HF is carried out by radiotelex:

- the forward error correcting (FEC) mode shall be used unless specifically requested to do otherwise;
- all messages shall be preceded by:

- at least one carriage return;
 - line feed;
 - one letter shift;
 - the distress signal “MAYDAY.”
- the ship in distress should commence the distress telex traffic on the appropriate distress telex traffic channel as follows:
- carriage return, line feed, letter shift;
 - the distress signal “MAYDAY;”
 - “this is;”
 - the 9-digit identity and call sign or other identification of the ship;
 - the ship’s position if not included in the DSC distress alert;
 - the nature of the distress;
 - any other information which might facilitate the rescue.

Actions on Reception of a DSC Distress Alert on HF from another Ship: Ships receiving a DSC distress alert on HF from another ship shall not acknowledge the alert, but should:

- watch for reception of a DSC distress acknowledgment from a coast station;
- while waiting for reception of a DSC distress acknowledgment from a coast station: prepare for reception of the subsequent distress communication by tuning the HF radiocommunication set (transmitter and receiver) to the relevant distress traffic channel in the same HF band in which the DSC distress alert was received, observing the following conditions:
 - if radiotelephony mode was indicated in the DSC alert, the HF radiocommunication set should be tuned to the radiotelephony distress traffic channel in the HF band concerned;
 - if telex mode was indicated in the DSC alert, the HF radiocommunication set should be tuned to the radiotelex distress traffic channel in the HF band concerned. Ships able to do so should additionally watch the corresponding radiotelephony distress channel;
- if the DSC distress alert was received on more than one HF band, the radiocommunication set should be tuned to the relevant distress traffic channel in the HF band considered to be the best one in the actual case. If the DSC distress alert was received successfully on the 8 MHz band, this band may in many cases be an appropriate first choice;
- if no distress traffic is received on the HF channel within 1 to 2 minutes, tune the HF radiocommunication set to the relevant distress traffic channel in another HF band deemed appropriate in the actual case;
- if no DSC distress acknowledgment is received from a coast station within 3 minutes, and no distress communication is observed going on between a coast station and the ship in distress:
 - transmit a DSC distress relay alert;
 - inform a Rescue Coordination Center via appropriate radiocommunications means.

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Transmission of DSC Distress Relay Alert: In case it is considered appropriate to transmit a DSC distress relay alert:

- considering the actual situation, decide in which frequency bands (MF, VHF, HF) DSC distress relay alert(s) should be transmitted, taking into account ship-to-ship alerting (MF, VHF) and ship-to-shore alerting;
- tune the transmitter(s) to the relevant DSC distress channel, following the procedures described above;
- follow the instructions for keying in or selection of call format and relevant information on the DSC equipment keyboard as described earlier;
- transmit the DSC distress relay alert.

Acknowledgment of a HF DSC Distress Relay Alert received from a Coast Station: Ships receiving a DSC distress relay alert from a coast station on HF, addressed to all ships within a specified area, should NOT acknowledge the receipt of the relay alert by DSC, but by radiotelephony on the telephony distress traffic channel in the same band(s) in which the DSC distress relay alert was received.

URGENCY:

Transmission of urgency messages on HF should normally be addressed:

- either to all ships within a specified geographical area;
- or to a specific coast station.

Announcement of the urgency message is carried out by transmission of a DSC call with category urgency on the appropriate DSC distress channel. The transmission of the urgency message itself on HF is carried out by radiotelephony or radiotelex on the appropriate distress traffic channel in the same band in which the DSC announcement was transmitted.

Transmission of DSC Announcement of an Urgency Message on HF:

- choose the HF band considered to be the most appropriate, taking into account propagation characteristics for HF radio waves at the actual season and time of the day; the 8 MHz band may in many cases be an appropriate first choice;
- tune the HF transmitter to the DSC distress channel in the chosen HF band;
- key in or select call format for either geographical area call or individual call on the DSC equipment, as appropriate;
- in case of area call, key in specification of the relevant geographical area;
- follow the instructions for keying in or selection of relevant information on the DSC equipment keyboard as described earlier, including type of communication in which the urgency message will be transmitted (radiotelephony or radiotelex);
- transmit the DSC call;
- if the DSC call is addressed to a specific coast station, wait for DSC acknowledgment from the coast station. If acknowledgment is not received within a few minutes, repeat the DSC call on another HF frequency deemed appropriate.

Transmission of the Urgency Message and subsequent Action:

- tune the HF transmitter to the distress traffic channel (telephony or telex) indicated in the DSC announcement;
- if the urgency message is to be transmitted using radiotelephony, follow the procedure described earlier;
- if the urgency message is to be transmitted by radiotelex, the following procedure shall be used:
 - use the forward error correcting (FEC) mode unless the message is addressed to a single station whose radiotelex identity number is known;
- commence the telex message by:
 - at least one carriage return, line feed, one letter shift;
 - the urgency signal “PAN PAN;”
 - “this is;”
 - the 9-digit identity of the ship and the call sign or other identification of the ship;
 - the text of the urgency message.

Announcement and transmission of urgency messages addressed to all HF equipped ships within a specified area may be repeated on a number of HF bands as deemed appropriate in the actual situation.

Reception of an Urgency Message: Ships receiving a DSC urgency call announcing an urgency message shall NOT acknowledge the receipt of the DSC call, but should tune the radiocommunication receiver to the frequency and communication mode indicated in the DSC call for receiving the message.

SAFETY:

The procedures for transmission of DSC safety announcement and for transmission of the safety message are the same as for urgency messages, described for Urgency, except that:

- in the DSC announcement, the category SAFETY shall be used;
- in the safety message, the safety signal “SECURITE” shall be used instead of the urgency signal “PAN PAN.”

PUBLIC CORRESPONDENCE ON HF:

The procedures for DSC communication for public correspondence on HF are the same as for MF. Propagation characteristics should be taken into account when making DSC communication on HF. International and national HF DSC channels different from those used for DSC for distress and safety purposes are used for DSC for public correspondence. Ships calling a HF coast station by DSC for public correspondence should preferably use the coast station’s national DSC calling channel.

TESTING THE EQUIPMENT USED FOR DISTRESS AND SAFETY ON HF:

The procedure for testing the ship’s equipment used for DSC distress, urgency and safety calls on HF by transmitting DSC test calls on HF DSC distress channels is the same as for testing on the MF DSC distress frequency 2187.5 kHz.

NOTE: In an effort to reduce the number of DSC relays of Distress Alerts on all shipboard DSC equipment, the IMO has issued COMSAR/Circ.25 (dated 15 March 2001) which modifies Recommendation ITU-R M.541-8 and provides new procedures for responding to VHF/MF and HF distress alerts.

Circ.25 is summarized as follows:

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- Distress relays and acknowledgments of all types should only be sent on the Master's authority.
- Ships should not acknowledge DSC Alerts by sending a return DSC call; they should acknowledge only by radiotelephony.
- Ships receiving a DSC Distress Alert on VHF Ch. 70 or MF 2187.5 kHz are not permitted to relay the call by DSC under any circumstances (they may relay by other means).
- Ships receiving a DSC Distress Alert on HF should wait for a period of 5 minutes of manual watchkeeping to ascertain whether it has been acknowledged by DSC, radiotelephony or NBDP, before manually relaying it only to the appropriate coast station.
- Ships may only send a Distress Relay Alert (Distress Alert on behalf of another vessel), if the following two conditions both apply:
 - the ship in distress is not itself able to transmit its own distress alert, and
 - the Master of the ship considers that further help is necessary.

The distress relay call should be addressed to "all ships" or to the appropriate coast station.

Flow diagrams, which describe the actions to be taken aboard ships upon receipt of DSC distress alerts from other ships, can be found on pgs. 4-47 and 4-49. The IMO recommends that these flow diagrams be displayed on the ship's bridge.

400K. Use of GMDSS Equipment for Routine Telecommunications

GMDSS telecommunications equipment should not be reserved for emergency use only. The IMO has issued COMSAR/Circ.17 (dated 9 March 1998) which recommends and encourages mariners to use that equipment for routine as well as safety telecommunications. The following recommendation is extracted from Circ.17:

Use of GMDSS equipment for transmission of general radiocommunications is one of the functional requirements specified in SOLAS chapter IV, regulation 4. Regular use of GMDSS equipment helps to develop operator competency and ensure equipment availability. If ships use other radiocommunication systems for the bulk of their business communications, they should adopt a regular program of sending selected traffic or test messages via GMDSS equipment to ensure operator competency and equipment availability and to help reduce the incidence of false alerts. This policy extends to all GMDSS equipment suites including Digital Selective Calling (DSC) on VHF, MF and HF, to the Inmarsat-A, -B and -C systems, and to any duplicated VHF and long-range communications facilities.

400L. Instructions for Canceling Inadvertent Distress Alerts

A false alert is any distress transmitted for any reason when a real distress situation does not actually exist. Most

such alerts are inadvertent and can be traced to equipment problems and human error (caused by improper use of GMDSS equipment). A few, however, are deliberately transmitted as a hoax, made easier by GMDSS equipment that is not properly registered. Many are from non-GMDSS sources, especially in the 121.5 MHz frequency band.

False alerts obstruct efficient and effective SAR services and are detrimental because they:

- Cause delays which may cost lives and prolong or worsen human suffering.
- Adversely affect mariner safety.
- Waste limited resources.
- Erode the confidence of both mariners and SAR personnel.
- Divert SAR facilities, making them less available should a real distress situation arise.
- Congest and drive up the costs of communications.

The following instructions, extracted from IMO Resolution A.814(19), are for canceling an inadvertent distress alert:

– DIGITAL SELECTIVE CALLING:

– VHF:

- Switch off the transmitter immediately (this applies when the false alert is detected during transmission);
- Switch equipment on and set to Channel 16;
- Make broadcast to "All Stations" giving name of vessel, call sign and DSC number, and cancel the false distress alert.

Example:

All Stations, All Stations, All Stations

This is NAME, CALL SIGN, DSC NUMBER, POSITION.

Cancel my distress alert of DATE, TIME UTC.

=Master, NAME, CALL SIGN, DSC NUMBER, DATE, TIME UTC

–MF

- Switch off the transmitter immediately (this applies when the false alert is detected during transmission);
- Switch equipment on and tune for radiotelephony transmission on 2182 kHz;
- Make broadcast to "All Stations" giving name of vessel, call sign and DSC number, and cancel the false distress alert.

Example:

All Stations, All Stations, All Stations,

This is NAME, CALL SIGN, DSC NUMBER, POSITION.

Cancel my distress alert of DATE, TIME UTC.

=Master, NAME, CALL SIGN, DSC NUMBER, DATE, TIME UTC

–HF:

- As for MF but the alert must be canceled on all the frequency bands in which it was transmitted: the

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

transmitter should be tuned consecutively to the radiotelephony distress frequencies in the 4, 6, 8, 12 and 16 MHz bands, as necessary.

– INMARSAT-C:

- Notify the appropriate Rescue Coordination Center (RCC) to cancel the alert by sending a distress priority message via the same CES through which the false distress alert was sent.

Example:

This is NAME, CALL SIGN, IDENTITY NUMBER, POSITION.

Cancel my Inmarsat-C distress alert of DATE, TIME UTC.

=Master +

– EPIRBs:

- If, for any reason, an EPIRB is activated accidentally, the ship should contact the nearest coast station or an appropriate coast earth station or RCC and cancel the distress alert.

NOTE: Keep the EPIRB activated until an appropriate RCC can be contacted to cancel the alert. (This reduces incomplete alerts and uncertainty associated with why an EPIRB signal ceased.)

Notwithstanding the above, a ship may use any means available to them to inform the appropriate authorities that a false alert has been transmitted and should be canceled. No action will normally be taken against any ship or mariner for reporting and canceling a false distress alert. However, in view of the serious consequences of false alerts, and the strict ban on their transmission, Governments may prosecute in cases of repeated violation.

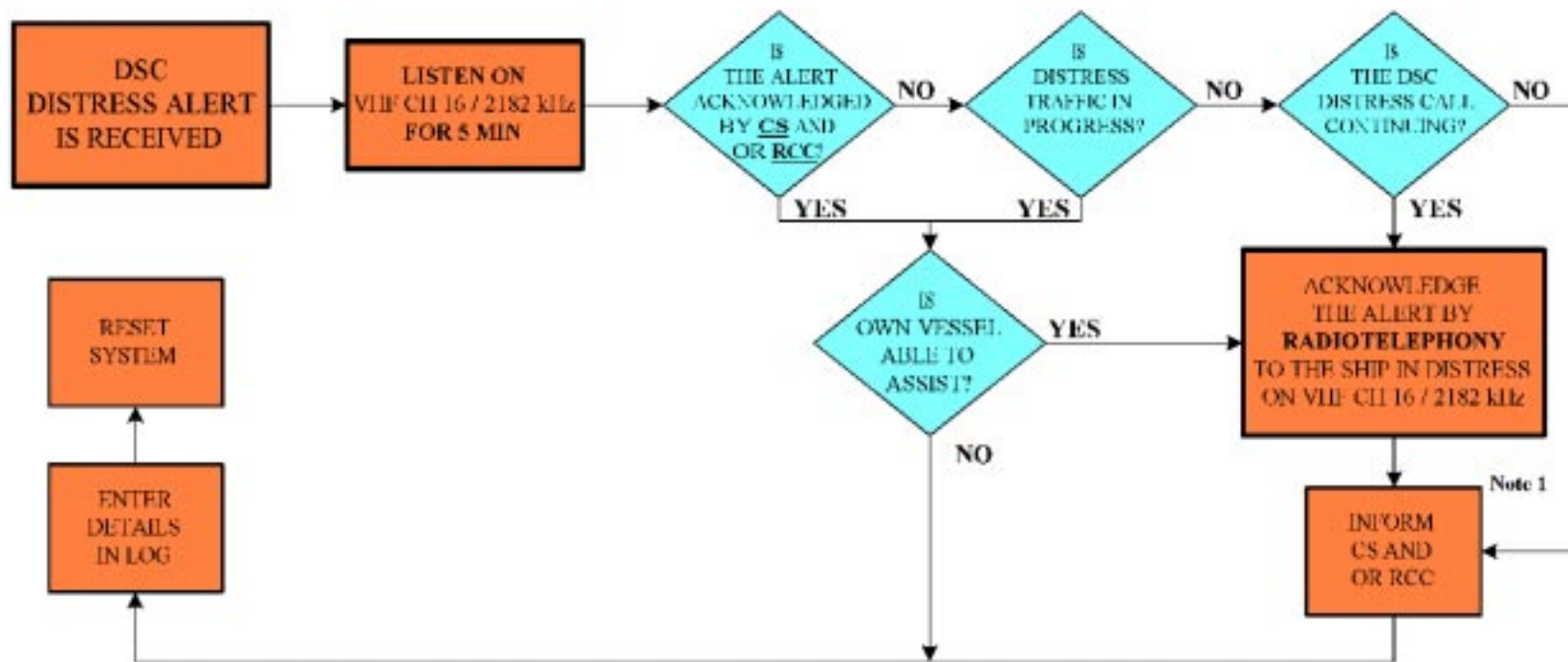
The following guidelines, extracted from IMO Resolution A.814(19), are recommended for reducing the chance of a false distress alert aboard ship:

- Ensure that all GMDSS certificated personnel responsible for sending a distress alert have been instructed about, and are competent to operate, the particular radio equipment on the ship.
- Ensure that the person(s) responsible for communication during distress incidents give the necessary instructions and information to all crew members on how to use GMDSS equipment to send a distress alert.
- Ensure that as part of each abandon ship drill, instruction is given on how emergency equipment should be used to provide GMDSS functions.
- Ensure that GMDSS equipment testing is only undertaken under the supervision of the person responsible for communications during distress incidents.
- Ensure that GMDSS equipment testing or drills are never allowed to cause false distress alerts.

- Ensure that coded identities of satellite EPIRBs, which are used by SAR personnel responding to emergencies, are properly registered in a database accessible 24 hours a day or automatically provided to SAR authorities (Masters should confirm that their EPIRBs have been registered with such a database, to help SAR services identify the ship in the event of distress and rapidly obtain other information which will enable them to respond appropriately (See sec. 400F.)).
- Ensure that EPIRB, Inmarsat and DSC registration data is immediately updated if there is any change in information relating to the ship such as owner, name or flag, and that the necessary action is taken to reprogram the ship's new data in the GMDSS equipment concerned.
- Ensure that, for new ships, positions for installing EPIRBs are considered at the earliest stage of ship design and construction.
- Ensure that satellite EPIRBs are carefully installed in accordance with the manufacturers' instructions and using qualified personnel (sometimes satellite EPIRBs are damaged or broken due to improper handling or installation. They must be installed in a location that will enable them to float free and automatically activate if the ship sinks. Care must be taken to ensure that they are not tampered with or accidentally activated. If the coding has to be changed or the batteries serviced, manufacturers' requirements must be strictly followed. There have been cases where EPIRB lanyards were attached to the ship so that the EPIRB could not float free; lanyards are only to be used by survivors for securing the EPIRB to a survival craft or person in the water).
- Ensure that EPIRBs are not activated if assistance is already immediately available (EPIRBs are intended to call for assistance if the ship is unable to obtain help by other means, and to provide position information and homing signals for SAR units).
- Ensure that, if a distress alert has been accidentally transmitted, the ship makes every reasonable attempt to communicate with the RCC by any means to cancel the false distress alert using the instructions given above.
- Ensure that, if possible, after emergency use, the EPIRB is retrieved and deactivated.
- Ensure that when an EPIRB is damaged and needs to be disposed of, if a ship is sold for scrap, or if for any other reason a satellite EPIRB will no longer be used, the satellite EPIRB is made inoperable, either by removing its battery and, if possible, returning it to the manufacturer, or by demolishing it.

NOTE: If the EPIRB is returned to the manufacturer, it should be wrapped in tin foil to prevent transmission of signals during shipment.

ACTIONS BY SHIPS UPON RECEPTION OF **VHF / MF DSC** DISTRESS ALERT



REMARKS:

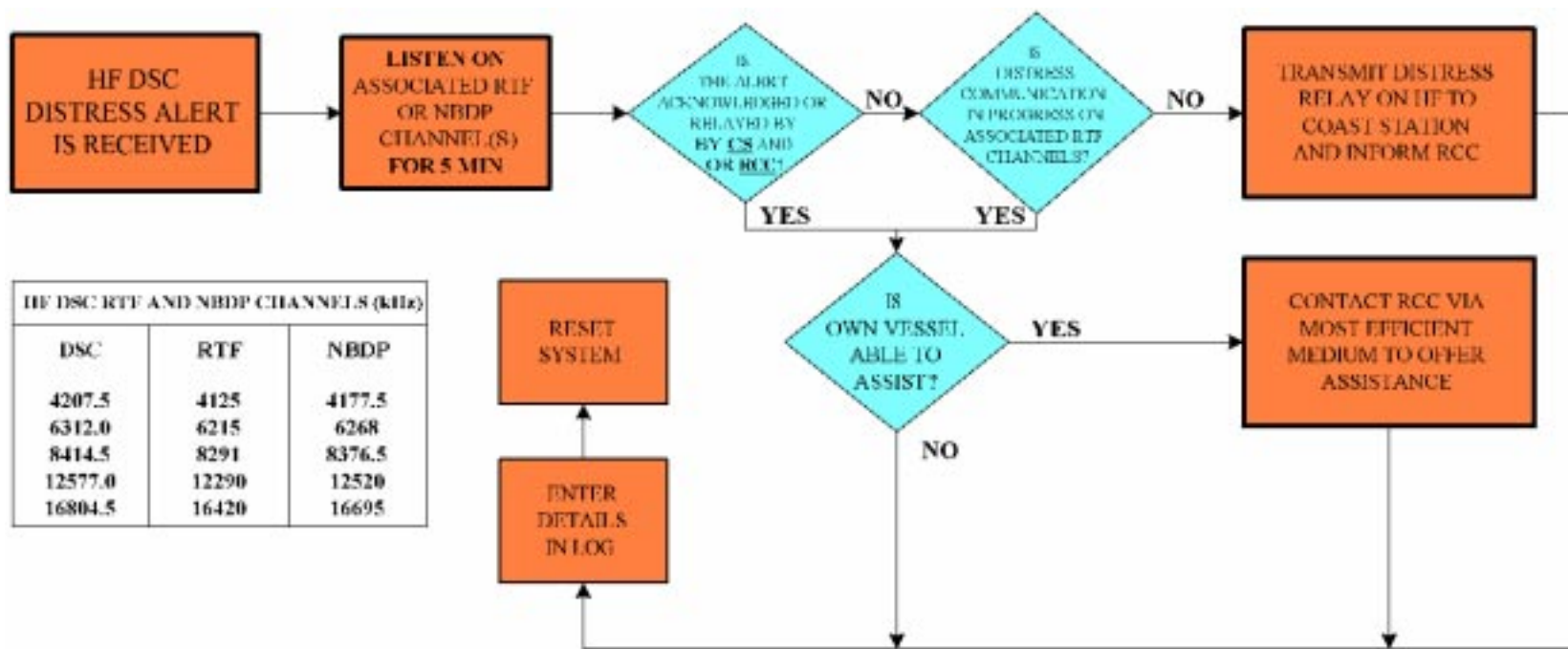
Note 1: Appropriate or relevant RCC and/or Coast Station shall be informed accordingly. If further DSC alerts are received from the same source and the ship in distress is beyond doubt in the vicinity, a DSC acknowledgment may, after consultation with an RCC or Coast Station, be sent to terminate the call.

Note 2: In no case is a ship permitted to transmit a DSC distress relay call on receipt of a DSC distress alert on either VHF Channel 70 or MF Channel 2187.5 kHz.

CS = Coast Station

RCC = Rescue Coordination Center

ACTIONS BY SHIPS UPON RECEPTION OF **HF DSC** DISTRESS ALERT



REMARKS:

Note 1: If it is clear the ship or persons in distress are not in the vicinity and/or other crafts are better placed to assist, superfluous communications which could interfere with search and rescue activities are to be avoided. Details should be recorded in the appropriate logbook.

Note 2: The ship should establish communications with the station controlling the distress as directed and render such assistance as required and appropriate.

Note 3: Distress relay calls should be initiated manually.

CS = Coast Station

RCC = Rescue Coordination Center

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LIST OF OPERATIONAL VHF DSC COAST STATIONS FOR SEA AREAS A1

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Belgium	Antwerpen	002050485	51-13N 04-23E	25	Oostende
		Oostende	002050480	51-11N 02-48E	25	
	Denmark	Lyngby	002191000	-	-	SOK, Aarhus
		Kobenhavn		55-41N 12-36E	29	
		Vejby		56-04N 12-07E	30	
		Roesnaes		55-44N 10-56E	35	
		Anholt		56-42N 11-35E	28	
		Fornaes		56-26N 10-56E	32	
		Vejle		55-40N 09-30E	42	
		Als		54-57N 09-33E	41	
		Karleby		54-52N 11-11E	36	
		Mern		55-03N 11-59E	45	
		Aarsballe		55-08N 14-52E	42	
		Laesoe		57-17N 11-03E	34	
		Frejlev		57-00N 09-49E	44	
		Blavand		55-33N 08-06E	33	
		Skagen		57-44N 10-34E	29	
		Hirtshals		57-31N 09-57E	31	
		Hanstholm		57-06N 08-39E	34	
		Bovbjerg		56-31N 08-10E	34	
		Torshavn (Færoes)	002311000	-	-	Torshavn
		Torshavn		62-01N 06-49W	56	
		Fugloy		62-20N 06-19W	68	
		Mykines		62-06N 07-35W	64	
		Suderoy		61-25N 06-44W	57	
	Estonia	Tallinn	002760100	59-24N 24-40E	20	MRCC Tallinn
		Toila	002761000	59-25N 27-31E	32	
		Eisma		59-33N 26-17E	30	
		Aabla		59-35N 25-31E	30	
		Suurupi		59-27N 24-22E	30	
		Dirhami		59-12N 23-30E	30	
		Kopu		58-55N 22-12E	35	
		Orissaare		58-33N 23-40E	35	
		Undva		58-29N 21-59E	30	
		Torgu		57-58N 22-04E	28	
		Ruhnu		57-48N 23-14E	28	
		Tostamaa		58-18N 23-59E	30	
	Finland	Turku	002300230	-	-	MRCC Turku
		Kemi		65-49N 24-32E	30.0	MRSC Vassa 002303000
		Hailuoto		65-02N 24-36E	27.4	
		Kalajoki		64-18N 24-11E	47.0	
		Kokkola		63-50N 23-10E	34.0	
		Raippaluoto		63-22N 21-19E	31.8	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Finland (cont.)	Kristiinankaupunki	002300230	62-16N 21-24E	35.6	MRSC Vassa 002303000
		Pori		61-36N 21-27E	15.9	MRSC Turku 002301000
		Rauma		61-08N 21-33E	28.2	
		Uusikaupunki		60-48N 21-23E	31.8	
		Geta		60-23N 19-51E	37.6	
		Brandö		60-24N 21-03E	25.2	
		Utö		59-47N 21-22E	22.7	
		Järsö		60-01N 20-00E	35.6	
		Korppoo		60-10N 21-33E	30.3	
		Naantali		60-27N 22-03E	32.5	
		Hanko		59-50N 22-56E	25.9	MRSC Helsinki 002302000
		Porkkala		59-59N 24-26E	30.0	
		Santahamina/ Helsinki		60-09N 25-02E	30.0	
		Sondby		60-16N 25-51E	25.9	
		Kotka		60-29N 26-53E	28.7	
		Virolahti		60-36N 27-50E	32.5	
	France	Gris Nez	002275100	50-52N 01-35E	23	MRCC Gris Nez
		Dunkerque		51-03N 02-21E	22	
		Saint Frieux		50-40N 01-35E	38	
		L'Ailly		49-55N 00-57E	28	
		Jobourg	002275200	49-44N 01-54W	42	MRCC Jobourg
		Antifer		49-41N 00-09E	33	
		Ver-sur-Mer		49-20N 00-34W	27	
		Gatteville		49-42N 01-16W	26	
		Granville		48-52N 01-35W	26	
		Roches Douvres		49-06N 02-49W	25	
		Corsen	002275300	48-24N 04-47W	27	MRCC Corsen
		Cap Frehel		48-41N 02-19W	28	
		Batz		48-44N 04-01W	27	
		Stiff Ouessant		48-28N 05-03W	34	
		Bodic		48-48N 03-05W	25	
		Pointe du Raz		48-02N 04-43W	24	
	Germany	Bremen Rescue Radio	002111240	53-05N 08-48E	25	MRCC Bremen
		Rügen		54-21N 13-45E	27	
		Arkona		54-34N 13-36E	31	
		Darss		54-24N 12-27E	30	
		Rostock		54-10N 12-06E	33	
		Kiel		54-18N 10-07E	37	
		Lübeck		54-13N 10-43E	46	
		Flensburg		54-44N 09-30E	29	
		Norddeich		53-34N 07-06E	24	
		Cuxhaven		53-50N 08-39E	24	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Germany (cont.)	Helgoland	002111240	54-11N 07-53E	33	MRCC Bremen
		Sylt		54-55N 08-18E	28	
		Eiderstedt		54-20N 08-47E	24	
		Hamburg		53-33N 09-58E	44	
	Ireland	MRCC Dublin	002500300	-	-	MRCC Dublin
		Dublin		53-23N 06-04W	40	
		Wicklow Head		52-58N 06-00W	30	
		Rosslare		52-19N 06-34W	44	
		Mine Head		52-00N 07-35W	30	
		MRSC Valentia	002500200	-	-	MRSC Valentia
		Cork		51-51N 08-29W	40	
		Bantry		51-38N 10-00W	60	
		Valentia		51-52N 10-21W	54	
		Shannon		52-31N 09-36W	50	
		MRSC Malin Head	002500100	-	-	MRSC Malin Head
		Clifden		53-30N 09-56W	50	
		Belmullet		54-16N 10-03W	25	
		Glen Head		54-44N 08-40W	47	
		Malin Head		55-22N 07-16W	49	
	Latvia	Riga Rescue Radio	002750100	56-58N 24-05E	20	MRCC Riga
	Lithuania	Klaipeda Rescue	002770330	55-43N 21-06E	40	MRCC Klaipeda
		Nida		55-18N 20-59E	40	
		Shventoji		56-01N 21-05E	40	
	Netherlands	Netherlands Coast Guard	002442000	52-28N 04-37E	25	JRCC IJmuiden
		West Kappelle		51-31N 03-28E	25	
		Goes		51-30N 03-53E	25	
		Rotterdam		51-52N 04-26E	25	
		Hook of Holland		51-59N 04-07E	25	
		Scheveningen		52-05N 04-15E	25	
		Huisdinen		52-58N 04-43E	25	
		Schiermonnikoog		53-29N 06-10E	25	
		Wieringerwerf		52-54N 05-03E	25	
		West Terschelling		53-21N 05-12E	25	
		Continental Shelf		53-34N 04-12E	25	
		Appingedam		53-20N 06-51E	25	
		Enkhuizen		52-44N 05-11E	25	
		Hilversum		52-11N 05-11E	25	
	Norway	Tjome	002570100	-	-	MRCC Stavanger
		Halden		59-11N 11-26E	53	
		Oslo		59-59N 10-40E	62	
		Drammen		59-40N 10-26E	24	
		Tjome		59-05N 10-25E	28	
		Porsgrunn		59-14N 09-42E	66	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Norway (cont.)	Risor	002570100	58-43N 09-12E	35	MRCC Stavanger
		Farsund	002570200	-	-	MRCC Stavanger
		Arendal		58-17N 08-28E	36	
		Kristiansand		58-04N 07-59E	36	
		Lindesnes		58-01N 07-04E	40	
		Farsund		58-04N 06-45E	29	
		Storefjell		58-09N 06-43E	52	
		Rogaland	002570300	-	-	MRCC Stavanger
		Ekofisk (Rig)		56-32N 03-13E	30	
		Draupner (Rig)		58-11N 02-28E	30	
		Sleipner A (Rig)		58-22N 01-54E	30	
		Bjerkreim		58-38N 05-58E	66	
		Stavanger		58-56N 05-43E	40	
		Bokn		59-13N 05-26E	50	
		Haugesund		59-25N 05-20E	47	
		Bergen	002570400	-	-	MRCC Stavanger
		Stord		59-52N 05-30E	74	
		Sotra		60-19N 05-07E	53	
		Bergen		60-25N 05-22E	65	
		Knarvik		60-35N 05-20E	59	
		Grimo		60-24N 06-40E	69	
		Oseberg (Rig)		60-30N 02-50E	30	
		Florø	002570500	-	-	MRCC Stavanger
		Gulen		61-02N 05-10E	73	
		Sogndal		61-14N 07-06E	93	
		Kinn		61-34N 04-47E	52	
		Bremanger		61-52N 05-00E	74	
		Raudeberg		62-00N 05-09E	38	
		Sagtennene		61-54N 06-07E	85	
		Snorre		61-27N 02-09E	31	
		Gullfaks		61-11N 02-11E	30	
		Ørlandet	002570600	-	-	MRCC Stavanger/Bodø
		Nerlandshorn		62-21N 05-33E	59	
		Hjorunganes		62-21N 06-07E	19	
		Aksla		62-29N 06-12E	41	
		Gamlemsveten		62-35N 06-19E	80	
		Molde		62-45N 07-08E	59	
		Reinsfjell		62-56N 07-56E	84	
		Kristiansund		63-07N 07-42E	34	
		Littlefonni		63-23N 08-43E	56	
		Forbordsfjell		63-32N 10-54E	66	
		Mosvik		63-46N 10-58E	55	
		Kopparen		63-48N 09-45E	64	
		Yttervåg		64-18N 10-18E	34	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Norway (cont.)	Namsos	002570600	64-27N 11-32E	58	MRCC Stavanger/Bodø
		Rorvik		64-53N 11-14E	43	
		Åsgård B (Rig)		65-07N 06-47E	30	
		Heidrun (Rig)		65-20N 07-19E	30	
		Bodø	002570700	-	-	MRCC Bodø
		Vega		65-38N 11-54E	75	
		Horva		66-01N 12-49E	57	
		Mo		66-13N 13-45E	71	
		Traenfjord		66-32N 12-49E	53	
		Meloy		66-51N 13-38E	50	
		Rønvikfjell		67-18N 14-27E	41	
		Fornesfjell		67-26N 15-27E	68	
		Værøy		67-40N 12-38E	59	
		Steigen		67-50N 15-00E	77	
		Fredvang		68-06N 13-11E	21	
		Hagskaret		68-10N 13-42E	36	
		Kvalnes		68-21N 13-57E	40	
		Svolvaer		68-24N 15-07E	18	
		Hadsel		68-33N 14-53E	61	
		Vesteralen		68-57N 15-01E	30	
		Stamnes		68-49N 15-29E	13	
		Andenes		69-17N 16-01E	54	
		Lodingen		68-24N 15-58E	13	
		Harstad		68-48N 16-31E	36	
		Sorollnes		68-44N 16-50E	13	
		Narvik		68-28N 17-10E	48	
		Kistefjell		69-18N 18-08E	85	
		Tromso		69-39N 18-57E	36	
		Tonsnes		69-43N 19-08E	47	
		Hillesoy		69-39N 18-00E	41	
		Sandoy		70-03N 18-32E	57	
		Bjørnøya		74-31N 19-01E	40	
		Vardø	002570800	-	-	MRCC Bodø
		Torsvaag		70-15N 19-30E	23	
		Trolltind		70-04N 20-26E	78	
		Skjervoy		70-01N 20-59E	37	
		Helligfjell		70-07N 22-56E	63	
		Fuglen		70-39N 21-58E	55	
		Tyven		70-38N 23-42E	57	
		Havoysund		71-00N 24-36E	49	
		Honningsvaag		70-59N 25-54E	56	
		Oksen		70-58N 27-21E	51	
		Mehamn		71-03N 28-07E	49	
		Berlevaag		70-52N 29-05E	40	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Norway (cont.)	Tana	002570800	70-28N 28-13E	65	MRCC Bodø
		Baatsfjord		70-39N 29-42E	49	
		Vardø		70-20N 31-02E	40	
		Varangefjord		70-05N 29-49E	41	
		Kirkenes		69-45N 30-08E	44	
		Svalbard	002570900	-	-	MRCC Bodø
		Isfjord		78-02N 13-40E	23	
		Longyearbyen		78-15N 15-24E	21	
		Kongsvegpasset		78-45N 13-30E	78	
	Poland	Szczecin	002610110	53-28N 14-35E	-	MRCC Gdynia
		Swinoujscie		53-55N 14-15E	20	
		Grzywacz		53-57N 14-30E	35	
		Kolowo		53-20N 14-40E	40	
		Witowo	002610210	54-33N 16-32E	-	
		Kolorzeg		53-10N 15-33E	25	
		Barzowice		54-29N 16-30E	30	
		Rowakol		54-39N 17-13E	35	
		Gdynia	002610310	54-32N 18-32E	-	
		Rozewie		54-50N 18-20E	25	
		Oksywie		54-32N 18-32E	30	
		Krynica Morska		54-23N 19-27E	20	
	Russian Federation	Saint Petersburg	002733700	59-53N 30-13E	27	MRCC Saint Petersburg
		Vyborg	002734415	60-42N 28-43E	17.5	
		Kaliningrad	002734417	54-58N 19-59E	26	MRSC Kaliningrad
	Sweden	Göteborg	002653000	-	-	MRCC Göteborg
		Umeå		63-50N 19-49E	59	
		Väddö		59-58N 18-50E	37	
		Svenska Högarne		59-27N 19-30E	21	
		Stockholm		59-18N 18-10E	50	
		Skellefteå		64-46N 20-57E	49	
		Seskarö		65-44N 23-44E	24	
		Luleå		65-32N 21-55E	36	
		Mjällom		62-59N 18-23E	48	
		Härnösand		62-36N 17-55E	40	
		Sundsvall		62-24N 17-28E	40	
		Hudiksvall		61-42N 16-51E	60	
		Gävle		60-38N 17-08E	42	
		Öregrund		60-30N 18-24E	30	
		Västerås		59-38N 16-24E	45	
		Södertälje		59-13N 17-37E	35	
		Torö		58-49N 17-51E	31	
		Norrköping		58-40N 16-28E	49	
		Gotska Sandön		58-23N 19-14E	27	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Sweden (cont.)	Fårö	002653000	57-52N 19-00E	30	MRCC Göteborg
		Visby		57-35N 18-22E	48	
		Hoburgen		56-56N 18-13E	30	
		Västervik		57-43N 16-25E	50	
		Borgholm		56-51N 16-42E	30	
		Ölands Södra		56-14N 16-27E	28	
		Karlskrona		56-14N 15-39E	32	
		Kivik		55-40N 14-09E	44	
		Trelleborg		55-29N 13-16E	36	
		Helsingborg		56-02N 12-41E	32	
		Falkenberg		56-50N 12-41E	39	
		Göteborg		57-41N 12-03E	47	
		Hunnebostrand		58-25N 11-25E	34	
		Strömstad		58-55N 11-10E	30	
		Vänersborg		58-19N 12-16E	27	
		Kinnekuile		58-36N 13-24E	48	
		Karlsborg (Vättern)		58-40N 14-34E	38	
	United Kingdom	Falmouth	002320014	50-08N 05-07W	25	MRCC Falmouth
		Lizard		49-59N 05-12W	27	
		Scillies		49-56N 06-18W	26	
		Lands End		50-08N 05-39W	44	
		St. Ives		50-13N 05-28W	19	
		Trevose Head		50-33N 05-02W	29	
		Bude		50-49N 04-33W	21	
		Brixham	002320013	-	-	MRSC Brixham
		Rame Head		50-19W 04-13W	30	
		East Prawle		50-13N 03-42W	35	
		Dartmouth		50-21N 03-35W	32	
		Berry Head		50-24N 03-29W	27	
		Portland	002320012	-	-	MRSC Portland
		Grove		50-33N 02-25W	33	
		Binkleaves		50-36N 02-27W	15	
		Beer Head		50-41N 03-06W	36	
		Hengistbury Head		50-43N 01-46W	21	
		Solent	002320011	-	-	MRSC Solent
		Boniface Down (Tx)		50-36N 01-12W	45	
		Stenbury Down (Rx)		50-37N 01-14W	45	
		Selsey Bill		50-44N 00-48W	17	
		Newhaven		50-47N 00-03W	27	
		Jersey Radio (Channel Islands)	002320060	49-11N 02-14W	35	
		Dover (Rx)	002320010	51-08N 01-21E	34	MRCC Dover

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	United Kingdom (cont.)	West Hougham (Rx)	002320010	51-07N 01-15E	39	MRCC Dover
		Fairlight		50-52N 00-40E	34	
		Northforeland		51-22N 01-27E	25	
		Thames	002320009	51-52N 01-16E	18	MRSC Thames
		Shoeburyness		51-31N 00-46E	17	
		Bradwell		51-44N 00-54E	16	
		Bawdsey		51-52N 01-25E	27	
		Yarmouth	002320008	52-36N 01-43E	16	MRCC Yarmouth
		Lowestoft		52-29N 01-46E	16	
		Trimingham		52-55N 01-21E	29	
		Langham		52-57N 00-57E	26	
		Skegness		53-09N 00-21E	20	
		Trusthorpe		53-20N 00-17E	24	
		Humber	002320007	-	-	MRSC Humber
		Easington		55-39N 00-06E	21	
		Flamborough		54-08N 00-06W	27	
		Whitby		54-29N 00-36W	29	
		Tyne Tees	002320006	55-01N 01-25W	23	MRSC Tyne Tees
		Hartlepool		54-42N 01-11W	19	
		Newton		55-31N 01-37W	24	
		Forth	002320005	56-17N 02-35W	21	MRSC Forth
		St. Abbs		55-54N 02-12W	43	
		Craigkelly		56-04N 03-19W	45	
		Aberdeen	002320004	-	-	MRCC Aberdeen
		Gregness		57-08N 02-03W	25	
		Inverbervie		56-51N 02-16W	37	
		Peterhead		57-31N 01-46W	18	
		Windy Head		57-39N 02-14W	43	
		Banff		57-38N 02-31W	31	
		Thrumster		58-24N 03-07W	38	
		Rosemarkie		57-38N 04-05W	43	
		Foyers		57-14N 04-31W	44	
		Noss Head		58-29N 03-03W	21	
		Dunnet Head		58-40N 03-22W	30	
		Ben Tongue		58-30N 04-24W	50	
		Durness		58-34N 04-44W	26	
		Shetland	002320001	60-09N 01-08W	26	MRSC Shetland
		Wideford Hill		58-59N 03-01W	44	
		Compass Head		59-52N 01-16W	32	
		Fitful Head		59-54N 01-23W	47	
		Collafirth Hill		60-32N 01-23W	46	
		Saxa Vord		60-50N 00-50W	46	
		Stornoway	002320024	-	-	MRSC Stornoway

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	United Kingdom (cont.)	Butt of Lewis	002320024	58-31N 06-16W	18	MRSC Stornoway
		Forsnaval		58-13N 07-00W	43	
		Rodel		57-45N 06-58W	29	
		Clettraval		55-37N 07-27W	36	
		Scoval		57-28N 06-42W	45	
		Barra		57-01N 07-30W	30	
		Melvaig		57-51N 05-47W	48	
		Skriaig		57-23N 06-14W	20	
		Arisaig		56-55N 05-50W	35	
		Limavady		55-06N 06-53W	53	
		Port Naguran		58-15N 06-10W	24	
		Clyde	002320022	55-58N 04-48W	20	MRCC Clyde
		Law Hill		55-42N 04-50W	41	
		Rhu Stafnish		55-22N 05-32W	44	
		Kilchiaran		55-46N 06-27W	37	
		South Knapdale		55-55N 05-28W	62	
		Glengorm		56-38N 06-08W	47	
		Tiree		56-30N 06-57W	33	
		Torosay		56-27N 05-44W	59	
		Pulpitt Hill		56-28N 05-28W	20	
		Belfast	002320021	-	-	MRSC Belfast
		Orlock Head		54-40N 05-35W	22	
		Slieve Martin		54-06N 06-10W	61	
		Black Mountain		54-35N 06-01W	53	
		West Torr		55-12N 06-05W	41	
		Liverpool	002320019	53-30N 03-03W	17	MRSC Liverpool
		Blackpool Tower		53-49N 03-03W	36	
		Walney Light		54-03N 03-11W	18	
		Snaefell		54-16N 04-28W	70	
		Spanish Head		54-04N 04-46W	38	
		Caldbeck		54-44N 03-03W	23	
		Holyhead	002320018	53-19N 04-38W	18	MRSC Holyhead
		Rhiw		52-50N 04-38W	51	
		South Stack		53-18N 04-42W	38	
		Great Orme		53-20N 03-51W	43	
		Milford Haven	002320017	-	-	MRSC Milford Haven
		Tenby		51-42N 04-41W	29	
		St. Ann's Head		51-40N 05-11W	35	
		Dinas Head		52-00N 04-54W	43	
		Blaenplwyf		52-22N 04-06W	53	
		Swansea	002320016	-	-	MRCC Swansea
		Gower		51-34N 04-17W	27	
		Mumbles Hill		51-34N 03-59W	29	
		St. Hilary		51-27N 03-24W	37	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	United Kingdom (cont.)	Severn Bridge	002320016	51-37N 02-39W	34	MRCC Swansea
		Combe Martin		51-10N 04-03W	47	
		Ilfracombe		51-13N 04-05W	27	
		Hartland Point		51-01N 04-31W	34	
II	Benin	Cotonou	006100001	06-21N 02-26E	N.I.	
	France	Etel	002275000	47-40N 03-12W	26	MRCC Etel
		Penmarc'h		47-48N 04-22W	28	
		Groix		47-39N 03-30W	24	
		Belle Ile		47-19N 03-14W	27	
		Kerrouault		47-28N 02-21W	33	
		Armandeche		46-29N 01-48W	21	
		Yeu		46-43N 02-23W	24	
		Soulac		45-30N 01-08W	24	
		Chassiron		46-03N 01-25W	22	
		Cap Ferret		44-39N 01-15W	22	
		Contis		44-06N 01-19W	23	
		Hourtin		45-09N 01-10W	23	
		Biarritz		43-30N 01-33W	26	
	Ghana	Tema	006270000	05-37N 00-00	-	Harbor Master's Office Accra
		Winneba		05-21N 00-37W	60	
		Aflao		06-07N 01-11W	60	
		Tema		05-38N 00-00	60	
		Cape Coast		05-07N 01-15W	60	
		Half Assini		05-03N 02-53W	60	
		Takoradi		04-54N 01-45W	60	
		Axim		04-52N 02-14W	60	
		Ada		05-47N 00-38W	60	
	Spain	Bilbao (CCR)	002241021	-	-	MRCC Bilbao
		Pasajes		43-17N 01-55W	35	
		Bilbao		43-17N 03-02W	35	
		Santander		43-25N 03-36W	35	MRCC Santander
		Cabo Penas		43-26N 05-35W		MRCC Gijon
		Navia		43-25N 06-50W		
		MRCC Bilbao	002240996	43-21N 03-02W	30	MRCC Bilbao
		MRCC Santander	002241009	43-28N 03-43W	30	MRCC Santander
		MRCC Gijon	002240997	43-34N 05-42W	30	MRCC Gijon
		MRSC Coruna	002240992	-	-	MRSC Coruna
		Coruna		43-22N 08-23W	30	
		Cabo Priorino		43-28N 08-20W	30	
		Coruna (CCR)	002241022	-	-	
		Cabo Ortegal		43-35N 07-47W	35	MRCC Finisterre
		Coruna		43-22N 08-27W	35	MRSC Coruna
		Finisterre		42-55N 09-17W	35	MRCC Finisterre
		Vigo		42-10N 08-41W	35	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
II	Spain (cont.)	La Guardia	002241022	41-53N 08-52W	35	MRCC Finisterre
		MRCC Finisterre	002240993	-	-	
		Finisterre		42-42N 08-59W	40	
		Monte Beo		43-20N 08-50W	40	
		Monte Xastas		43-02N 09-16W	40	
		Monte Taume		42-36N 09-03W	40	
		MRSC Vigo	002240998	42-14N 08-43W	30	MRSC Vigo
		MRSC Cadiz	002241011	36-30N 06-20W	30	MRSC Cadiz
		MRCC Tarifa	002240994	-	-	MRCC Tarifa
		Tarifa		36-01N 05-35W	30	
		Punta Almina		35-54N 05-17W	30	
		Cape Trafalgar		36-12N 06-01W	30	
		MRSC Algeciras	002241001	36-07N 05-26W	30	MRSC Algeciras
		Malaga (CCR)	002241023	-	-	MRCC Tarifa
		Huelva		37-13N 07-07W	35	MRSC Huelva
		Cadiz		36-21N 06-17W	35	MRSC Cadiz
		Tarifa		36-03N 05-33W	35	MRCC Tarifa
		MRCC Tenerife	002241007	28-29N 16-14W	30	MRCC Las Palmas
		Tenerife (CCR)	002241025	-	-	
		Arrecife		29-08N 13-31W	45	MRCC Las Palmas
		Fuerteventura		28-33N 13-55W	35	
		Tenerife		28-27N 16-23W	50	MRCC Tenerife
		Las Palmas		27-58N 15-33W	60	MRCC Las Palmas
		Gomera		28-06N 17-06W	35	MRCC Tenerife
		Hierro		27-48N 17-55W	35	
		La Palma		28-39N 17-50W	35	
		MRCC Las Palmas	002240995	-	-	MRCC Las Palmas
		Las Palmas		28-09N 15-25W	30	
		La Isleta		28-10N 15-25W	30	
III	Bulgaria	Varna	002070810	43-15N 27-57E	52	MRCC Varna
		Kaliakra		43-21N 28-28E	27	
		Emona		42-43N 27-32E	55	
		Papia		42-06N 27-51E	61	
	Croatia	Split	002380100	43-30N 16-28E	70	MRCC Rijeka
		Ucka		45-17N 14-12E	90	
		Kamenjak		44-46N 14-47E	50	
		Sv. Mihovil		44-04N 15-10E	40	
		Labistica		43-34N 16-13E	80	
		Vidova Gora		43-17N 16-37E	50	
		Vis		43-13N 16-07E	70	
		Uljenje		42-54N 17-29E	70	
		Srdj		43-39N 18-07E	50	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
III	Croatia (cont.)	MRCC Rijeka	002387010 002387020	45-19E 14-27E	15	MRCC Rijeka
	Cyprus	Cyprus	002091000	35-07N 33-20E	-	RCC Larnaca
		Pissouri		34-39N 32-41E	50	RCC Episcopi
		Olympos		34-56N 32-51E	120	
		Kionia		34-55N 33-11E	100	
	France	Agde	002275410	43-29N 06-54E	31	MRCC La Garde MRCC Agde
		Pic Neoulos		42-29N 02-57E	94	
		Espiguette		43-29N 04-08E	93	
		La Garde	002275400	43-06N 05-59E	23	MRCC LaGarde
		Planier		43-12N 05-14E	25	
		Coudon		43-10N 06-10E	72	
		Pic de l'Ours		43-28N 06-54E	62	
		Aspretto	002275420	41-55N 08-46E	-	MRCC La Garde MRSC Corse
		Ersa		43-58N 09-23E	64	
		Serra Di Pigno		42-52N 09-24E	83	
		Piana		42-14N 08-38E	69	
		Punta		41-57N 08-42E	75	
		Serragia		41-31N 08-57E	58	
		Conca		41-44N 09-20E	54	
	Georgia	Poti	002130300	42-09N 41-39E	50	RSC Poti
		Batumi	002130100	41-39N 41-39E	50	MRCC Georgia
	Greece	Hellas	002371000	38-01N 23-50E	-	Piraeus JRCC
		Gerania		38-00N 23-20E	98	
		Poros/Darditsa		37-30N 23-27E	73	
		Thassos		40-47N 24-43E	90	
		Sfendami		40-25N 22-31E	41	
		Thira		36-25N 25-26E	66	
		Chios		38-23N 26-03E	78	
		Kefallinia		38-08N 20-40E	107	
		Kerkira		39-45N 19-52E	82	
		Kithira		36-09N 22-59E	52	
		Limnos		39-52N 25-04E	59	
		Sitia (Mare)		35-12N 26-06E	75	
		Mitilini		39-04N 26-21E	84	
		Parnis		38-10N 23-44E	98	
		Petalidi		36-56N 21-52E	83	
		Pilio		39-22N 22-57E	104	
		Rodhos		36-16N 27-56E	78	
		Syros		37-27N 24-56E	57	
		Knossos		35-17N 24-53E	87	
		Patmos		37-18N 26-32E	46	
		Moustakos		35-18N 23-37E	84	
		Tsoukalas		40-23N 23-28E	68	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
III	Greece (cont.)	Faistos	002371000	35-00N 25-12E	84	Piraeus JRCC
		Aroi/Patrai		38-15N 21-46E	46	
		Astypalea		36-36N 28-26E	59	
		Karpathos		35-28N 27-10E	66	
		Brochas Kritis		35-19N 25-44E	65	
		Lichada		38-52N 22-53E	60	
		Skiros		38-50N 24-30E	68	
	Israel	Haifa	004280001	32-49N 35-00E	50	MRCC Israel
	Romania	Constanta	002640570	44-07N 28-35E	19	Constanta Harbor Master
	Russian Federation	Eisk	002734422	46-43N 38-16E	23	MRCC Novorossiysk
		Novorossiysk	002734411	44-41N 37-47E	26	
		Doob		44-36N 37-58E	50	
		Anapa		44-50N 37-21E	50	
		Sochi		43-32N 39-51E	71	
		Taganrog		47-14N 38-56E	19	
		Temryuk		45-19N 37-13E	28	
		Rostov-na-Donu	002734422	47-13N 39-44E	21	
		Tuapse	002734413	44-06N 39-02E	46	
	Slovenia	Koper	002780200	45-32N 13-59E	86	Koper
	Spain	Malaga (CCR)	002241023	-	-	MRCC Tarifa
		Malaga		36-36N 04-36W	45	
		Cabo Gata		36-43N 02-10W	35	
		MRCC Almeria	002241002	-	-	MRCC Almeria
		Almeria		36-50N 02-29W	30	
		Cabo Gata		36-43N 02-11W	30	
		MRSC Cartagena	002241003	37-35N 00-58W	30	MRSC Cartagena
		MRCC Valencia	002241004	39-27N 00-20W	30	MRCC Valencia
		Valencia (CCR)	002241024	-	-	
		Cartagena		37-35N 00-58W	35	MRSC Cartagena
		Alicante		38-20N 00-42W	35	MRCC Valencia
		Cabo de la Nao		38-43N 00-10W	35	
		Castellon		39-52N 00-19W	35	
		Tarragona		41-21N 01-32E	35	MRSC Tarragona
		Barcelona		41-25N 02-07E	35	MRCC Barcelona
		Bagur		42-17N 03-15E	35	
		Menorca		39-59N 04-07E	35	
		Palma		39-44N 02-43E	35	MRCC Palma
		Ibiza		38-55N 01-16E	35	
		MRCC Tarragona	002241006	41-06N 01-14E	30	MRCC Tarragona
		MRCC Barcelona	002240991	41-20N 02-09E	40	MRCC Barcelona
		MRCC Palma	002241005	-	-	MRCC Palma
		Palma		39-34N 02-39E	30	
		Cabo Cala Figuera		39-27N 02-31E	30	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
III	Turkey	Samsun	002712000	-	-	MRCC Ankara
		Pazar		41-08N 40-49E	60	
		Hidirnebi		40-58N 39-26E	99	
		Uçpınar		41-19N 36-06E	94	
		Dütmən		41-26N 35-28E	107	
		Inebolu		41-53N 33-43E	85	
		Zonguldak		41-23N 31-49E	67	
		Istanbul	002711000	-	-	
		Akçakoca		40-58N 31-12E	66	
		Keltepe		40-38N 30-05E	105	
		Sarköy		40-41N 27-01E	70	
		Camlica		41-01N 29-04E	45	
		Mahyadagi		41-47N 27-37E	85	
		Kayalidag		39-58N 26-38E	79	
		Akdag		38-33N 26-30E	92	
		Antalya	002713000	-	-	
		Dilektepe		37-39N 27-09E	93	
		Palamut		36-45N 27-03E	79	
		Yumrutepe		36-15N 29-27E	88	
		Markiz		36-43N 30-29E	80	
		Anamur		36-02N 32-45E	61	
		Cobandede		36-31N 36-15E	108	
	Ukraine	Mariupol	002723650	47-04N 37-17E	23	MRCC Odessa
		Kerch	002723659	45-21N 36-32E	25	
		Odessa	002723660	46-26N 30-46E	25	
IV	Bermuda	Bermuda Harbor	003100001	32-23N 64-41W	30	RCC Bermuda
	Mexico	Tampico	003450110	22-13N 97-51W	40	MRCC Ciudad Madero
		Veracruz	003450310	19-09N 96-07W	40	MRCC Veracruz
		Chetumal	003451120	18-30N 88-17W	40	MRCC Chetumal
		Cozumel	003451110	20-25N 86-46W	40	MRSC Isla Cozumel
		Ciudad del Carmen	003450710	18-08N 92-07W	40	MRSC Lama-Campeche
		Progreso	003450910	20-54N 90-12W	40	MRSC Yukalpeten
		Coatzacoalcos	003450320	18-10N 94-25W	40	MRCC Veracruz
	Netherlands Antilles	Curaçao	003061000	-	-	JRCC Curaçao
		Seru Gracia (Curaçao)		12-20N 69-08W	40	
		Jamanota (Aruba)		12-29N 69-56W	35	
		Sibu Rincon (Bonaire)		12-14N 68-20W	30	
		Mt. Scenery (Saba)		17-38N 63-14W	70	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
VI	Argentina	Argentina Radio	007010111	34-36S 58-28W	35	RCC Buenos Aires
		Mar del Plata	007010221	38-03S 57-32W	35	Puerto Belgrano
VIII	Mauritius	Mauritius Radio	006452700	-	-	MRCC Mauritius
		Albion		20-13S 57-24E	25	
		Belle Mare		20-11S 57-46E	25	
		Cap Malheureux		19-59S 57-36E	25	
		Souillac		20-31S 57-31E	25	
	Myanmar (Burma)	Yangon (Rangoon)	005060100	16-42N 96-17E	50	MRCC Yangon
		Myeik	005060200	12-26N 98-36E	50	
IX	Iran	Kharg (Island)	004225306	29-16N 50-15E	25-30	HQ PSO Tehran
		Khorramshahr	004225309	30-20N 48-23E	25-30	
		Lengeh	004225307	26-33N 54-53E	25-30	
		Bandar Abbas	004225304	27-07N 56-04E	25-30	
		Bahonar	004225308	27-18N 57-17E	25-30	
		Bandar Khomeyni	004225300	30-30N 49-09E	25-30	
		Bushehr	004225302	28-58N 50-50E	25-30	
		Anzali (Caspian Sea)	004225305	37-25N 49-20E	25-30	
		Nowshahr (Caspian Sea)	004225303	36-40N 51-30E	25-30	
	Jordan	Aqaba	004381234	29-27N 34-58E	25	Harbor Master Aqaba
	Kuwait	Kuwait Radio	004472188	29-22N 47-59E	N.I.	
	Pakistan	Karachi	004634060	24-52N 67-01E	40	MRCC Karachi
		Ormara	004634056	25-12N 64-38E	40	
		Gwadar	004634052	25-08N 64-20E	40	
	Saudi Arabia	Jiddah	004030000	-	-	RCC Jiddah
		Duba		27-22N 35-48E	30-35	
		Al Wajh		26-14N 36-27E	30-35	
		Umm Lajj		25-01N 37-16E	30-35	
		Yanbu		24-05N 38-04E	30-35	
		Rabigh		22-48N 39-02E	30-35	
		Abhur		21-44N 39-07E	30-35	
		Jiddah		21-23N 39-10E	30-35	
		Al Shoaibah		20-40N 39-32E	30-35	
		Al Lith		20-09N 40-17E	30-35	
		Al Qunfudhah		19-07N 41-05E	30-35	
		Al Birk		18-13N 41-32E	30-35	
		Al Shaiq		17-44N 42-02E	30-35	
		Jizan		16-54N 42-33E	30-35	
		Khafji		28-26N 48-30E	30-35	
		Al Jubayl		27-00N 49-40E	30-35	
		Dammam		26-26N 50-06E	30-35	
		Aziziyah		26-08N 50-01E	30-35	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
IX	United Arab Emirates	Emirates Radio	004700000	-	-	RCC Abu Dhabi
		Fujayrah		25-04N 56-21E	25	
		Khawr Fakkan		25-21N 56-22E	25	
		Ras al Khaymah		25-47N 55-59E	25	
		Umm al Qaywayn		25-32N 55-32E	25	
		Jabal Ali		25-02N 55-06E	25	
		Abu Zaby (Abu Dhabi)		24-28N 54-22E	25	
		Ruways (Jabal Dhanna)		24-06N 52-44E	25	
		Zirkuh		24-53N 53-04E	25	
X	New Caledonia	Noumea	005401000	-	-	MRCC Noumea
		Noumea		22-16S 166-28E	40	
		Mont Do		21-45S 166-00E	95	
		Kafeate		21-02S 164-43E	51	
		Mandgelia		20-24S 164-32E	84	
		Ouvea		20-39S 166-32E	27	
		Lifou		21-06S 167-24E	36	
		Mare		21-28S 168-02E	28	
		Oungone		22-19S 166-55E	68	
XI	Malaysia	Pinang	-	05-26N 100-24E	-	MRCC Port Klang
		Gunung Jerai	005330001	05-47N 100-26E	95	
		Gunung Berinchang	005330003	04-31N 101-23E	117	
		Ulu Kali	005330004	03-26N 101-47E	114	
		Gunung Ledang	005330005	02-03N 102-34E	95	
		Tioman	005330006	02-48N 104-12E	27	
		Kuala Rompin	005330007	02-48N 103-29E	38	
		Kemuning	005330008	04-19N 103-28E	57	
		Kuala Terengganu	005330009	05-18N 103-08E	55	
		Machang	005330010	05-43N 102-17E	70	
		Kuching	005330011	01-35N 110-11E	85	
		Bintulu	005330012	03-13N 113-05E	48	
		Kota Kinabalu	005330013	06-02N 116-12E	75	
		Labuan	005330014	05-17N 115-15E	22	
	Republic of Korea	Inchon	004401001	37-45N 126-36E	25	RCC Inchon
		Busan	004401004	35-07N 129-05E	25	RCC Busan
		Donghae	004401002	37-31N 129-07E	25	RCC Donghae
		Mokpo	004401003	34-47N 126-24E	25	RCC Mokpo
		Cheju	004401005	33-31N 126-32E	25	RCC Cheju
	Singapore	Singapore Port Operations Control	005630002	01-16N 103-51E	25	Singapore Port Operations Control Center
	Taiwan	Chi-lung (Keelung)	004162019	-	-	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XI	Taiwan (cont.)	Chinmen (Mainland)	004162019	24-28N 118-22E	32	
		Anmashan (West)		24-16N 121-01E	86	
		San-I		24-24N 120-44E	43	
		Taping		23-34N 120-36E	48	
		Lung Chuan		22-56N 120-26E	21	
		Shou Shan		22-38N 120-15E	39	
		Taping Ting		22-01N 120-41E	30	
		Taiho Shan		22-15N 120-52E	45	
		Hsichuan Chuan		22-34N 121-01E	51	
		Hotien Shan		23-53N 121-35E	45	
		Suao		24-37N 121-52E	21	
		Yingtzuling (South East)		24-54N 121-48E	64	
		Yingtzuling (North East)		24-54N121-48E	64	
		Chi-lung		25-08N 121-45E	21	
		Tsaoshan		25-06N 121-52E	51	
		Fukueichiao		25-14N 121-31E	40	
		Anmashan (North)		24-16N 121-01E	86	
		Matsu (Mainland)		26-13N 119-59E	32	
	Thailand	Bangkok Radio (Nonthaburi)	005671000	13-34N 100-39E	27	RCC Bangkok
	Vietnam	Ho Chi Minh City	005741993	10-47N 106-40E	23	Saigon Port Authority
		Vung Tau	005742005	10-19N 107-04E	23	Vung Tau Port Authority
		Nha Trang	005742002	12-15N 109-12E	23	Nha Trang Port Authority
		Qui Nhon	005742011	13-47N 109-14E	23	Quy Nhon Port Authority
		Danang	005741998	16-05N 108-13E	23	Danang Port Authority
		Haiphong	005741996	20-44N 106-44E	23	Haiphong Port Authority
		Quang Ninh	005742006	20-57N 107-03E	23	Quang Ninh Port Authority
		Cam Pha	005742008	20-01N 107-22E	23	Cam Pha Port Authority
	Hong Kong (Associate Member of IMO)	Hong Kong Maritime Rescue	004773500	22-24N 114-07E	50	MRCC Hong Kong
		Victoria Peak (Alternative)		22-16N 114-08E		
XII	Ecuador	Guayaquil	007354750	02-11S 79-53W	30	Guayaquil Coast Guard
		Esmeraldas	007354752	00-57N 70-39W	30	
		Bahia	007354753	00-35S 80-25W	30	
		Manta	007354754	00-57S 80-43W	30	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XII	Ecuador (cont.)	Salinas	007354755	02-12S 80-52W	30	Guayaquil Coast Guard
		Puerto Bolivar	007354756	03-16S 80-00W	30	
		Ayora	007354757	00-49S 90-20W	30	
		Baquerizo Moreno	007354758	00-54S 89-37W	30	
	Mexico	Mazatlan	003450810	23-12N 106-26W	40	MRCC Mazatlan
		Ensenada	003450210	31-25N 116-37W	40	MRCC Ensenada
		Manzanillo	003451410	18-15N 104-13W	40	MRSC Puerto Vallarta
		Acapulco	003451810	16-51N 99-54W	40	MRSC Acapulco
XIII	Russian Federation	Vladivostok	002734412	43-07N 131-55E	30	MRCC Vladivostok
		Nakhodka		42-51N 132-50E	45	
		Tumannaya (Posiet)		42-34N 131-11E	70	
		Magadan	002734416	59-33N 150-43E	19	MRSC Petropavlovsk-Kamchatskiy
		Murmansk	002733744	68-58N 33-01E	18	MRCC Murmansk
		Arkhangelsk	002734414	64-32N 40-32E	25.6	MRSC Arkhangelsk
XV	Chile	Arica	007250010	18-29S 70-19W	60	MRCC Iquique
		Iquique	007250020	20-21S 70-25W	90	
		Tocopilla	007250030	22-06S 70-12W	18	
		Mejillones	007250040	23-06S 70-13W	18	
		Antofagasta	007250050	23-40S 70-25W	60	
		Taltal	007250060	25-24S 70-29W	18	MRCC Valparaiso
		Chanaral	007250070	26-21S 70-38W	18	
		Caldera	007250080	27-04S 70-42W	18	
		Isla de Pascua	007250100	27-11S 109-25W	60	
		Huasco	007250090	28-28S 71-15W	18	
		Coquimbo	007250110	29-56S 71-13W	70	
		Los Vilos	007250120	31-45S 71-31W	18	
		Quintero	007250125	32-46S 71-31W	18	
		Valparaiso	007251860	33-01S 71-39W	80	
		San Antonio	007250140	33-34S 71-37W	40	
		Juan Fernandez	007250130	33-37S 78-50W	18	
		Constitucion	007250150	35-20S 72-35W	18	MRCC Talcahuano
		Talcahuano	007250170	36-42S 73-06W	40	
		Valdivia	007250220	39-48S 73-15W	15	
		Corral	007250210	39-53S 73-25W	18	
		Ancud	007250240	41-25S 73-50W	15	MRCC Puerto Montt
		Puerto Montt	007250230	41-29S 72-57W	40	
		Corona	007250235	41-47S 73-53W	30	
		Castro	007250250	42-29S 73-46W	15	
		Chaiten	007250260	42-55S 72-43W	18	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	VHF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XV	Chile (cont.)	Quellon	007250270	43-07S 73-38W	15	MRCC Puerto Montt
		Isla Guafo	007250290	43-34S 74-50W	40	
		Puerto Aguirre	007250294	45-10S 73-32W	18	
		Aysen	007250300	45-24S 72-42W	15	
		Chacabuco	007250298	45-28S 73-49W	18	
		Raper	007250310	46-49S 75-37W	30	MRCC Punta Arenas
		San Pedro	007250320	47-43S 74-53W	25	
		Puerto Natales	007250340	51-45S 72-32W	15	
		Dungeness	007250400	52-24S 68-26W	22	
		Evangelistas	007250350	52-24S 75-06W	30	
		Punta Delgada	007250390	52-28S 69-33W	18	
		Fairway	007250360	52-44S 73-47W	25	
		Bahia Felix	007250370	52-58S 74-04W	22	
		Punta Arenas	007250380	53-09S 70-57W	75	
		Puerto Williams	007250420	54-56S 67-37W	15	
		Wollaston	007250430	55-37S 68-18W	25	
		Bahia Fildes	007250450	62-13S 58-49W	20	
		Bahia Paraiso	007250470	64-49S 62-51W	20	
XVI	Peru	Paita	007600121	05-05S 81-07W	40	MRCC Paita
		Callao	007600125	12-03S 77-09W	40	MRCC Callao
		Mollendo	007600129	17-01S 72-01W	40	MRCC Mollendo

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

LIST OF OPERATIONAL MF DSC COAST STATIONS FOR SEA AREAS A2

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Belgium	Oostende	002050480	51-11N 02-48E	115	Oostende
	Denmark	Lyngby	002191000	-	-	SOK, Aarhus
		Blavand		55-33N 08-06E	153	
		Skagen		57-44N 10-34E	148	
		Torshavn (Færoes)	002311000	62-00N 06-47W	225	MRCC Torshavn
	Estonia	Tallinn	002760100	59-24N 24-40E	150	MRCC Tallinn
		Undva	002761000	58-29N 21-59E	150	
		Kuressaare	002760120	58-15N 22-29E	150	
		Kärdla	002760130	59-00N 22-45E	150	
		Narva-Joesuu	002760160	59-28N 28-02E	150	
	Finland	Turku	002300230	-	-	MRCC Turku
		CRS Söndy (Rx)		60-16N 25-51E	185	MRSC Helsinki 002302000
		Helsinki (Tx)		60-09N 25-09E	185	
		Mariehamn (Tx)		60-07N 19-57E	185	MRCC Turku 002301000
		Mariehamn (Rx)		63-18N 21-10E	185	MRSC Vaasa 002303000
		Hailuoto		65-02N 24-32E	185	
		Raippaluoto (Tx)		63-19N 21-08E	185	
		Raippaluoto (Rx)		63-18N 21-10E	185	
	France	Ouessant (Tx)	002275300	48-28N 05-03W	300	MRCC Corsen
		Corsen (Rx)		48-24N 04-24W	300	
	Greenland (Denmark)	Aasiaat	003313000	69-15N 53-31W	280	MRCC Grønnedal
		Upernavik		72-47N 56-10W	280	
		Sisimiut		66-55N 53-40W	270	
		Nuuk	003312000	64-04N 52-01W	250	
		Paamiut		62-00N 49-43W	230	
		Qaqortoq	003311000	60-41N 46-36W	220	
		Ikerasassuaq		60-04N 43-10W	220	
		Ammassilik	003314000	65-36N 37-38W	280	
	Iceland	Reykjavik	002510100	64-05N 21-51W	216	MRCC Keflavik
		Isafjordur	N.I.	66-05N 23-02W	227	
		Siglufjordur	N.I.	66-11N 18-57W	216	
		Neskaupstadur	N.I.	65-09N 13-42W	194	
		Hornafjordur	N.I.	64-15N 15-13W	194	
		Vestmannaeyjar	N.I.	63-26N 20-16W	194	
	Ireland	Malin Head	002500100	55-21N 07-20W	150	MRCC Shannon
		Valentia	002500200	51-55N 10-20W	150	
	Latvia	Riga Rescue Radio	002750100	56-58N 24-05E	150	MRCC Riga
	Lithuania	Klaipeda Rescue	002770330	55-43N 21-06E	150	MRCC Klaipeda
	Netherlands	Netherlands Coast Guard (Tx)	002442000	52-06N 04-15E	240	Coast Guard Center IJmuiden
		Appingedam (Rx)		53-20N 06-51E	150	
		Hook of Holland (Rx)		51-59N 04-06E	150	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
I	Norway	Tjome	002570100	59-26N 10-37E	200	MRCC Stavanger
		Farsund	002570200	58-04N 06-45E	200	
		Rogaland	002570300	58-39N 05-36E	200	
		Bergen	002570400	60-42N 04-52E	200	
		Floro	002570500	61-35N 05-00E	200	
		Ørlandet	002570600	63-41N 09-36E	200	MRCC Stavanger/Bodø
		Aalesund		62-28N 06-12E	200	
		Bodø	002570700	67-16N 14-23E	200	MRCC Bodø
		Sandnessjøen		66-01N 12-37E	200	
		Andenes		69-18N 16-04E	200	
		Jan Mayen		70-57N 08-40W	200	
		Bjørnøya		74-31N 19-01E	200	
		Vardø	002570800	70-22N 31-06E	200	
		Tromsø		69-39N 18-57E	200	
		Hammerfest		70-40N 23-40E	200	
		Berlevaag		70-52N 29-04E	200	
		Svalbard	002570900	78-02N 13-40E	200	
	Poland	Witowo	002610210	54-33N 16-32E	N.I.	MRCC Gdynia
	Russian Federation	Kaliningrad	002734417	54-58N 19-59E	120	MRSC Kaliningrad
	Sweden	Göteborg	002653000	57-28N 11-56E	210	MRCC Göteborg
		Stockholm	002652000	59-16N 18-42E	210	
		Bjuröklubb	002653000	64-28N 21-36E	250	
		Hoburg (Rx only)		56-56N 18-13E	210	
	United Kingdom	Aberdeen	002320004	57-39N 02-14W	150	MRCC Aberdeen
		Tyne-Tees	002320006	55-01N 01-25W	150	MRSC Tyne-Tees
		Humber	002320007	54-18N 00-05W	150	MRSC Humber
		Stornoway	002320024	58-13N 06-21W	150	MRSC Stornoway
		Holyhead	002320018	53-19N 04-38W	150	MRSC Holyhead
		Falmouth	002320014	50-09N 05-03W	150	MRCC Falmouth
		Clyde	002320022	55-58N 04-48W	150	MRCC Clyde
		Milford Haven	002320017	51-41N 05-10W	150	MRSC Milford Haven
		Shetland	002320001	60-09N 01-09W	150	MRSC Shetland
II	Benin	Cotonou	006100001	06-21N 02-26E	N.I.	
	France	Ouessant (Tx)	002275300	48-28N 05-03W	300	MRCC Corsen
		Corsen (Rx)		48-24N 04-24W	300	
	Ghana	Tema	006270000	05-39N 00-03W	200	Harbor Master's Office Accra
	Spain	Bilbao (CCR)	002241021	-	-	MRCC Bilbao
		Machichaco		43-27N 02-45W	240	
		Cabo Penas		43-39N 05-51W	280	
		MRCC Bilbao	002240996	43-21N 03-02W	150	
		MRCC Gijon	002240997	43-34N 05-42W	150	MRCC Gijon
		Coruna (CCR)	002241022	-	-	MRCC Finisterre

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
II	Spain (cont.)	Finisterre	002241022	42-54N 09-16W	280	MRCC Finisterre
		Coruna		43-22N 08-27W	240	
		MRCC Finisterre	002240993	42-42N 08-59W	150	
		MRCC Tarifa	002240994	36-01N 05-35W	150	MRCC Tarifa
		Malaga (CCR)	002241023	-	-	
		Chipiona		36-41N 06-25W	240	
		Tarifa		36-03N 05-33W	240	
		MRCC Tenerife	002241007	28-29N 16-14W	150	MRCC Las Palmas
		MRCC Las Palmas	002240995	28-09N 15-25W	150	
		Las Palmas (CCR)	002241026	-	-	
		Arrecife		29-08N 13-31W	240	
		Las Palmas		27-45N 15-36W	240	
		Tenerife		28-25N 16-20W	280	MRCC Tenerife
III	Bulgaria	Varna	002070810	43-04N 27-46E	200	MRCC Varna
	Croatia	MRCC Rijeka	002387010	45-19N 14-27E	160	MRCC Rijeka
	Cyprus	Cyprus	002091000	35-07N 33-20E	200	RCC Larnaca RCC Episcopi
	France	Porquolles (Tx)	002275400	42-59N 06-12E	250	MRCC La Garde
		La Garde (Rx)		43-06N 05-59E	250	
	Georgia	Batumi	002130100	41-39N 41-39E	150	MRCC Georgia
	Greece	Piraeus JRCC*	237673000 237673100	37-58N 23-40E	130	Piraeus JRCC
		Aspropirgos*	002391000	38-02N 23-35E	130	
		Kerkira*	237673190	39-38N 19-55E	130	
		Patrai*	237673140	38-14N 21-44E	130	
		Pilos*	237673230	36-54N 21-41E	130	
		Iraklion*	237673180	35-20N 25-08E	130	
		Rodhos*	237673150	36-27N 28-14E	130	
		Thessaloniki*	237673210	40-38N 22-56E	130	
		Mitilini*	237673220	39-06N 26-35E	130	
	Israel	Haifa	004280001	32-49N 35-00E	150	MRCC Israel
	Romania	Constanta	002640570	44-07N 28-35E	100	Constanta Harbor Master
	Russian Federation	Novorossiysk	002734411	44-36N 37-58E	173	MRCC Novorossiysk
		Taganrog		47-14N 38-56E	70	
		Temryuk		45-19N 37-13E	70	
	Spain	Malaga (CCR)	002241023	-	-	MRCC Tarifa
		Cabo Gata		36-43N 02-12W	240	
		MRCC Almeria	002241002	36-50N 02-29W	150	MRCC Valencia
		MRCC Valencia	002241004	39-27N 00-20W	150	
		Valencia (CCR)	002241024	-	-	

DSC MF stations, owned by Hellenic Coast Guard. Until the establishment of the A2 Sea Area for reasons of additional safety only, the Hellenic Coast Guard will keep 24 hour watch on MF DSC distress frequency (2187.5 kHz) indicated by the asterisk (). This should not be considered as an established A2 Sea Area.

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
III	Spain (cont.)	Cabo de la Nao	002241024	38-43N 00-10W	280	MRCC Valencia
		Palma		39-21N 02-59E	240	
		MRCC Barcelona	002240991	41-20N 02-09E	150	MRCC Barcelona
	Turkey	Trabzon	002718000	41-00N 39-43E	146	MRCC Ankara
		Samsun	002712000	41-17N 36-20E	146	
		Zonguldak	002719000	41-27N 31-48E	146	
		Istanbul	002711000	40-59N 28-49E	146	
		Çanakkale	002714000	40-08N 26-24E	146	
		Izmir	002716000	38-21N 26-35E	146	
		Antalya	002713000	36-53N 30-42E	146	
		Mersin	002717000	36-49N 34-36E	146	
		Iskenderun	002715000	36-37N 36-07E	146	
IV	Bermuda	Bermuda Harbor	003100001	32-23N 64-41W	200	RCC Bermuda
	Greenland (Denmark)	Aasiaat	003313000	69-15N 53-31W	280	MRCC Grønnedal
		Upernavik		72-47N 56-10W	280	
		Sisimiut		66-55N 53-40W	270	
		Nuuk	003312000	64-04N 52-01W	250	
		Paamiut		62-00N 49-43W	230	
		Qaqortoq	003311000	60-41N 46-36W	220	
		Ikerasassuaq		60-04N 43-10W	220	
		Ammassilik	003314000	65-36N 37-38W	280	
	Mexico	Tampico	003450110	22-13N 97-51W	150	MRCC Ciudad Madero
	Netherlands Antilles	Curaçao (Seru Gracia)	003061000	12-20N 69-08W	400	JRCC Curaçao
	United States	Boston	003669991	41-39N 70-30W	200	RCC Boston
		Chesapeake	003669995	36-44N 76-01W	200	RCC Norfolk
		Miami	003669997	25-37N 80-23W	200	RCC Miami
		New Orleans	003669998	29-53N 89-57W	200	RCC New Orleans
VI	Argentina	Argentina Radio	007010111	34-36S 58-28W	200	RCC Buenos Aires
		Mar del Plata	007010221	38-03S 57-32W	150	RCC Puerto Belgrano
VIII	Mauritius	Mauritius Radio	006452700	-	-	MRCC Mauritius
		Cassis		20-12S 57-28E	150	
	Myanmar (Burma)	Yangon (Rangoon)	005060100	16-42N 96-17E	100	MRCC Yangon
IX	Jordan	Aqaba	004381234	29-33N 34-59E	350	Harbor Master Aqaba
	Kuwait	Kuwait Radio	004472188	29-22N 47-59E	N.I.	
	Pakistan	Karachi	004634060	24-52N 67-01E	250	MRCC Karachi
X	Australia	Perth	005030331	31-48S 115-53E	100	RCC Australia
		Brisbane	005030330	27-04S 150-03E	100	
XI	Japan	Otaru	004310101	-	-	RCC Otaru
		Shakotan		43-20N 140-32E	150	
		Hakodateyama		41-45N 140-43E	150	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XI	Japan (cont.)	Kushiro	004310102	-	-	RCC Otaru
		Tokotan		43-00N 144-53E	150	
		Souyamisaki		45-31N 141-56E	150	
		Nemuro		43-21N 145-35E	100	
		Monbetsu		44-21N 143-22E	150	
		Shiogama	004310201	-	-	RCC Shiogama
		Komagamine		38-18N 141-32E	150	
		Same		40-29N 141-37E	150	
		Kamaishi		39-16N 141-54E	150	
		Nyudozaki		40-00N 139-42E	150	
		Yokohama	004310301	-	-	RCC Yokohama
		Chikura		34-56N 139-56E	150	
		Chosi		35-44N 140-52E	150	
		Shimoda		34-40N 138-57E	150	
		Nagoya	004310401	-	-	RCC Nagoya
		Asamagatake		34-27N 136-49E	150	
		Tanabe	004310502	33-43N 135-24E	150	RCC Kobe
		Kochi	004310503	-	-	
		Tosayama		33-36N 133-32E	150	
		Kobe	004310501	-	-	
		Senzan		34-22N 134-50E	60	
		Hiroshima	004310601	-	-	RCC Hiroshima
		Noro		34-15N 132-40E	60	
		Moji	004310701	-	-	RCC Kitakyushu
		Yukawayama		33-52N 130-33E	150	
		Wakayama		33-11N 131-44E	60	
		Mokkoku		34-08N 129-12E	150	
		Sasebo	004310702	-	-	
		Ishimoriyama		33-14N 129-44E	150	
		Maizuru	004310801	-	-	RCC Maizuru
		Sorayama		35-33N 135-25E	150	
		Nawa		35-31N 133-32E	150	
		Niigata	004310901	-	-	RCC Niigata
		Nekogatake		37-28N 138-08E	150	
		Shidaihama		38-00N 139-17E	150	
		Kagoshima	004311001	-	-	RCC Kagoshima
		Yoko-o		31-19N 130-49E	150	
		Aburatsu		31-35N 131-25E	150	
		Naze		28-23N 129-30E	100	
		Naha	004311101	26-09N 127-46E	150	RCC Naha
		Ishigaki	004311102	-	-	
		Miyara		24-21N 124-12E	150	
	Malaysia	Pinang	-	05-26N 100-24E	-	MRCC Port Klang
		Kuantan	005330008	04-06N 103-23E	200	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XI	Malaysia (cont.)	Kota Kinabalu	005330013	05-57N 116-02E	200	MRCC Port Klang
		Kuching	005330011	01-49N 109-46E	200	
	Republic of Korea	Inchon	004401001	37-45N 126-36E	120	RCC Inchon
		Busan	004401004	35-07N 129-05E	120	RCC Busan
		Donghae	004401002	37-31N 129-07E	120	RCC Donghae
		Mokpo	004401003	34-47N 126-24E	120	RCC Mokpo
		Cheju	004401005	33-31N 126-32E	120	RCC Cheju
	Taiwan	Chi-lung (Keelung)	004162019	-	-	
		Taping Ting (Rx)		22-01N 120-42E	N.I.	
		Hua-lien (Rx)		23-53N 121-35E	N.I.	
		Yüanli (Rx)		24-26N 120-38E	N.I.	
		Yenliaoken		23-54N 121-36E	97	
		Chi-lung		25-08N 121-45E	97	
		Linyuan		22-29N 120-24E	97	
		Sanchih (Rx)		25-16N 121-28E	N.I.	
	Thailand	Bangkok Radio (Nonthaburi)	005671000	13-34N 100-39E	162	RCC Bangkok
	Vietnam	Ho Chi Minh City	005741994	10-47N 106-40E	100	Saigon Port Authority
		Haiphong	005741997	20-44N 106-44E	100	Haiphong Port Authority
	Hong Kong (Associate Member of IMO)	Hong Kong Maritime Rescue	004773500	22-12N 114-15E	200	MRCC Hong Kong
		Mt. Butler		22-16N 114-12E	200	
XII	Mexico	Mazatlan	003450810	23-12N 106-26W	150	MRCC Mazatlan
	United States	Point Reyes	003669990	37-56N 122-44W	200	RCC Alameda
		Kodiak	003669899	57-46N 152-34W	N.I.	RCC Juneau
		Honolulu	003669993	21-26N 158-09W	N.I.	RCC Honolulu
XIII	Russian Federation	Vladivostok	002734412	42-45N 133-02E	150	MRCC Vladivostok
		Murmansk	002733744	68-58N 33-01E	170	MRCC Murmansk
XIV	Fiji	RCC Suva	005201100	18-08S 178-26E	200	RCC Wellington RCC Funafuti RCC Nadi Nat. Surv. Center Samoa Mar. Div. Tarawa RCC Canberra
XV	Chile	Arica	007250010	18-29S 70-19W	180	MRCC Iquique
		Iquique	007250020	20-21S 70-25W	180	
		Antofagasta	007250050	23-40S 70-25W	180	
		Caldera	007250080	27-04S 70-42W	180	MRCC Valparaiso
		Isla de Pascua	007250100	27-11S 109-25W	180	
		Coquimbo	007250110	29-56S 71-13W	180	
		Valparaiso	007251860	33-01S 71-39W	250	
		San Antonio	007250140	33-34S 71-37W	180	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	MF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Range (NM)	
XV	Chile (cont.)	Juan Fernandez	007250130	33-37S 78-50W	180	MRCC Valparaiso
		Talcahuano	007250170	36-42S 73-06W	180	MRCC Talcahuano
		Puerto Montt	007250230	41-47S 73-53W	180	MRCC Puerto Montt
		Aysen	007250300	45-24S 72-42W	80	
		San Pedro	007250320	47-43S 74-53W	180	MRCC Punta Arenas
		Punta Delgada	007250390	52-28S 69-33W	120	
		Bahia Felix	007250370	52-58S 74-04W	120	
		Punta Arenas	007250380	53-10S 70-54W	180	
		Puerto Williams	007250420	54-56S 67-37W	120	
XVI	Peru	Paita	007600121	05-05S 81-07W	200	MRCC Paita
		Callao	007600125	12-03S 77-09W	200	MRCC Callao
		Mollendo	007600129	17-01S 72-01W	200	MRCC Mollendo

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LIST OF OPERATIONAL HF DSC COAST STATIONS FOR SEA AREAS A3 AND A4

NAV/MET Area	Country	HF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Frequency Band ¹	
I	Denmark	Lyngby	002191000	55-50N 11-25E	4,6,8,12,16 MHz	SOK, Aarhus
	Iceland	Reykjavik	002516200	64-05N 21-51W	4,6,8,12,16 MHz	MRCC Oceanic
II	Ghana	Tema	006270000	05-37N 00-00	4,6,8,12,16 MHz	Harbor Master's Office Accra
	Spain	MRCC Gijon	002240997	43-34N 05-42W	4,6,8,12,16 MHz	MRCC Gijon
		MRCC Finisterre	002240993	42-42N 08-59W		MRCC Finisterre
		Madrid	002241078	40-22N 03-17W	8,12 MHz	MRCC Madrid
		MRCC Tenerife	002241007	28-29N 16-14W	4,6,8,12,16 MHz	
		MRCC Las Palmas	002240995	28-09N 15-25W		
III	Cyprus	Cyprus	002091000	35-03N 33-17E	4,8,16 MHz	RCC Larnaca
	Greece	Piraeus JRCC ²	237673000 237673100	37-58N 23-40E	4,6,8,12,16 MHz	Piraeus JRCC
		Aspropirgos ²	002391000	38-02N 23-35E		
	Romania	Constanta	002640570	44-07N 28-35E	4,6,8,12,16 MHz	Constanta Harbor Master
	Spain	MRCC Valencia	002241004	39-27N 00-20W	4,6,8,12,16 MHz	MRCC Valencia
		MRCC Barcelona	002240991	41-20N 02-09E		MRCC Barcelona
	Turkey	Istanbul	002711000	40-59N 28-49E	4,6,8,12,16 MHz	MRCC Ankara
IV	United States	Boston	003669991	41-39N 70-30W	4,6,8,12,16 MHz	RCC Boston
		Chesapeake	003669995	36-44N 76-01W		RCC Norfolk
		Miami	003669997	25-37N 80-23W		RCC Miami
		New Orleans	003669998	29-53N 89-57W		RCC New Orleans
VI	Argentina	Argentina Radio	007010111	34-36S 58-28W	4,6,8,12,16 MHz	RCC Buenos Aires
VII	South Africa	Cape Town	006010001	33-40S 18-43E	4,6,8,12,16 MHz	MRCC Cape Town
VIII	Myanmar (Burma)	Yangon (Rangoon)	005060100	16-42N 96-17E	4,6,8,12,16 MHz	MRCC Yangon
IX	Kuwait	Kuwait Radio	004472188	29-22N 47-59E	4,6,8,12,16 MHz	
	Pakistan	Karachi	004634060	24-52N 67-01E	4,6,8,12,16 MHz	MRCC Karachi
X	Australia	Perth	005030331	31-48S 115-53E	4,6,8,12,16 MHz	RCC Australia
		Brisbane	005030330	27-04S 153-03E		
XI	Japan	Tokyo	004310001	35-40N 139-45E	4,6,8,12,16 MHz	RCC Otaru RCC Shiogama RCC Yokohama RCC Nagoya RCC Kobe RCC Hiroshima RCC Kitakyushu RCC Maizuru RCC Niigata RCC Kagoshima RCC Naha
		Inchon	004401001	37-45N 126-36E	4,6 MHz	RCC Inchon
		Donghae	004401002	37-31N 129-07E		RCC Donghae
	Taiwan	Chi-lung (Keelung)	004162019	25-08N 121-45E	4,6,8,12,16 MHz	

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NAV/MET Area	Country	HF DSC Coast Station				Associated RCC
		Name	MMSI	Position	Frequency Band ¹	
XI	Thailand	Bangkok Radio (Nonthaburi)	005671000	13-34N 100-39E	6,8,12 MHz	RCC Bangkok
	Vietnam	Ho Chi Minh City	005741994	10-47N 106-40E	6 MHz	Saigon Port Authority
		Haiphong	005741997	20-44N 106-44E	8 MHz	Haiphong Port Authority
	Hong Kong (Associate Member of IMO)	Hong Kong Maritime Rescue	004773500	22-12N 114-15E	4,6,8,12,16 MHz	MRCC Hong Kong
XII	United States	Point Reyes	003669990	37-56N 122-44W	4,6,8,12,16 MHz	RCC Alameda
		Kodiak	003669899	57-46N 152-34W		
		Honolulu	003669993	21-26N 158-09W		
XIV	Fiji	RCC Suva	005201100	18-08S 178-26E	4,6,8,12,16 MHz	RCC Funafuti RCC Tonga RCC Nadi Nat. Surv. Center Samoa Mar. Div. Tarawa RCC Canberra
	New Zealand	Taupo Maritime Radio	005120010	38-52S 176-26E	4,6,8,12,16 MHz	RCC Lower Hutt
XV	Chile	Antofagasta	007250050	23-40S 70-25W	4 MHz	MRCC Iquique
		Isla de Pascua	007250100	27-11S 109-25W		MRCC Valparaiso
		Valparaiso	007251860	33-01S 71-39W	4,6,8,12,16 MHz	MRCC Talcahuano
		Talcahuano	007250170	36-42S 73-06W	4 MHz	
		Puerto Montt	007250230	41-47S 73-53W		
		Punta Arenas	007250380	53-10S 70-54W	4,8 MHz	MRCC Punta Arenas
XVI	Peru	Paita	007600121	05-05S 81-07W	8 MHz	MRCC Paita
		Callao	007600125	12-03S 77-09W		MRCC Callao
		Mollendo	007600129	17-01S 72-01W		MRCC Mollendo

¹ The following frequencies are allocated for HF DSC distress and safety communication by Radio Regulation (Article N38):

4 MHz = 4207.5 kHz 6 MHz=6312 kHz 8 MHz = 8414.5 kHz 12 MHz = 12577 kHz 16 MHz = 16804.5 kHz

² Until HF DSC installation at Athinai becomes fully operational, the Hellenic Coast Guard at Piraeus will keep 24 hour watch on all HF DSC frequencies.

PART II

410A. Requests for U.S. Navy Assistance in Emergency Situations

In view of the current and continuing threat of possible terrorist activity, seizure by hostile military forces, or piracy against U.S. merchant ships on the high seas, the requirement exists for the establishment and promulgation of emergency call-up procedures between U.S. merchant ships and units of the U.S. Navy for protection and assistance.

The following situations warrant immediate use of emergency communications to request assistance from the Navy:

- Attack, threat of attack, or other hostile actions by military forces. Warning shots and/or observation of mining operations in international waters are included.
- Harassment by military forces. Attempts of boarding and seizure, threat (or attempt) of hostage taking are included.
- Terrorist attack (or threat) or seizure.
- Piracy.
- Request for rescue in the event of natural disaster if no acknowledgment is received through use of established distress and safety communications procedures.

NAVY ACTION: Upon receipt of emergency transmission by the Fleet CINC command center, the Navy will determine what action will be taken in response, e.g., dispatch of forces, establishing direct communications between the merchant ship and a Navy afloat unit, or providing guidance. Decision factors affecting Navy response are contingent upon USN units available, proximity of USN units to the merchant ship, and/or rules of engagement applicable to the theater of operations.

CALL-UP PROCEDURES: The following voice call-up procedure should be used by merchant ships if an indefinite call-up address is to be employed:

ANY NAVY/AIR FORCE/COAST GUARD STATION GUARDING THIS NET, THIS IS SS EXAMPLE, EMERGENCY MESSAGE FOLLOWS.

If the merchant ship is calling a specific Navy, Air Force, or Coast Guard station ashore, the voice calls listed in appendix B apply. Merchant ships are cautioned that Navy shore stations and/or afloat units guarding HICOM or other tactical HF nets may respond with an alphanumeric daily changing call sign and advise the merchant ship to send traffic, and will not reveal the Navy unit's name to prevent compromise of the call sign.

Procedures for emergency incident reporting and/or requests for USN assistance emphasize the use of voice communications between the merchant ship and the commands/facilities ashore and afloat as defined in appendix A. Frequencies for HF voice and radiotelex (NBDP) communications are listed in appendix B. Inmarsat equipped ships should file voice or telex traffic

via appropriate earth stations. Emergency or distress messages received by non-U.S. Navy facilities will be immediately forwarded to the appropriate Navy command center.

MESSAGE FORMAT: The following format is recommended to provide for brevity and uniformity in reporting procedure:

- To Fleet Commander in Chief, Operations Control Center (as appropriate).
- Name of ship.
- International radio call sign and Inmarsat ID.
- Position (latitude/longitude).
- Date and time (GMT).
- Brief description (military attack, seizure, terrorist attack, mining, piracy, natural disaster).

Example:

TO CINCPACFLT OPCONCEN

A. SS NOGALES

B. KCSD/1509999

C. LAT. 05N, LONG. 105E

D. 231800Z JAN 89

E. SHIP UNDER ATTACK BY MACHINE GUN AND RIFLE FIRE BY SMALL PATROL CRAFT AND BEING BOARDED BY PIRATES OR TERRORISTS. PERSONNEL CASUALTIES ON DECK.

F. REQUEST IMMEDIATE ASSISTANCE.

COMMUNICATIONS PROCEDURES: Emergency communications from merchant ships in crisis situations essentially involve the reporting of incidents and requests for USN protection or assistance on a real time basis. Requests for assistance will be submitted to Navy fleet command centers by either commercial satellite (Inmarsat) or HF media. Commercial telephone numbers for fleet command centers, Navy communications stations, and USCG communications stations are in appendix A.

- Inmarsat Equipped Ships: Direct dial the appropriate Navy Fleet Commander-in-Chief (CINC) Operations Control Center (OPCONCEN) to report the situation and request USN assistance. If the direct dial attempt is unsuccessful, place a call via Inmarsat operator to the appropriate Navy command center.

If the call cannot be completed to the Fleet CINC, dial the appropriate Naval Computer and Telecommunications Area Master Station (NCTAMS) or Naval Computer and Telecommunications Station (NAVCOMTELSTA) for patching relay to the Fleet CINC OPCONCEN. If direct dial effort is unsuccessful, place call to the communications station via the Inmarsat operator.

If contact cannot be made with the area NCTAMS or NAVCOMTELSTA, a merchant ship should request the Inmarsat operator to place the call to USCG area operations center (OPCEN) for notification to Fleet CINC. U.S. flag/EUSC ships operating in the North

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Arabian Sea and Persian Gulf area requiring assistance from USN ships of COMUSNAVCENT should call NAVCOMTELSTA Guam for direct patching via FM non-secure voice satellite communications.

- HF Equipped Ships: Upon establishing HF voice communications with the HF public coast radio station serving the merchant ship, request that the marine operator place a call to the appropriate Fleet CINC OPCONCEN for assistance, giving information in the prescribed format.

If a voice call via the coast station marine operator cannot be completed to the Fleet CINC OPCONCEN, the call should be placed to the closest NCTAMS or NAVCOMTELSTA, USAF communications station, or USCG communications station for relay to the appropriate Navy command center.

If a merchant ship uses U.S. military HF facilities (Navy, Air Force, or Coast Guard communications stations) for a direct emergency voice communication request for assistance, the message will be relayed by the receiving facility to the appropriate Navy operations control center for action. A listing of available HF frequencies by military facility and area is in appendix B.

Ship to ship communications may be initiated by use of 2182 kHz or one of the Navy HICOM or tactical HF frequencies listed in appendix B. However, Fleet CINC command center approval is necessary prior to establishment of extended ship to ship communications between merchant ships and USN afloat units.

- VHF Communications: 156.8 MHz (Ch. 16) is recommended for use by ships at line-of-sight or extended line-of-sight (15-30 miles) communications ranges.
- Direct Ship to Ship Communications Connectivity: If a Fleet CINC command center considers it essential for a merchant ship to establish direct non-secure voice communications with U.S. Navy surface units, the merchant ship will be directed to call the appropriate NCTAMS or NAVCOMTELSTA Guam for a patch to be made between the commercial media (Inmarsat, HF) and the Navy's Fleet Satellite Communications (FLTSATCOM) system to a Navy ship by use of a conference bridge. If direct HF voice connectivity is required, the merchant ship and Navy unit will be

assigned an appropriate frequency for coordination purposes.

- COMSC Charter Ships: Except in crisis situations, U.S. merchant ships under charter to COMSC would continue to use the procedures stated in the effective edition of NTP-10.
- Billing: Billing will be in accordance with tariff regulations applicable to Inmarsat and HF public coast radio stations.

SHAR: The guidance provided above does not eliminate the need for submission of SHARs by merchant ships to NIMA. Emergency procedures provide for transmission of a request for assistance to precede the SHAR.

TESTING OF PROCEDURES/FACILITIES: U.S. Navy and Air Force HF voice communications nets are dedicated to command and control of military units and air traffic control. These nets are not to be used for training purposes unless specifically designated by the Services and/or operational commanders for use by merchant ships as part of a scheduled exercise. Commercial communications systems (Inmarsat, HF) aboard ship may be used for personnel training and equipment check-out procedures by merchant ships by placing calls to the Fleet CINC command centers. Tests should be initiated from the merchant ship by dialing the appropriate Fleet CINC command center for the ocean area involved. Shipping line owners are required to fund costs incurred for tests initiated by their ships. The Fleet CINC will determine if the calls should be extended to USN afloat units via the FLTSATCOM interface at the NCTAMS or NAVCOMTELSTA Guam. The Fleet CINC may desire to use HF HICOM for exercise and training with COMSC chartered merchant ships as well as U.S. flag merchant ships not under Navy control during Naval Control of Shipping exercises or for test prior to in-chop.

In addition to requesting direct assistance from the U.S. Navy, mariners should report acts of terrorism to the following:

- In the waters and ports of the United States, the FBI and the USCG.
- In areas outside U.S. territorial limits, the nearest U.S. Consulate Office (Regional Security Officer), the U. S. State Department (Operations Center), at (1) 202-647-1512, and NIMA.

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APPENDIX A

OCEAN AREAS AND COMMAND CENTERS/COMMUNICATIONS FACILITIES

The following provides a listing of U.S. Navy and Coast Guard Command Centers and Communications Stations, showing area of command and/or communications coverage:

Ocean Area - Navy operations control centers and communications facilities, USCG command centers and communications facilities	Telephone Number
Mediterranean, Baltic, Middle East	
CINCUSNAVEUR OPCONCEN LONDON UK	44-207-514-4080
NCTAMS EURCENT NAPLES IT	39-081-568-6141
COMLANTAREA COGARD PORTSMOUTH VA	(1) 757-398-6231, Telex 127775
Atlantic, Caribbean, Atlantic Approaches to Panama Canal, North Sea	
CINCLANTFLT OPCONCEN NORFOLK VA	(1) 757-836-5397
NCTAMS LANT NORFOLK VA	(1) 757-444-2124
COMLANTAREA COGARD PORTSMOUTH VA	(1) 757-398-6231, Telex 127775
COGARD CAMSLANT CHESAPEAKE VA	(1) 757-421-6240/6247
Eastern Pacific, Mexico, Central America	
CINCPACFLT OPCONCEN PEARL HARBOR HI	(1) 808-471-3201/422-5944
NCTAMS PAC HONOLULU HI	(1) 808-653-5377/0090
NAVCOMTELSTA SAN DIEGO CA	(1) 619-545-6983
COMPACAREA COGARD ALAMEDA CA	(1) 510-437-3701, Telex 172343
COGARD COMMSTA KODIAK AK	(1) 907-487-5778
COGARD CAMSPAC PT REYES CA	(1) 415-669-2047
Mid Pacific, Northern Pacific, Pacific Approaches to Panama Canal, South America	
CINCPACFLT OPCONCEN PEARL HARBOR HI	(1) 808-471-3201/422-5944
NCTAMS PAC HONOLULU HI	(1) 808-653-5377/0090
NAVCOMTELSTA SAN DIEGO CA	(1) 619-545-6983
COMPACAREA COGARD ALAMEDA CA	(1) 510-437-3701, Telex 172343
COGARD COMMSTA KODIAK AK	(1) 907-487-5778
COGARD CAMSPAC PT REYES CA	(1) 415-669-2047
Western Pacific, South Pacific, Southeast Asia, Straits of Malacca, Sea of Japan, Indian Ocean	
CINCPACFLT OPCONCEN PEARL HARBOR HI	(1) 808-471-3201/422-5944
NAVCOMTELSTA GUAM	671-355-5513/5326/5327/5328
NAVCOMTELSTA FAR EAST	81-311-743-7510
COGARD COMMSTA KODIAK AK	(1) 907-487-5778

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

Ocean Area - Navy operations control centers and communications facilities, USCG command centers and communications facilities	Telephone Number
Persian Gulf, Red Sea	
COMUSNAVCENT/COMFIFTHFLT OPCONCEN BAHRAIN	973-724-006/577
(For Ships in the Persian Gulf)	
NAVCOMTELSTA GUAM	671-355-5513/5326/5327/5328
(For Ships in the Red Sea)	
NCTAMS EURCENT NAPLES IT	39-081-568-6141
COMLANTAREA COGARD PORTSMOUTH VA	(1) 757-398-6231, Telex 127775
Navy Communications Facilities With FLTSATCOM Interface Capability:	
Upon direction from Fleet CINC OPCONCEN, calls will be placed to the following Navy communications stations with conference bridge capability to establish unclassified ship to ship voice connectivity with Navy afloat units via Navy FLTSATCOM:	
NCTAMS LANT NORFOLK VA	(1) 757-445-9988/9989
NCTAMS EURCENT NAPLES IT	39-081-568-6141
NCTAMS PAC HONOLULU HI	(1) 808-653-0321
NAVCOMTELSTA GUAM	671-355-5513/5326/5327/5328

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

APPENDIX B

HIGH FREQUENCIES GUARDED BY AIR FORCE, NAVY, COAST GUARD, AND COMMERCIAL STATIONS

AIR FORCE

Area	Control Station	Voice Call	SSB (carrier) Frequencies (in kHz)	Hours of Watch (GMT)
Southeast Asia	ANDERSEN AFB GUAM	ANDERSEN	North and East Sectors	
			6738	1200-2200
			13201	24 hr.
			18002	2200-1200
			West Sector	
			6738	1200-2200
			8993	24 hr.
			11176	1300-0200
Indian Ocean (Indian Ocean Area coverage includes all of the Indian Ocean, west coast of Africa, Asian subcontinent, Singapore, Thailand, and Arabian Sea.)	DIEGO GARCIA	DIEGO GARCIA	6738	1200-2200
			11176	1500-0200
			13201	24 hr.
			23227	0200-1300
Southwest Pacific, Micronesia	ANDERSEN AFB GUAM	ANDERSEN	4721	0900-2000
			6738	0700-2200
			8967	24 hr.
			11176	24 hr.
			13201	2000-0900
			18002	2200-0700
Northwest Pacific, Sea of Japan, Sea of Okhotsk	YOKOTA AFB JA	YOKOTA	4747	1000-2100
			6738	0800-2400
			8967	24 hr.
			11236	24 hr.
			13201	2100-1000
			18002	0100-0800
Central Pacific	HICKAM AFB HI	HICKAM	4729	0600-1700
			6738	0400-1900
			8964	24 hr.
			11179	24 hr.
			13201	1700-0600
			18002	1900-0400

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

Area	Control Station	Voice Call	SSB (carrier) Frequencies (in kHz)	Hours of Watch (GMT)
North Pacific, Bering Strait, Gulf of Alaska	ELMENDORF AFB AK	ELMENDORF	3081	Apr.-Sep. 0800-1800
				Oct.-Mar. 0600-2000
			6738	24 hr.
			8989	24 hr.
			11176	24 hr.
			13201	Apr.-Sep. 1800-0800
East Pacific, West Coast Continental U.S., Mexico	MCCLELLAN AFB CA	MCCLELLAN		Oct.-Mar. 2000-0600
			3067	0400-1600
			6738	0400-1600
			8989	24 hr.
			11239	24 hr.
			13201	1600-0400
Central and South America, (Atlantic and Pacific), Cuba, Hispaniola	ALBROOK AFB PN	ALBROOK	18002	1600-0400
			3137	0200-1200
			6683	0001-1400
			8993	24 hr.
			11176	24 hr.
			15015	1200-0200
North Atlantic, East Coast Continental U.S., Canada, Caribbean, Gulf of Mexico	MACDILL AFB FL	MACDILL	18019	1400-2400
				Northern North Atlantic
			3074	0200-1200
			6738	0001-1300
			8964	24 hr.
			11179	1200-0200
			13244	0900-2400
			18019	0900-2400
				Central North Atlantic
			4746	0001-0900
			6750	0001-0900
			11179	0900-2400
			11246	24 hr.
			13244	0900-2400
				Southern North Atlantic
			4746	0001-0900
			6750	0001-0900
			8993	24 hr.
			11246	24 hr.
			13244	0900-2200

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

Area	Control Station	Voice Call	SSB (carrier) Frequencies (in kHz)	Hours of Watch (GMT)
			4746 6750 8993 11246	Gulf of Mexico 0001-0900 0001-0900 24 hr. 24 hr.
Northern North Atlantic, Canada, Greenland	THULE AFB GREENLAND	THULE	6738 8967 13201 (slight delay in answering)	
Eastern North Atlantic, Iceland, North Sea, Baltic Sea	CROUGHTON AFB, UK	CROUGHTON	3067 5703 6750 9011 11176 13214	Apr.-Sep. 2300-0500 Oct.-Mar. 1900-0700 Apr.-Sep. 2200-0300 Oct.-Mar. 1800-0600 24 hr. Apr.-Sep. 0300- 2200 Oct.-Mar. 0600- 1800 24 hr. Apr.-Sep. 0500-2300 Oct.-Mar. 0700-1900
Eastern North Atlantic, Spain, Western Mediterranean, North Africa	LAJES AFB PO (Acores)	LAJES	3081 4746 6750 8967 11271 13244	2100-1000 2100-1000 24 hr. 24 hr. 1000-2100 1000-2100
South Atlantic, Cape of Good Hope, Western Indian Ocean, Red Sea	ASCENSION ISLAND AUXILIARY AFB	ASCENSION	6753 8993 11176 13244 15015	2000-0800 24 hr. 1800-1000 1000-1800 0800-2000
Central and Eastern Mediterranean, Strait of Hormuz, Persian Gulf, Northern Red Sea	INCIRLIK AFB TU	INCIRLIK	3137 6738 11176 13244 23227 15015	2000-0500 1500-0700 24 hr. 24 hr. 0700-1500 0500-0200

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAVY

Area	Control Station	Voice Call	SSB (carrier) Frequencies (in kHz)
Mediterranean, Eastern and Northern North Atlantic (CINCUSNAVEUR HICOM NET)	NCTAMS EURCENT DET ROTA SP NAVCOMTELSTA SICILY IT Designated afloat units	AOK NSY “ANY NAVY STATION THIS NET”	2200-0600 Carrier Frequency: 6720 Upper Sideband: 6721.5 0600-2200 Carrier Frequency: 11255 Upper Sideband: 11256.5
Atlantic, Caribbean (CINCLANTFLT)	NCTAMS LANT NORFOLK VA NCTAMS LANT DET KEY WEST FL NAVCOMTELSTA PUERTO RICO PR NAVCOMTELSTA KEFLAVIK IC	NAM NAR NAU NRK	24 hr. Carrier Frequency: 6687 Upper Sideband: 6698.5
HICOM Net	Navy Command Centers Ashore Designated afloat units	“ANY NAVY STATION THIS NET”	24 hr. Carrier Frequency: 23287 Upper Sideband: 23288.5
Indian Ocean Voice Net	NAVCOMTELSTA DIEGO GARCIA Designated afloat units	NKW “ANY NAVY STATION THIS NET”	0200-1300 Carrier Frequency: 23315 Upper Sideband: 23316.5 1300-0200 Carrier Frequency: 11205 Upper Sideband: 11206.5
Western Pacific HICOM Net	NAVCOMTELSTA GUAM NAVCOMTELSTA FAR EAST Designated afloat units	NPN NDT “ANY NAVY STATION THIS NET”	24 hr. Carrier Frequency: 6720 Upper Sideband: 6721.5 Carrier Frequency: 11205 Upper Sideband: 11206.5 Carrier Frequency: 11255 Upper Sideband: 11256.5 Carrier Frequency: 18009 Upper Sideband: 18010.5
Eastern and Central Pacific HICOM	NCTAMS PAC HONOLULU HI COMTHIRDFLEET NAVCOMTELSTA SAN DIEGO CA	NPM “ANY NAVY STATION THIS NET”	0600-1700 Carrier Frequency: 4415.4 Upper Sideband: 4417.7 24 hr. Carrier Frequency: 8777.4 Upper Sideband: 8779.2 1700-0600 Carrier Frequency: 13156.4 Upper Sideband: 13182.8

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

COAST GUARD (HF RADIOTELEPHONE)

Area	Station (Call Sign)	ITU Channel	SSB (carrier) Frequencies (in kHz)		
			Shore	Ship	Hours of Watch (GMT)
Atlantic	Boston MA (NMF)	424	4426	4134	2230-1030
		601	6501	6200	24 hr.
		816	8764	8240	24 hr.
		1205	13089	12242	1030-2230
		1625	17314	16432	on request
	CAMSLANT Chesapeake VA (NMN)	424	4426	4134	0000-1100
		601	6501	6200	24 hr.
		816	8764	8240	24 hr.
		1205	13089	12242	1100-0000
		1625	17314	16432	on request
	Miami FL (NMA)	601	6501	6200	24 hr.
		1205	13089	12242	24 hr.
		1625	17314	16432	24 hr.
	New Orleans LA (NMG)	424	4426	4134	24 hr.
		601	6501	6200	24 hr.
		816	8764	8240	24 hr.
		1205	13089	12242	24 hr.
		1625	17314	16432	on request
Pacific	Kodiak AK (NOJ)		4125	4125	24 hr.
		424	4426	4134	on request
		601	6501	6200	24 hr.
		816	8764	8240	on request
		1205	13089	12242	on request
	CAMSPAC Point Reyes CA (NMC)	424	4426	4134	24 hr.
		601	6501	6200	24 hr.
		816	8764	8240	24 hr.
		1205	13089	12242	24 hr.
		1625	17314	16432	on request
	Honolulu HI (NMO)	424	4426	4134	0600-1800
		601	6501	6200	24 hr.
		816	8764	8240	24 hr.
		1205	13089	12242	1800-0600
		1625	17314	16432	on request
	Guam (NRV)	601	6501	6200	0900-2100
		1205	13089	12242	2100-0900

Note: Miami, Boston and New Orleans receive remoted to CAMSLANT Chesapeake (NMN). Honolulu and Guam receive remoted to CAMSPAC Point Reyes (NMC).

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

COAST GUARD (HF RADIOTELEX)

This net provides for common medium and long range radioteletype communications between all ship stations and COMMSTAs for safety and liaison traffic. Calling and working frequencies between shore and ships are in the paired duplex frequency modes indicated below. Stations follow the indicated schedule for frequency guards. Any changes wanted by area commanders to meet operational needs will be included in this schedule.

Area	Station (Call Sign)	ITU Channel	SITOR or NBDP (assigned) Frequencies (in kHz)		
			Shore	Ship	Hours of Watch (GMT)
Atlantic	CAMSLANT	404	4212	4174	on request
	Chesapeake VA (NMN)	604	6316	6264.5	2300-1100
	Selcall: 1097	824	8428	8388	24 hr.
	MMSI: 003669995	1227	12592.5	12490	24 hr.
		1627	16819.5	16696.5	24 hr.
		2227	22389.5	22297.5	1100-2300
Pacific	Kodiak AK (NOJ)	407	4213.5	4175.5	HN
	Selcall: 1106	607	6317.5	6266	24 hr.
	MMSI: 003669899	807	8419.5	8379.5	HJ
	CAMPAC	412	4215.5	4178	on request
	Point Reyes CA (NMC)	620	6323.5	6272.5	HN
	Selcall: 1096	820	8426	8386	24 hr.
	MMSI: 003669990	1242	12600	12497.5	on request
		1620	16816.5	16693	HJ
		2220	22386	22294	on request
	Honolulu HI (NMO)	404	4212	4174	on request
	Selcall: 1099	604	6316	6264.5	on request
	MMSI: 003669993	827	8429.5	8389.5	24 hr.
		1220	12589	12486.5	24 hr.
		1627	16819.5	16696.5	on request
		2227	22389.5	22297.5	HJ
	Guam (NRV)	412	4215.5	4178	on request
	Selcall: 1100 or 1096	612	6319.5	6268.5	on request
	MMSI: 003669994	812	8422	8382	HN
		1212	12585	12482.5	24 hr.
		1612	16812.5	16689	24 hr.
		2212	22382	22290	HJ

- Notes:
- (1) Selcall number is used for radiotelex (sitor). The Maritime Mobile Service Identity (MMSI) is used for Digital Selective Calling (DSC) and may also be used for radiotelex.
 - (2) For radio telex the frequencies listed are assigned. The carrier or dial frequency is located 1.7 kHz below the assigned frequency.
 - (3) Honolulu, Kodiak and Guam are operated remotely by CAMSPAC Point Reyes (NMC).
 - (4) Time definitions:
 HJ — Daytime (2 hours after sunrise until 2 hours before sunset, local time).
 HN — Nighttime (2 hours before sunset until 2 hours after sunrise, local time).

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

RADIOTELEX SERVICES AVAILABLE

COMMAND	EXPLANATION	RESPONSE
OBS+	WEATHER OBSERVATION (message must be in standard format)	MOM11+ MSG+
AMV+	AMVER MESSAGE (message must be in standard format)	MOM01+ MSG+
MED+	MEDICAL EMERGENCIES (signals an alarm at the coast station)	MOM07+ MSG+
URG+	SHIPBOARD DISTRESS/EMERGENCIES (signals an alarm at the coast station)	MOM20+ MSG+
TFC+	MISCELLANEOUS ROUTINE MESSAGES	MOM16+ MSG+
VES+	U.S. FISHERIES, POLLUTION OR OTHER REQUIRED VESSEL REPORT	MOM13+ MSG+
OPR+	OPERATOR ASSISTANCE	
FREQ+	FREQUENCY GUARD SCHEDULE LIST	
MSG+	DOWNLOADS SHORE-TO-SHIP MESSAGES (limited to government vessels)	
BRK+	BREAK OFF COMMUNICATIONS	
HELP+	LIST OF AVAILABLE COMMANDS	

COMMERCIAL STATIONS (HF RADIOTELEX/NBDP)

The following radio communication stations are part of the Marine Radio Network, operated remotely from Mobile Marine Radio, Inc. in Mobile, Alabama. AMVER messages may be sent free of charge through any WLO Marine Radio Network station.

Location	Station (Call Sign)	ITU Channel	Frequencies (kHz)	
			Shore	Ship
Mobile, Alabama, U.S.A.	Mobile Radio (WLO) Selcall: 1090 MMSI: 003660003	406	4213	4175
		410	4215	4177
		417	4218	4180.5
		606	6317	6265.5
		610	6319	6267.5
		615	6321	6270
		624	6325.5	6274.5
		806	8419	8379
		810	8421	8381
		815	8423.5	8385.5
		829	8430.5	8390.5
		832	8432	8392
		836	8434	8394
		1205	12581.5	12479
		1211	12584.5	12482
		1215	12586.5	12484
		1234	12596	12493.5
		1240	12599	12496.5
		1251	12604.5	12502
		1254	12606	12503.5
		1261	12609.5	12507
		1605	16809	16685.5
		1611	16812	16688.5
		1615	16814	16690.5
		1625	16818.5	16695.5

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

Location	Station (Call Sign)	ITU Channel	Frequencies (kHz)	
			Shore	Ship
Mobile, Alabama, U.S.A. (cont.)	Mobile (WLO) Selcall: 1090 MMSI: 003660003	1640	16826	16703
		1644	16828	16705
		1654	16833	16710
		1661	16836.5	16713.5
		1810	19685.5	18875
		2210	22381	22289
		2215	22383.5	22291.5
		2254	22403	22311
		2256	22404	22312
		2260	22406	22314
		2262	22407	22315
		2272	22412	22320
		2284	22418	22326
		2510	26105.5	25177.5
		2615	26108	251800
Seattle, Washington, U.S.A.	Seattle (KLB) Selcall: 1113	408	4214	4176
		608	6318	6266.5
		818	8425	8385
		1223	12590.5	12488
		1604	16808.5	16685
		2240	22396	22304
Tuckerton, New Jersey, U.S.A.	Tuckerton (WSC) Selcall: 1108	419	4219	4181.5
		832	8432	8392
		1283	12620.5	12518
		1688	16850	16727
		1805	19683	18872.5
		2295	22423.5	22331.5

COMMERCIAL STATIONS (HF RADIOTELEPHONE)

Location	Station (Call Sign)	ITU Channel	SSB (carrier) Frequencies (in kHz)	
			Shore	Ship
Mobile, Alabama, U.S.A.	Mobile (WLO)	405	4369	4077
		414	4396	4104
		419	4411	4119
		607	6519	6218
		824	8788	8264
		829	8803	8279
		830	8806	8282
		1212	13110	12263
		1226	13152	12305
		1607	17260	16378
		1641	17362	16480
		1807	19773	18798
		2237	22804	22108

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

COMMERCIAL STATIONS (HF DSC)

Location	Station (Call Sign)	ITU Channel	Frequencies (in kHz)	
			Shore	Ship
Mobile, Alabama, U.S.A.	Mobile (WLO) MMSI: 003660003		4219	4208
			6331	6312.5
			8436.5	8415
			12657	12577.5
			16903	16805

FREQUENCY SELECTION GUIDE

Time at Coast (Local)	Distance (NM)		
	200-750	750-1500	>1500
0000	3-5 MHz	6-9 MHz	6-11 MHz
0400	3-5 MHz	4-7 MHz	6-9 MHz
0800	3-7 MHz	6-11 MHz	11-22 MHz
1200	4-7 MHz	8-13 MHz	13-22 MHz
1600	4-7 MHz	8-13 MHz	13-22 MHz
2000	3-7 MHz	6-11 MHz	11-22 MHz

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

LIST OF INMARSAT COAST EARTH STATIONS

(Extracted from ANNEX 5 of the IMO GMDSS Master Plan)

NAV/MET Area	Country	Location	Ocean Area	Inmarsat Satellite Service	Associated RCC
I	Netherlands	Borum (Xantic) (LES ID x12 and x22)	AOR-E (12)	-A,-B,-C,-E	Coast Guard Center Den Helder
			AOR-E (22)	-C	
			AOR-W (12)	-A,-B,-C,-E	
			AOR-W (22)	-C	
			IOR (12)	-A,-B,-E	
	Norway	Eik	AOR-E	-A,-B,-C	MRCC Stavanger
			AOR-W	-A,-B,-C	
			IOR	-A,-B,-C	
	Poland	Psary	AOR-E	-A,-B,-C	RCC Gdynia
			IOR	-A,-B,-C	
	United Kingdom	Goonhilly	AOR-E	-A,-B,-C,-E	MRCC Falmouth
			AOR-W	-A,-B,-C,-E	
			IOR	-A,-B,-C	
			POR	-A,-B,-C	
II	France	Pleumeur-Bodou	AOR-E	-A	MRCC Gris-Nez (MRCC Bremen for Inmarsat-E)
			AOR-W	-A	
			IOR	-A	
			POR	-A	
		Aussaguel	AOR-E	-B,-C,-E	
			IOR	-B,-C,-E	
	Portugal	Sintra	AOR-E	-C	MRCC Lisbon
III	Greece	Thermopylae	AOR-E	-A,-B,-C	Piraeus JRCC
			IOR	-A,-B,-C	
	Italy	Fucino	AOR-E	-A,-B,-C	MRCC Roma
			IOR	-A,-B,-C	
	Turkey	Ata	AOR-E	-A,-C	MRCC Ankara
			IOR	-A,-C	
	Ukraine	Odessa	AOR-E	-A	
			IOR	-A	
IV	Canada	Laurentides	AOR-E	-B	RCC Halifax
			AOR-W	-B	
	United States	Southbury	AOR-E	-A,-B,-C	RCC Norfolk
			AOR-W	-A,-B,-C	
		Staten Island	AOR-E	-A	
V	Brazil	Tangua	AOR-E	-A,-C	Salvamar-Su Este; Rio de Janeiro
VIII	India	Arvi	IOR	-A,-B,-C	
IX	Egypt	Maadi	AOR-E	-A	RCC Cairo
	Iran	Boumehen	IOR	-A,-C	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

NAV/MET Area	Country	Location	Ocean Area	Inmarsat Satellite Service	Associated RCC
IX	Saudi Arabia	Jiddah	IOR	-A	RCC Jiddah
	United Arab Emirates	Towi Al Sawan	IOR	-B	
X	Australia	Perth (Xantic) (LES ID x12 and x22)	IOR (12)	-C,	MRCC Australia (Canberra)
			IOR (22)	-A,-B,-C,-E	
			POR (12)	-A,-B,-C,-E	
			POR (22)	-A,-B,-C,-E	
XI	China	Beijing	IOR	-A,-B,-C	MRCC China
			POR	-A,-B,-C	
	Indonesia	Jatiluhur	IOR	-B	
	Japan	Yamaguchi	IOR	-A,-B,-C	RCC Yokohama RCC Nagoya RCC Kobe RCC Hiroshima RCC Kitakyushu RCC Maizuru RCC Niigata RCC Kagoshima RCC Naha
			POR	-A,-B,-C	RCC Otaru RCC Shiogama
	Malaysia	Kuantan	IOR	-A,-B	MRCC Port Klang
	Republic of Korea	Kumsan	IOR	-A,-C	RCC Inchon
			POR	-A,-C	
	Singapore	Sentosa	IOR	-A,-B,-C	Singapore Port Operations Control Center
			POR	-A,-B,-C	
	Thailand	Nonthaburi	IOR	-B,-C	RCC Bangkok
	Vietnam	Haiphong	IOR	-B,-C	MRCC Viet Nam
	Hong Kong (Associate Member of IMO)	Cape D'Aguilar	IOR	-A,-B	MRCC Hong Kong
			POR	-A,-B	
XII	United States	Santa Paula	POR	-A,-B,-C	RCC Alameda
		Niles Canyon	AOR-W	-A,-E	RCC Norfolk
			POR	-A,-E	RCC Alameda
XIII	Russian Federation	Nakhodka	POR	-A	MRCC Vladivostok
		Nudol	AOR-E	-C	SMRCC Moscow
			IOR	-C	

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

LIST OF RESCUE COORDINATION CENTERS USING SHIP EARTH STATIONS

(Extracted from ANNEX 6 of the IMO GMDSS Master Plan)

NAV/MET Area	Country	RCC		SES DETAIL		
		Name	Position	ID	Type	Ocean Region Accessed
I	Estonia	MRCC Tallinn	59-24N 24-40E	492480040	Inmarsat-C	AOR-E
	Germany	MRCC Bremen	53-04N 08-48E	492621021	Inmarsat-C	AOR-E
	Latvia	MRCC Riga	57-02N 24-05E	427518510	Inmarsat-C	AOR-E
	Lithuania	MRCC Klaipeda	55-43N 21-06E	327703310	Inmarsat-B	AOR-E or IOR
	Russian Federation	MRCC Saint Petersburg	59-54N 30-14E	492509012	Inmarsat-C	AOR-E, IOR
	Sweden	MRCC Göteborg	57-28N 11-56E	326590010	Inmarsat-B	AOR-E, AOR-W, IOR
				426590010	Inmarsat-C	AOR-E, AOR-W, IOR
	United Kingdom	MRCC Falmouth	Falmouth	1441532	Inmarsat-A	AOR-E
				423200159	Inmarsat-C	AOR-W
				423200158	Inmarsat-C	AOR-E
II	France	MRCC Etel	47-40N 03-12W	422799025	Inmarsat-C	AOR-E
III	Croatia	MRCC Rijeka	45-20N 14-27E	423816510	Inmarsat-C	AOR-E
	Cyprus	RCC Larnaca	34-52N 33-37E	321099990	Inmarsat-B	AOR-E, IOR
				421099999	Inmarsat-C	AOR-E, IOR
	Greece	Piraeus JRCC	37-58N 23-40E	1133207	Inmarsat-A	AOR-E, IOR
				423767310	Inmarsat-C	AOR-E, IOR
	Russian Federation (Caspian Sea)	MRCC Novorossiysk	44-41N 37-47E	327325510	Inmarsat-B	IOR
		MRCC Astrakhan	46-20N 48-00E	427310985	Inmarsat-C	IOR
	Ukraine	MRCC Odessa	46-29N 30-44E	492550019	Inmarsat-C	AOR-E
IV	Bermuda	RCC Bermuda	32-23N 64-41W	431010110	Inmarsat-C	AOR-E
	France	MRCC Fort-de-France	14-36N 61-04W	422799024	Inmarsat-C	AOR-E, AOR-W
VI	Argentina	MRCC Puerto Belgrano	38-53S 62-06W	497222227	Inmarsat-C	AOR-E, AOR-W
VII	France (La Reunion)	MRCC La Reunion	20-56S 55-17E	422799193	Inmarsat-C	IOR
VIII	France (La Reunion)	MRCC La Reunion	20-56S 55-17E	422799193	Inmarsat-C	IOR
IX	Egypt	Suez Canal Authority	Ismailia Radio	1622570	Inmarsat-A	AOR-E
X	Australia	RCC Australia	35-15S 149-05E	450300458	Inmarsat-C	POR
	France (New Caledonia)	MRCC Noumea	22-17S 166-26E	422799194	Inmarsat-C	POR
XI	China	Beijing	N.I.	N.I.	N.I.	N.I.
	Hong Kong (Associate Member of IMO)	MRCC Hong Kong	Hong Kong	447735010	Inmarsat-C	POR
XIII	Russian Federation	MRCC Vladivostok	43-07N 131-53E	492500379	Inmarsat-C	POR

DISTRESS, EMERGENCY, AND SAFETY TRAFFIC

		RCC		SES DETAIL		
NAV/MET Area	Country	Name	Position	ID	Type	Ocean Region Accessed
XIII	Russian Federation (cont.) (White Sea)	MRSC Yuzhno-Sakhalinsk	46-59N 142-43E	427311122	Inmarsat-C	POR
		MRSC Arkhangelsk	64-32N 40-32E	492509110	Inmarsat-C	AOR-E, IOR
XIV	French Polynesia	MRCC Papeete	17-32S 149-35W	422799192	Inmarsat-C	POR

CHAPTER 5

STATIONS TRANSMITTING MEDICAL ADVICE

500A. General

This chapter is to assist ships at sea, with no medical personnel embarked, experiencing a medical emergency onboard. The text of any message should be formatted in plain language and should describe the medical emergency as follows:

- General description of medical resources.
- Name of next port of call.
- List of ports visited where exotic or infectious diseases could have been contracted.
- Patient data:
 - Sex.
 - Age.
 - Clinical antecedents.
 - Vital signs (temperature in degrees centigrade).
 - Symptoms.
 - Presumed cause of illness or accident.
 - Observations.

If language is a limiting factor, the International Code of Signals (NVPUB102) can be used by itself, or in

conjunction with English or another language specified by the coast station called.

Messages are generally addressed RADIOMEDICAL followed by the name of the coast station to which the message is sent. The priority of the message should depend on the severity of the ailment. In extreme emergency the urgency signal (XXX or PAN PAN) should precede the address on the address line (example: XXX RADIOMEDICAL HALIFAX RADIO).

Messages are sent using distress and safety frequencies (See chapter 4.) by radiotelegraphy, radiotelephony, or Inmarsat

500B. Station List

Detailed information concerning stations transmitting medical advice is contained in the List of Radiodetermination and Special Service Stations of the International Telecommunication Union. A brief listing of medical advice stations, alphabetical by country, follows.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
For all addresses in this table, the letters "XXX" are for use in radiotelegraphy; they are replaced by the words "Pan Pan Pan" in radiotelephony.				
5010	Algeria	XXX RADIOMEDICAL; station call sign.	Algiers (7TA). Annaba (7TB). Oran (7TO).	Message must be in English or French.
5020	Argentina	Ministry of Social Welfare and Public Health. In urgent cases the prefix "XXX" may be used.	General Pacheco (LPD)(LPL).	Message must be in Spanish plain language. It should include patient's sex, age, medical history and symptoms. Message must be signed by the Master. This service assumes no liability.
5030	Australia	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station.	Message should include patient's symptoms and description of ship's medical chest. It must be signed by the Master. Medical advice can be obtained on Inmarsat-A and -C via Perth, code 32, and medevac assistance on Inmarsat-A and -C via Perth, code 38.
5050	Bahrain	Health Officer, Bahrain.	Bahrain (A9M).	
5060	Bangladesh	Medical Services, Port Health Officer, Chittagong. In urgent cases the prefix "XXX" may be used.	Chittagong (S3D).	Message should include description of patient's symptoms and description of ship's medical chest. It must be signed by the Master.
5070	Barbados	Health Officer, Barbados.	Barbados (8PO).	
5080	Belgium	RADIOMEDICAL Oostende. In urgent cases the prefix "XXX" may be used.	Oostende (OST).	Message must be in Dutch, English, French or German. It should include description of ship's medical chest and patient's symptoms, age, sex, vital signs and medical history. Message must be signed by the Master.
5090	Benin	XXX RADIOMEDICAL Cotonou.	Cotonou (TYA).	Message must be in French. It should include description of ship's medical chest and patient's symptoms, age, sex, vital signs and medical history. Message must be signed by the Master.
5100	Bermuda	Health Officer, Bermuda.	Bermuda Radio (VRT)(ZBM).	
5101	Burma	Medical Service, Rangoon.	Rangoon (XYR).	
5110	Cameroon	XXX RADIOMEDICAL Douala.	Douala (TJC).	Message must be in French. This service assumes no liability.
5120	Canada	RADIOMEDICAL; station call sign.	Any coast radio station.	Message must be signed by the Master.
5130	Chile	MEDICO; station call sign. In urgent cases the prefix "XXX" may be used.	Antofagasta (CBA). Magallanes (CBM). Talcahuano (CBT). Valparaiso (CBV).	
5140	China	MEDICO; station call sign. In urgent cases the prefix "XXX" may be used.	Dalian (XSZ). Guangzhou (XSQ). Qingdao (XST). Shanghai XSG). Tianjin (XSV).	
5141	Comoros	RADIOMEDICAL Dzaoudzi.	Dzaoudzi (FJN).	Message must be in English or French.
5150	Congo	XXX RADIOMEDICAL Pointe Noire.	Pointe Noire (TNA).	Message must be in French. This service assumes no liability.
5160	Costa Rica	DH MEDICO Limon.	Limon (TIM).	
5165	Croatia	RADIOMEDICAL; station call sign.	Any coast radio station.	Message should include patient's age, sex, medical history, symptoms and vital signs and description of ship's medical chest.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5170	Cuba	DH MEDICO; station call sign.	Habana (CLA)(CLT). Santiago De Cuba (CLM).	
5180	Cyprus	MEDICO DMO Nicosia.	Cyprus (5BA).	
5190	Denmark	RADIOMEDICAL; station call sign.	Blaavand (OXB). Lyngby (OXZ). Ronne (OYE). Skagen (OXP). Torshavn (OXJ).	Message must be in Danish, English, French, German, Norwegian or Swedish. It should include ship's name and position and patient's symptoms and vital signs. Message must be signed by the Master.
5200	Djibouti	Service Quarantenaire Djibouti (J2A). In urgent cases the prefix "XXX" may be used.	Djibouti (J2A).	Message must be in English or French. This service assumes no liability.
5210	Dominican Republic	RADIOMEDICO Santo Domingo Piloto.	Santo Domingo Piloto (HIA).	
5220	Egypt	XXX RADIOMEDICAL; station call sign.	Alexandria (SUH). Kosseir (SUK).	Message must be signed by the Master. This service assumes no liability.
5245	Fiji Islands	RADIOMEDICAL Suva.	Suva (3DP).	
5250	Finland	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station except Kemi, Turku or Port.	Message must be in English, Finnish or Swedish. It should include patient's symptoms and cause of illness. Message must be signed by the Master. Consultations with doctors of central hospitals of Helsinki and Turku University are free of charge. Other doctors consulted set their own fees.
5260	France	XXX RADIOMEDICAL; name of CROSS/Sous-CROSS station.	Any coast radio station or CROSS/Sous-CROSS station. CCMM telex: 530333F telephone: 33 5 61 49 33 33	Message must be in French, English, or International Code (NVPUB 102). The French Center for Maritime Medicine (CCMM) is part of the Urgent Medical Aid Service (SAMU) in Toulouse and is available continuously to give advice to ships at sea. After analyzing the patient's situation, CCMM advises the ship's Master of the recommended treatment. Type 1 - treatment onboard without altering voyage. Type 2 - treatment onboard with change of voyage plan. Type 3 - urgent evacuation without doctor (EVA-SAN). Type 4 - urgent evacuation with doctor (EVA-MED). Type 5 - onboard transfer of medical team followed by evacuation. For treatment types 3, 4, and 5 (interventions by CCMM), the Master is advised to send his request by telex or radiotelephone to the nearest CROSS station; Etel and La Garde CROSS stations specialize in providing medical advice. CCMM can be contacted by: (1) Radiotelephone via any CROSS or Sous-CROSS station or coast radio station. (2) Radiotelex (MED+) via any coast radio station. (3) Inmarsat telephone call using code 38.
5290	Gambia	Health Officer, Banjul.	Banjul (C5G).	
5300	Germany	Funkarzt; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station.	Message must be in English or German.
5320	Ghana	Port Health Officer, Takoradi.	Takoradi (9GA).	
5330	Greece	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station.	Message must be in English, French or Greek. This service assumes no liability.
5340	Greenland	RADIOMEDICAL Julianehab.	Qaqortoq (OXF).	Message must be in Danish, English, French, German, Norwegian or Swedish.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5350	Guadeloupe	XXX RADIOMEDICAL Pointe-a-Pitre.	Pointe-a-Pitre (FFQ).	Message must be in French.
5360	Guinea	XXX RADIOMEDICAL Conakry.	Conakry (3XC).	Message must be in French. It should include patient's symptoms, age, sex, vital signs and medical history. This service assumes no liability. Conakry guards 2182 kHz 0700-1900 and 3 minutes at the beginning of every hour 2000-2200.
5370	Guyana	Health Officer, Georgetown.	Demerara (8RB).	
5380	Hong Kong (China)	Porthealth Hong Kong.	Hong Kong (VRX).	
5390	India	Medical service; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station.	Message should include patient's symptoms and description of ship's medical chest. It must be signed by the Master.
5400	Indonesia	RADIOMEDICAL Jayapura. In urgent cases the prefix "XXX" may be used.	Jayapura (PNK).	Message must be in Dutch or English. It should include description of ship's medical chest and patient's sex, age, medical history, symptoms and vital signs. Message must be signed by the Master.
5410	Iraq	Port Medical Officer, Ma'aqal. In urgent cases the prefix "XXX" may be used.	Basrah Control (YIR).	
5420	Ireland	(No specific format).	Any coast radio station.	If a doctor from shore is wanted, the request should be addressed as a radiotelegram to the medical officer of the nearest convenient port.
5430	Israel	MEDICO Haifa. In urgent cases the prefix "XXX" may be used.	Haifa (4XO).	Message must be signed by the Master. This service assumes no liability.
5440	Italy	MEDRAD CIRM Roma.	Any coast radio station. The following coast radio stations will relay messages to CIRM: Italian coast radio stations (asking for CIRM) (address: MEDRAD CIRM Roma). USCG stations (Atlantic and Gulf coasts) (address: DH MEDICO CIRM Roma). USCG stations (Pacific coast) (address: DH MEDICO CIRM Roma via PREWI). CIRM can be contacted 24 hours by: telephone: 39 06 592 3331/3332 facsimile: 39 06 592 3333 telex*: 043 612068 CIRM I (both satellite or radio telex) E-mail: telesoccorso@cirm.it Website: www.cirm.it Maritec system	The International Radio Medical Center (CIRM) provides 24-hour free radio medical assistance to patients onboard vessels of any nationality anywhere in the world. CIRM can also decide and coordinate, wherever possible, the Medevac of a patient from a vessel by naval craft or helicopter, cooperating mainly with National MRCCs and if necessary with other rescue organizations, such as the USCG. Message must be in English, French or Italian. When requesting radio medical assistance, the vessel should communicate the following information regarding: the vessel: (a) Vessel's name/call sign. (b) Position, port of departure and destination, ETA, route and speed. (c) Medicine chest available. the patient: (d) Name, age and nationality. (e) Temperature, blood pressure, pulse and respiratory rates. (f) Patient's symptoms, location and type of pains, and any relevant information concerning the illness. (g) Other medical problems, with special reference to drug or other allergies, chronic illness and their treatment. (h) In case of accident, in addition to the symptoms, where and how the accident occurred. (i) Treatment already administered to the patient.
*NOTE: Requests via telex should be addressed MEDRAD or DH MEDICO to obtain priority of transmission.				
5450	Ivory Coast	XXX RADIOMEDICAL Abidjan.	Abidjan (TUA).	Message must be in French. It should include patient's age, sex, symptoms, medical history and vital signs. Message must be signed by the Master. This service assumes no liability. Abidjan guards 2182 kHz, but only distress and safety traffic are handled 2000-0800.
5460	Jamaica	Health Office, Kingston.	Kingston (6YI).	

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5470	Japan	MDC; station call sign and hospital name if applicable. In urgent cases the prefix "XXX" may be used.	Any coast radio station. The following hospitals also respond under the call signs listed: NKEB - Kobe Moji Nagasaki Nagoya Osaka Otaru Shiogama Tokyo Yokohama SHKB - Osaka Tokyo Yokohama Japanese vessels with doctors aboard will also respond to requests for medical advice (address: ship's Master).	Message must be in English, French, German or Japanese. It must be signed by the Master.
5480	Kenya	Medical Port Health Officer, Mombasa.	Mombasa (5ZF).	Message must be signed by the Master.
5485	Latvia	(No specific format).	Riga (UKB).	
5500	Madagascar	XXX RADIOMEDICAL; station call sign.	Antseranana (5RL). Mahajango (5RO). Taomasina (5RS). Toliara (5RT).	Message must be in English, French or Malagasy. This service assumes no liability.
5510	Malaysia	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Kelang (9MP). Kota Kinbalu (9WH). Kuantan (9MK). Kuching (9WW20). Miri (9WW21). Pinang (9MG). Sandakan (9WH21).	Message should include patient's symptoms and description of ship's medical chest.
5520	Malta	Medical Officer, Malta.	Malta (9HD).	
5540	Martinique	XXX RADIOMEDICAL Fort de France Radio.	Fort de France (FFP).	Message must be in French. This service assumes no liability.
5541	Mauritius	Superintendent, Victoria Hospital, Quatre-Bornes, Mauritius.	Mauritius (3BA).	Message must be in English or French.
5542	Monaco	(No specific format).	Monaco (3AC).	Message must be in English, French or Italian.
5550	Morocco	XXX RADIOMEDICAL; station call sign.	Agadir (CND). Casablanca (CNP). Safi (CND3). Tangier (CNW).	Message must be in French. This service assumes no liability.
5560	Namibia	Porthealth, Walvis Bay.	Walvis Bay (ZSV).	Message must be in International Code (NVPUB 102) supplemented, if necessary, with Afrikaans or English. It should include patient's symptoms and brief description of ship's medical chest. This service assumes no liability.
5565	Nauru	RADIOMEDICAL Nauru.	Nauru (C2N).	

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5570	Netherlands	Radio Medical Advice (RMA).	Netherlands Coastguard Radio (PBK).	Message must be in Dutch or English. Radiotelephone (VHF)-Sea Area A1: (a) Call Netherlands Coastguard Radio (PBK) on VHF DSC Ch. 70 MMSI 002442000 or Ch. 16. (b) State vessel's name, callsign and position, and ask for Medical Advice. (c) The vessel will be assigned a VHF working channel (Ch. 23 or 83) and connected to the duty RMA doctor. (d) Use the Radio Medical Advice questionnaire to give the doctor clear information. Radiotelephone (MF)-Sea Area A2: (a) Call Netherlands Coastguard Radio (PBK) on MF DSC 2187.5 kHz MMSI 002442000 requesting a transfer to 2182 kHz. (b) After establishing contact on 2182 kHz state vessel's name, callsign and position, and ask for Medical Advice. (c) The vessel will be assigned a working frequency and connected to the duty RMA doctor. (d) Use the Radio Medical Advice questionnaire to give the doctor clear information. Inmarsat-A/-B/-M Telephone (via Burum-Station 12): (a) Contact Station 12 by entering code 12. (b) For priority use code 32-Medical Advice or code 38-Medical Evacuation. (c) State vessel's name, Inmarsat number and position. (d) Vessel will be connected to the duty RMA doctor. (e) Use the Radio Medical Advice questionnaire to give the doctor clear information. Inmarsat-A/-B/-C Telex* (via Burum-Station 12): (a) Contact Station 12 by entering code 12. (b) For priority use code 32-Medical Advice or code 38-Medical Evaluation.
*NOTE: For Inmarsat -A/-B Telex, the vessel will be automatically relayed to the RMA computer and will receive the host (MEDIC SERVICE NL). Vessel's host will be called in. Send the message and end with: NNNN. Disconnect but do not switch off the Inmarsat terminal as the RMA computer will automatically send a reply from the doctor. For Inmarsat-C Telex, the vessel will be automatically relayed to the store and forward system of Station 12. Send the message and end with: NNNN. Disconnect but do not switch off the Inmarsat terminal as the RMA computer will automatically send a reply from the doctor.				
5580	Netherland Antilles	RADIOMEDICUS Curacao.	Curacao (PJC).	Message should include description of ship's medical chest, last/next ports of call and patient's age, sex, symptoms, vital signs and medical history. It must be signed by the Master.
5590	New Caledonia	RADIOMEDICAL Noumea.	Noumea (FJP).	Message must be in French. It should include patient's symptoms and description of ship's medical chest. Message must be signed by the Master.
5600	New Zealand	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Taupo Maritime Radio (ZLM).	Message should include patient's symptoms and description of ship's medical chest. It must be signed by the Master.
5610	Nigeria	Health Officer, Lagos.	Lagos (5OW).	
5620	Norway	(No specific format).	Any coast radio station.	Message must be in Danish, English, German, Norwegian or Swedish.
5630	Oman	Health Officer, Muscat.	Muscat (A4M).	
5640	Pakistan	Medical Services, Port Health Officer, Karachi. In urgent cases the prefix "XXX" may be used.	Karachi (ASK).	Message should include patient's symptoms and description of ship's medical chest. It must be signed by the Master.
5650	Panama	DH MEDICO.	Canal (HPN60)	Canal guards 500 kHz.
5660	Papua New Guinea	RADIOMEDICAL; station call sign.	Port Moresby (P2M). Rabaul (P2R).	
5665	Peru	Centro Medico Naval Callao.	Callao (OBC3).	Message must be in Spanish. It should include patient's sex, age, symptoms, medical history and vital signs, description of ship's medical chest, position and next port of call.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5670	Philippines	MEDICO Manila.	Manila (DZR).	
5680	Poland	RADIOMEDICAL; station call sign. In urgent cases the prefix "XXX" may be used.	Gdynia (SPC)(SPH). Szczecin (SPE)(SPO). Witowo (SPN)(SPS).	Message must be in English or Polish.
5690	Portugal	XXX RADIOMEDICAL; station call sign.	Lisboa (CUL). Madeira (CUB). Sao Miguel (CUG).	Message must be in English, French or Portuguese. It should include cause and symptoms of illness. Message must be signed by the Master. This service assumes no liability.
5705	Russia	(No specific format).	Arkhangel'sk (UGE). Murmansk (UMN). St. Petersburg (UDB). Vladivostok (UIK).	Message must be in English or Russian.
5710	Reunion Island	XXX RADIOMEDICAL St. Denis.	St. Denis (FFD).	Message must be in French. This service assumes no liability.
5720	St. Helena	Medical Officer, St. Helena.	St. Helena (ZHH).	
5725	St. Pierre and Miquelon	RADIOMEDICAL St. Pierre.	St. Pierre (TXU).	Message must be in French.
5730	Saudi Arabia	(No specific format).	Dammam (HZG). Jiddah (HZH). Ra's Tannurah (HZY).	Stations guard 500 kHz.
5740	Senegal	XXX RADIOMEDICAL Dakar.	Dakar (6VA).	Message must be in French. It should include patient's age, sex, medical history, vital signs and symptoms. Dakar guards 2182 kHz, but only distress and safety traffic are handled 2000-0800.
5741	Seychelles	Health Officer, Seychelles.	Seychelles (S7Q).	
5750	Sierra Leone	Health Officer, Freetown.	Freetown (9LL).	
5755	Singapore	RADIOMEDICAL Singapore.	Singapore (9VG).	
5760	Slovenia	RADIOMEDICAL; station call sign.	Any coast radio station.	Message should include patient's age, sex, medical history, symptoms and vital signs and description of ship's medical chest.
5770	South Africa	Porthealth; station call sign.	Capetown (ZSC). Durban (ZSD). East London (ZSA). Port Elizabeth (ZSQ). Richards Bay (ZSU).	Message must be in International Code (NVPUB 102) supplemented, if necessary, with Afrikaans or English. It should include patient's symptoms and description of ship's medical chest. This service assumes no liability.
5780	Yemen Aden	Health Officer, Aden.	Aden (7OA).	
5790	Spain	MEDRAD; station call sign. In urgent cases the prefix "XXX" may be used.	Any coast radio station.	Message must be in Spanish or International Code (NVPUB 102).
5800	Sri Lanka	Medical Service, Colombo. In urgent cases the prefix "XXX" may be used.	Colombo (4PB).	Message should include patient's symptoms and description of ship's medical chest. It must be signed by the Master.
5810	Suriname	Medical Advice, Director of Health, Paramaribo.	Paramaribo (PZN).	Message should include description of ship's medical chest and patient's sex, age, symptoms and medical history. It must be signed by the Master.
5820	Sweden	RADIOMEDICAL; station call sign.	Any coast radio station except Tingstade (SAE).	Message must be in English, French, German or Swedish.
5820.5	Svalbard	(No specific format).	Svalbard (LGS). Ny-Alesund (LJN).	Message must be in Danish, English, German, Norwegian or Swedish (French over radiotelegraph only).
5821	Switzerland	RADIOMEDICAL Bern.	Bern (HEB)(HEC).	Message may be in English, but preferably in French or German.
5822	Tahiti	RADIOMEDICAL Mahina.	Mahina (FJA).	Message must be in English or French.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5823	Tonga	RADIOMEDICAL Nukualofa.	Nukualofa (A3A).	
5824	Togo	RADIOMEDICAL Lome.	Lome (5VA).	Message must be in French.
5840	Tunisia	XXX RADIOMEDICAL; station call sign.	Bizerte (3VB). Mahdia (3VM). Sfax (3VS). Tunis (3VX)(3VT).	Message must be in French.
5845	Ukraine	(No specific format).	Odessa (UDE).	
5850	United Kingdom	(No specific format).	Any coast radio station.	Radiotelephone (VHF): Vessels should call on DSC Ch. 70 or on VHF Ch. 16 and will be directed to a working channel. After contact is established on the working channel, the vessel will be connected to a casualty doctor by simplex radiotelephone. Radiotelephone (MF): After an initial call on DSC 2187.5 kHz using the Urgency priority and contact is established on 2182 kHz, the vessel will be assigned a working frequency. After contact is established on the working frequency, the vessel will be connected to a casualty doctor by simplex radiotelephone. Alternatively, vessels may call direct on 2182 kHz. Inmarsat-A/-B/-M/Mini-M Telephone (via Goonhilly): Vessels should use code 32 for medical advice and will be automatically connected to a doctor. Vessels requiring urgent medical assistance should use code 38 and will be automatically connected to the HM Coast Guard.
5860	United States (Atlantic and Gulf)	DH MEDICO; station call sign; group count (number of words in message).	Massachusetts: Boston (NMF), USCG. Virginia: CAMSLANT Chesapeake (Portsmouth) (NMN), USCG. Alabama: Mobile Radio (WLO), Mobile Marine Radio, Inc. Florida: Miami (NMA), USCG. Louisiana: New Orleans (NMG), USCG.	Telephone calls from ships to doctors or hospitals are handled as regular phone calls in accordance with legally applicable tariffs. Ships requesting medical advice with no specific telephone number will be connected by the USCG. No charge is made for the call when the ship states it is an emergency involving the safety of life or property at sea. Message must be signed by the Master. Messages transmitted to a USCG station are routed to the nearest medical facility. This service (inquiry and reply) is free of charge. Numerous USCG stations continuously guard 2182 kHz (USB) and 156.8 MHz (VHF-FM) and will facilitate the provision of medical advice through their associated Rescue Coordination Center (RCC). The use of the signal "CQ" from the International Code (NVPUB 102) for medical messages is discouraged.
5861	United States (Great Lakes)	DH MEDICO; station call sign; group count (number of words in message).		Telephone calls from ships to doctors or hospitals are handled as regular phone calls in accordance with legally applicable tariffs. ships requesting medical advice with no specific telephone number will be connected by the USCG. No charge is made for the call when the ship states it is an emergency involving the safety of life or property at sea. Messages must be signed by the Master. Messages transmitted to a USCG station are routed to the nearest medical facility. This service (inquiry and reply) is free of charge. Numerous USCG stations continuously guard 2182 kHz (USB) and 156.8 MHz (VHF-FM) and will facilitate the provision of medical advice through their associated Rescue Coordination Center (RCC). The use of the signal "CQ" from the International Code (NVPUB 102) for medical messages is discouraged.

STATIONS TRANSMITTING MEDICAL ADVICE

(1) No.	(2) Name	(3) Address	(4) Name of Coast Station	(5) Remarks
5862	United States (Pacific)	DH MEDICO; station call sign; group count (number of words in message).	Alaska: Kodiak (NOJ), USCG. Washington: Seattle (KLB), Mobile Marine Radio, Inc. California: CAMSPAC Point Reyes (San Francisco) (NMC), USCG. Hawaii: Honolulu (NMO), USCG. Mariana Islands: Guam (NRV), USCG.	Telephone calls from ships to doctors or hospitals are handled as regular phone calls in accordance with legally applicable tariffs. Ships requesting medical advice with no specific telephone number will be connected by the USCG. No charge is made for the call when the ship states it is an emergency involving the safety of life or property at sea. Message must be signed by the Master. Messages transmitted to a USCG station are routed to the nearest medical facility. This service (inquiry and reply) is free of charge. Numerous USCG stations continuously guard 2182 kHz (USB) and 156.8 MHz (VHF-FM) and will facilitate the provision of medical advice through their associated Rescue Coordination Center (RCC). The use of the signal "CQ" from the International Code (NVPUB 102) for medical messages is discouraged.
5866	Uruguay	Montevideo Trouville (CWC39).	Any coast radio station.	Message must be in International Code (NVPUB 102).
5868	Vietnam	RADIOMEDICAL; station call sign.	Ho Chi Minh Ville (XVS). Haiphong (XVG).	
5880	Yugoslavia	RADIOMEDICAL; station call sign.	Any coast radio station.	Message should include patient's age, sex, medical history, symptoms and vital signs and description of ship's medical chest.

CHAPTER 6

LONG RANGE NAVIGATIONAL AIDS

PART I LORAN-C

600A. General

LORAN is a long range system which operates on the principle that the difference in time of arrival of signals from two precisely synchronized transmitting stations describes a hyperbolic line of position (LOP). This time difference is measured with a LORAN receiver, and is either converted into geographic LOPs for use with nautical charts overprinted with LORAN lines or directly into latitude and longitude readouts. Since at least two LOPs must be determined to establish a position, the user must be within the range of two pairs of transmitting stations or, as is normally the case, a LORAN chain where a centrally located station serves as a timing reference for the other stations in the chain. This station is called the master station (designated M) and the secondaries are usually designated by the letters V, W, X, Y, or Z. In the United States, LORAN-C is operated by the U.S. Coast Guard. Developed in the late 1950's, LORAN-C operates on a frequency of 100 kHz. Each LORAN-C chain operates on a different pulse group repetition interval (GRI). This allows the operator to make at least two time difference (TD) measurements without changing channels on the receiver. The low frequency of LORAN-C permits usable groundwave signals over several hundred miles.

600B. Operation

The LORAN-C GRI rate structure is such that a GRI between 40,000 and 99,990 microseconds is chosen for each chain. The chain designations are four digit numbers which indicate the GRI in tens of microseconds. For example, the northeast U.S. LORAN-C chain is designated 9960 and has a GRI of 99,600 microseconds.

The accuracy of a LORAN-C fix is determined by the accuracy of the individual lines of position used to establish the fix, as well as by their crossing angle of intersection. The accuracy of the individual lines of position depends on the following factors:

- Synchronization of the transmitting stations.
- Operator skill.
- Type of receiver and its condition.
- Skill in plotting the line of position.
- Position of user relative to the transmitting stations.
- Accuracy of charts.
- Accuracy of corrections to compensate for the overland path.

Some LORAN-C receivers employ a coordinate converter function, which is designed to internally compute the latitude and longitude and directly display these values. This eliminates the need for charts

overprinted with LORAN-C time difference lines. (CAUTIONARY NOTE: The conversion computation on some models is based upon an all sea water propagation path. This leads to errors if the LORAN-C signals from the various stations involve appreciable overland paths. It is recommended that operators using coordinate converters check the manufacturer's operating manual to determine if and how corrections are to be applied to compensate for overland paths.)

Each LORAN-C rate is continuously monitored to determine that proper synchronization is being maintained. When the synchronization error exceeds the advertised tolerance, the user is advised by the blinking of pulses of the affected secondary and is warned not to use the signal for navigational purposes. The blink signal will cause most receivers to indicate by an alarm that the navigational data displayed is in error. Mariners should check equipment manuals to determine if their receivers are equipped with a Blink Alarm and, if not, should exercise caution when near known hazards or when in restricted waters.

LORAN-C position determinations on or near the baseline extensions are subject to significant errors and should be avoided wherever possible. A great circle line between two LORAN stations is a baseline; the baseline extension is the extension of that line beyond either station.

LORAN-C coverage presently exists along the western coast of North America from the Bering Sea southward along the Gulf of Alaska, western Canada, and the U.S. west coast to the Mexican border. Along the eastern coast of North America, LORAN-C coverage exists from Newfoundland to the southern tip of Florida. Gulf Coast coverage exists from the southern tip of Florida to the Texas-Mexico border. Coverage of Lakes Superior, Michigan, and Huron is provided by the Great Lakes chain, rate 8970. Coverage of Lakes Huron, Erie, and Ontario is provided by the Northeast U.S. chain, rate 9960. Coverage over the central region of the U.S. is provided by the North and South Central chains, rates 8290 and 9610, respectively. For foreign LORAN-C coverage (including that described above) refer to the LORAN-C Plotting Charts diagram in the latest edition of NIMA Catalog of Maps, Charts, and Related Products Part 2-Volume I Hydrographic Products (CATP2V01U).

Detailed LORAN-C information is contained in the U.S. Coast Guard's LORAN-C User Handbook (COMDTPUB P16562.6).

NOTE: While the United States continues to evaluate the long-term need for continuation of the Loran-C radionavigation system, the Government will operate the Loran-C system in the short term. The U.S. Government will give users reasonable notice if it concludes that

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Loran-C is not needed or is not cost effective, so that users will have the opportunity to transition to alternative navigation aids. With this continued sustainment of the Loran-C service, users will be able to realize additional benefits. Improvement of GPS time synchronization of the Loran-C chains and the use of digital receivers may support improved accuracy and coverage of the service. Loran-C will continue to provide a supplemental means of navigation.

For further information and/or operational questions regarding LORAN-C in the United States, contact:

COMMANDING OFFICER
U.S. COAST GUARD NAVIGATION CENTER
7323 TELEGRAPH ROAD
ALEXANDRIA VA 22315-3998

Telephone: (1) 703-313-5900.
Fax: (1) 703-313-5920.

The Navigation Information Service (NIS) is internet accessible through the U.S. Coast Guard Navigation Center Website at:

<http://www.navcen.uscg.gov/>
<http://www.nis-mirror.com> (Mirror site)

FOREIGN LORAN-C COVERAGE: In 1992, the U.S. Coast Guard, which operated LORAN-C overseas for the Department of Defense, initiated plans to accomplish transfer or closure of U.S. Coast Guard LORAN-C stations located on foreign soil. As a result of these efforts, new LORAN-C systems have developed in areas of the world previously covered by the U.S. chains.

The countries of Norway, Denmark, Germany, Ireland, the Netherlands and France have established a common LORAN-C system known as the Northwest European Loran-C System (NELS). The developing system will be comprised of nine stations forming four chains. Since 1995, two chains, Bo and Ejde, have been in experimental (continuous) operation. The Sylt chain became operational in late 1995, but users are warned of its unstable condition. The Lessay chain became operational in September 1997.

For further information regarding NELS, contact:

NELS COORDINATING AGENCY OFFICE
LANGKAIA 1
N-0150 OSLO NORWAY

Telephone: 47 2309 2476.
Fax: 47 2309 2391.
Internet: <http://www.nels.org>

The countries of Japan, the People's Republic of China, the Republic of Korea and the Russian Federation have established an organization known as the Far East Radionavigation Service (FERNS). Japan took over operation of the former U.S. Coast Guard stations in its territory and they are currently operated by the Japanese Maritime Safety Agency (JMSA). In 1996, five chains

(Korea, North China Sea, East China Sea, South China Sea, and Russian) became operational.

600C. Receivers

There are many types of LORAN-C receivers available. Each type employs various techniques for acquiring and tracking LORAN-C signals, and for indicating the time difference or position information to the user. A LORAN-C receiver which will be useful within the limits of the Coast Guard's coverage for the U.S., and which is capable of measuring positions with the accuracy which is advertised for LORAN-C, has the following characteristics:

- It acquires the LORAN-C signals automatically, without the use of an oscilloscope.
- It identifies master and secondary groundwave pulses automatically.
- It tracks the signals automatically once they have been acquired.
- It displays two time difference readings, to a precision of at least one tenth of a microsecond, and/or latitude and longitude.
- It has notch filters to minimize the effects of radio frequency interference in the area of its operation.
- It automatically detects blink and alerts the operator.

Proper LORAN-C receiver installation is necessary to ensure optimum results. Some of the essential elements of good LORAN-C receiver installations are:

- Use of the correct antenna and antenna coupler. Mount the antenna as high as possible and away from all metal objects, stays, and other antennas. Do not connect any other equipment to a LORAN-C antenna.
- Connect both the antenna coupler and the receiver to a good ground. LORAN-C, operating at low frequency, requires proper grounding.
- Electrical and electronic interference, or noise, can come from many sources, both aboard the vessel as well as from the surrounding environment. Onboard noise comes from anything that generates or uses electricity; it is a more severe problem at 100 kHz than at higher frequencies, and it must be suppressed in order to have good results from LORAN-C. Alternators, generators, ignition systems, electrical motors, fluorescent lights, radars, and television sets are examples of interfering sources. Interference suppression may include installation of filters, shields, grounds, and capacitors. Interference suppression should be accomplished with the vessel engine running.
- Protection of the LORAN-C receiver from excessive heat, dampness, salt spray, and vibration must be ensured. Do not mount the receiver in direct sunlight or within one meter of your magnetic compass. Provide adequate ventilation.

600D. Station List

LORAN-C stations, grouped geographically by chains, are contained in the following list.

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
NORTH PACIFIC CHAIN						
6100	St. Paul, AK 9990 (SS1).	LORAN-C	Master	57 09 12N 170 15 06W		
	Attu Is., AK 9990-X.		Secondary	52 49 44N 173 10 50E		
	Port Clarence, AK 9990-Y.		Secondary	65 14 40N 166 53 12W		
	Kodiak, AK 9990-Z.		Secondary	57 26 20N 152 22 11W		
RUSSIAN (CHAYKA)-AMERICAN CHAIN						
6105	Petropavlovsk, Russia 5980.	LORAN-C	Master	53 07 48N 157 41 43E		
	Attu Is., AK 5980-X.		Secondary	52 49 44N 173 10 50E		
	Alexandrovsk, Russia 5980-Y.		Secondary	51 04 43N 142 42 05E		
RUSSIAN CHAIN						
6110	Alexandrovsk, Russia 7950.	LORAN-C	Master	51 04 43N 142 42 05E		
	Petropavlovsk, Russia 7950-W.		Secondary	53 07 48N 157 41 43E		
	Ussuriysk, Russia 7950-X.		Secondary	44 32 00N 131 38 23E		
	Tokachibuto, Hokkaido, Japan 7950-Y.		Secondary	42 44 37N 143 43 10E		
	Okhotsk, Russia 7950-Z.		Secondary	59 25 02N 143 05 23E		
NORTHWEST PACIFIC CHAIN						
6120	Nii Jima, Japan 8930 (SS3).	LORAN-C	Master	34 24 12N 139 16 19E		
	Gesashi, Okinawa, Japan 8930-W.		Secondary	26 36 25N 128 08 57E		
	Minami-tori Shima (Marcus Island), Japan 8930-X.		Secondary	24 17 08N 153 58 54E		
	Tokachibuto, Hokkaido, Japan 8930-Y.		Secondary	42 44 37N 143 43 10E		
	Pohang, South Korea 8930-Z.		Secondary	36 11 05N 129 20 27E		

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
KOREA CHAIN						
6122	Pohang, South Korea 9930.	LORAN-C	Master	36 11 05N 129 20 27E		
	Kwangju, South Korea 9930-W.		Secondary	35 02 24N 126 32 27E		
	Gesashi, Okinawa, Japan 9930-X.		Secondary	26 36 25N 128 08 57E		
	Nii Jima, Japan 9930-Y.		Secondary	34 24 12N 139 16 19E		
	Ussuriysk, Russia 9930-Z.		Secondary	44 32 00N 131 38 23E		
NORTH CHINA SEA CHAIN						
6124	Rongcheng, China 7430.	LORAN-C	Master	37 03 52N 122 19 26E		
	Xuancheng, China 7430-X.		Secondary	31 04 08N 118 53 10E		
	Helong, China 7430-Y.		Secondary	42 43 12N 129 06 27E		
EAST CHINA SEA CHAIN						
6126	Xuancheng, China 8390.	LORAN-C	Master	31 04 08N 118 53 10E		
	Raoping, China 8390-X.		Secondary	23 43 26N 116 53 45E		
	Rongcheng, China 8390-Y.		Secondary	37 03 52N 122 19 26E		
SOUTH CHINA SEA CHAIN						
6128	Hexian, China 6780.	LORAN-C	Master	23 58 04N 111 43 10E		
	Raoping, China 6780-X.		Secondary	23 43 26N 116 53 45E		
	Chongzuo, China 6780-Y.		Secondary	22 32 35N 107 13 22E		
GULF OF ALASKA CHAIN						
6130	Tok, AK 7960 (SL4).	LORAN-C	Master	63 19 43N 142 48 31W		
	Kodiak, AK 7960-X.		Secondary	57 26 20N 152 22 11W		
	Shoal Cove, AK 7960-Y.		Secondary	55 26 21N 131 15 19W		
	Port Clarence, AK 7960-Z.		Secondary	65 14 40N 166 53 12W		

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
WEST COAST CANADA CHAIN						
6140	Williams Lake, B.C., Canada 5990 (SH1).	LORAN-C	Master	51 57 59N 122 22 02W		
	Shoal Cove, AK 5990-X.		Secondary	55 26 21N 131 15 19W		
	George, WA 5990-Y.		Secondary	47 03 48N 119 44 39W		
	Port Hardy, B.C., Canada 5990-Z.		Secondary	50 36 30N 127 21 28W		
WEST COAST U.S. CHAIN						
6150	Fallon, NV 9940 (SS6).	LORAN-C	Master	39 33 07N 118 49 56W		
	George, WA 9940-W.		Secondary	47 03 48N 119 44 39W		
	Middletown, CA 9940-X.		Secondary	38 46 57N 122 29 44W		
	Searchlight, NV 9940-Y.		Secondary	35 19 18N 114 48 17W		
EAST COAST CANADA CHAIN						
6160	Caribou, ME 5930 (SH7).	LORAN-C	Master	46 48 27N 67 55 37W		
	Nantucket, MA 5930-X.		Secondary	41 15 12N 69 58 39W		
	Cape Race, Nfld., Canada 5930-Y.		Secondary	46 46 32N 53 10 28W		
	Fox Harbor, Nfld., Canada 5930-Z.		Secondary	52 22 35N 55 42 28W		
NEWFOUNDLAND EAST COAST CHAIN						
6165	Comfort Cove, Nfld., Canada 7270.	LORAN-C	Master	49 19 54N 54 51 43W		
	Cape Race, Nfld., Canada 7270-W.		Secondary	46 46 32N 53 10 28W		
	Fox Harbor, Nfld., Canada 7270-X.		Secondary	52 22 35N 55 42 28W		
GREAT LAKES CHAIN						
6170	Dana, IN 8970.	LORAN-C	Master	39 51 08N 87 29 12W		
	Malone, FL 8970-W.		Secondary	30 59 39N 85 10 09W		
	Seneca, NY 8970-X.		Secondary	42 42 51N 76 49 33W		
	Baudette, MN 8970-Y.		Secondary	48 36 50N 94 33 18W		
	Boise City, OK 8970-Z.		Secondary	36 30 21N 102 53 59W		

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
NORTHEAST U.S. CHAIN						
6180	Seneca, NY 9960 (SS4).	LORAN-C	Master	42 42 51N 76 49 33W		
	Caribou, ME 9960-W.		Secondary	46 48 27N 67 55 37W		
	Nantucket, MA 9960-X.		Secondary	41 15 12N 69 58 39W		
	Carolina Beach, NC 9960-Y.		Secondary	34 03 46N 77 54 46W		
	Dana, IN 9960-Z.		Secondary	39 51 08N 87 29 12W		
SOUTHEAST U.S. CHAIN						
6190	Malone, FL 7980 (SL2).	LORAN-C	Master	30 59 39N 85 10 09W		
	Grangeville, LA 7980-W.		Secondary	30 43 33N 90 49 43W		
	Raymondville, TX 7980-X.		Secondary	26 31 55N 97 50 00W		
	Jupiter, FL 7980-Y.		Secondary	27 01 59N 80 06 53W		
	Carolina Beach, NC 7980-Z.		Secondary	34 03 46N 77 54 46W		
EJDE CHAIN						
6205	Ejde, Faroe Is., Denmark 9007.	LORAN-C	Master	62 17 59N 7 04 26W		
	Jan Mayen Is., Norway 9007-W.		Secondary	70 54 51N 8 43 56W		
	Bo, Norway 9007-X.		Secondary	68 38 06N 14 27 47E		
	Vaerlandet, Norway 9007-Y.		Secondary	61 17 49N 4 41 46E		
BO CHAIN						
6215	Bo, Norway 7001.	LORAN-C	Master	68 38 06N 14 27 47E		
	Jan Mayen Is., Norway 7001-X.		Secondary	70 54 51N 8 43 56W		
	Berlevag, Norway 7001-Y.		Secondary	70 50 43N 29 12 15E		
SYLT CHAIN						
6220	Sylt, Germany 7499.	LORAN-C	Master	54 48 29N 8 17 36E		
	Lessay, France 7499-X.		Secondary	49 08 55N 1 30 17W		
	Vaerlandet, Norway 7499-Y.		Secondary	61 17 49N 4 41 46E		

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
LESSAY CHAIN						
6225	Lessay, France 6731.	LORAN-C	Master	49 08 55N 1 30 17W		
	Soustons, France 6731-X.		Secondary	43 44 23N 1 22 49W		
	Sylt, Germany 6731-Z.		Secondary	54 48 29N 8 17 36E		
NORTH SAUDI ARABIAN CHAIN						
6240	Afif, Saudi Arabia 8830.	LORAN-C	Master	23 48 37N 42 51 18E		
	Salwa, Saudi Arabia 8830-W.		Secondary	24 50 02N 50 34 13E		
	Al Khamasin, Saudi Arabia 8830-X.		Secondary	20 28 02N 44 34 53E		
	Ash Shaykh Humayd, Saudi Arabia 8830-Y.		Secondary	28 09 16N 34 45 41E		
	Al Muwassam, Saudi Arabia 8830-Z.		Secondary	16 25 56N 42 48 05E		
INDIA (BOMBAY) CHAIN						
6260	Dhrangadhara 6042.	LORAN-C	Master	23 00 14N 71 31 39E		
	Veraval 6042-W.		Secondary	20 57 07N 70 20 13E		
	Billimora 6042-X.		Secondary	20 45 40N 73 02 17E		
INDIA (CALCUTTA) CHAIN						
6270	Balasore 5543.	LORAN-C	Master	21 29 08N 86 55 18E		
	Patpur 5543-W.		Secondary	20 26 48N 85 49 47E		
	Diamond Harbor 5543-X.		Secondary	22 10 18N 88 12 25E		

LONG RANGE NAVIGATIONAL AIDS

PART II DECCA

610A. General

Decca is a high accuracy, medium range radio navigational aid intended for coastal and landfall navigation. An important characteristic of the system is the simplicity and speed in taking a precise fix, facilitated by the Decca receiver's three integrated coordinate meters, which continuously, automatically, and simultaneously display all position line information. When a fix is required, all that is necessary is to read off the two relevant position coordinate values indicated, and apply them to a Decca latticed navigation chart, an operation that can be completed in under 1 minute.

The system operates as a stable frequency, continuous wave phase comparison system with transmissions of 70 kHz to 130 kHz. The Decca transmitting chains consist of a master station (A) and two or three slave stations designated Red (B), Green (C) and Purple (D), each about 60-120 miles from the master. The continuous wave transmissions from the slave stations are rigidly phase-locked to those from the master, and transmission frequencies are all harmonically related: Master 6F, Red 8F, Green 9F and Purple 5F, where F is a fundamental frequency of around 14.2 kHz.

These transmissions are received by the special Decca Navigator ship-borne receiver, and frequency multiplying circuits therein produce phase comparison frequencies of 24F for the Master and Red transmissions, 18F for the Master and Green transmissions, and 30F for the Master and Purple transmissions.

Three phase meters, called Decometers, which are part of the receiving equipment, simultaneously indicate the phase difference at these comparison frequencies received from the master station and each of the slave stations. The line of constant phase is a hyperbola focused on a master/slave pair. For each master/slave pair there is a stable family of hyperbolae geometrically related to the position of the stations.

The hyperbolic lattice lines of zero phase difference are printed in the respective colors, red, green, or purple, on the Decca charts. The interval between successive zero phase hyperbolae is termed a Decca lane. The position of the ship can be easily and continuously plotted on the lattice chart at the intersections of the Decometer readings.

The Decometers measure only the decimal fraction of each lane and mechanically integrate the whole lane value. Initially, the correct lane value is determined by lane identification transmissions, utilizing as a comparison frequency the basic frequency (1F). The correct large number setting of each color is indicated in succession on either one common lane identification digital readout in the case of a MARK 21 receiver or one common lane identification meter in the case of MARK 12/MARK V receivers, and is then set on the Decometer. This common 1F comparison frequency determines the lane number within a zone whose width on the baselines between the

master and slave stations is the same for all colors. Each zone contains 24 red lanes, 18 green lanes, or 30 purple lanes. The width of each lane on the baseline is approximately: 450 meters (red); 590 meters (green); and 350 meters (purple).

For unambiguous presentation the zones are lettered and the lanes numbered outwards from the master station. Each group of ten zones is lettered from A to J, and the lanes in each zone are numbered: 0 to 23 (red); 30 to 47 (green); and 50 to 79 (purple).

The correct zone letter must be determined by other navigational methods and by reference to the appropriate Decca latticed chart. As the zones are about 6 miles in width on the baselines, and as this width increases away from the baselines, the accepted position of the ship is generally not critical for this purpose.

610B. Chain Numbers

There are 11 groups of basic frequencies, numbered 0 to 10. In each of these 11 basic groups, 6 master frequencies, lettered A to F, are derived to provide for existing and future chains. Thus, in Group 0, normal master frequencies in kHz are: 0A 84.100; 0B 84.105; 0C 84.110; and, separated by 0.090 kHz, 0D 84.190; 0E 84.195; and 0F 84.200. The frequency interval between each numbered group is 0.180 kHz; e.g., the English Chain No. 5B has a master frequency of 85.000 kHz. Group 10 includes only the A, B, and C frequencies. Decca MARK 12 or MARK 21 receivers can be switched to each of these 63 frequencies. Earlier receivers can be switched to the numbers only, where they will receive A, B, or C frequencies, but cannot receive the D, E, or F transmissions.

When correctly set up, Decca will give a continuous record of position. Lane slip (or incorrect lane identification), giving errors in position may, however, result from:

- Interruption or disturbance in transmissions.
- Incorrect referencing of receiver.
- Interference: either excessive Decca sky-wave signals, external radio, snow static, or electrical storms.

610C. Accuracy

The accuracy obtained from Decca is dependent upon the distance from the transmitters and the angle of cut of the lattice lines. Used correctly and under favorable conditions, the system is capable of a high degree of accuracy, and positions correct to within ± 50 yards can be obtained up to 50 miles from the transmitting stations. In limited areas the chains are capable of being used for surveys and ship trials.

In daylight hours at the longer ranges (i.e., 250 to 450 miles) an improvement in fixing accuracy is possible in areas of adjacent Decca chains. This is done by crossing a position line of one chain with that of another, providing

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the angle of cut is substantially better than in either chain by itself. This technique is referred to as inter-chain fixing and should only be employed with a Decca MARK 12 or MARK 21 type receiver when operating from a multi-phase (MP) type lane identification Decca chain. Specially latticed Multi-Chain Decca charts are available for this technique in the areas where it should be beneficial.

Two types of errors, fixed and variable, are inherent in the system and are explained below.

610D. Fixed Errors

The speed of propagation of the Decca transmissions from the master and slave stations is affected by the conductivity of the terrain, e.g., it is lower over land than over the sea. The advancing wave fronts are thus not exactly hyperbolic, as they would be in a uniform medium, but are slightly irregular; the lines of constant phase difference in these overlapping patterns therefore produce irregular hyperbolic position lines. This system of irregular position lines is, however, stable in position, as the Decca chains are continuously monitored and the phase locking of the slave stations held rigid. The hyperbolic lattices shown on the charts are calculated using a mean speed of propagation obtained by averaging the calculated probable velocities at numerous points over the coverage of the chain. The difference between the actual position of a hyperbolic position line and its theoretically calculated position (i.e., the position given on the chart) is known as the fixed error.

This fixed error, or pattern correction, varies with locality. Where the Decca chain coverage is almost wholly over water, the speed of propagation differs only slightly from that adopted for the calculation of the lattices, and the resultant fixed errors are small. Where, however, the chain extends over large mountainous land masses or islands, as in the North Scottish chain, the actual speed of propagation varies markedly in different localities; the resultant fixed errors are appreciable, and can exceed ± 0.5 lanes.

The variation in the speeds of propagation can cause simultaneous observations of all three Decometers to produce three separate two-color fixes. In the area of overlap of adjoining chains, observation of each separate chain can similarly produce different fixes.

Observations to determine these fixed errors of the chains, i.e., the corrections to be applied to observed Decometer readings to make them agree with the theoretical lattice on the charts, have usually been carried out during the acceptance trials. The resultant fixed errors at certain positions, generally about 3 miles offshore, along the coastal coverage of the chains, and including the approaches to all the important ports are given in detail in the Operating Instructions and Marine Data Sheets issued by Racal-Decca Marine Navigator Limited.

When no information regarding fixed errors is available, the charted Decca lattices should be used with caution, especially near the coast and in restricted waters.

At one time it was anticipated that adequate observations would be made of the fixed errors, and that the corrections would be included in the lattices printed on the charts.

Experience has shown, that in general, this task is not practicable; it is unlikely that the theoretical lattices shown on British Admiralty charts will ever be corrected. However, the Swedish Hydrographer has published Swedish charts with adjusted Decca lattices incorporating the results of extended observations in the Baltic, and these have been copied on the Admiralty latticed charts of the Swedish Chain.

610E. Variable Errors

A proportion of the transmitted signal is reflected from the ionosphere and interferes with the direct or groundwave signal. The coefficient of reflection varies with time of day, season of the year, and the geographical location of the transmitters and receivers. At night, or in daylight at extreme range, this skywave signal may become sufficiently strong to cause an inaccurate reading on the Decometer. This causes a variable error which can become considerable at extreme ranges, and is greater at night than by day and is worse in the winter than in summer.

These variable errors are explained in detail, and portrayed in contour form in Operating Instructions and Marine Data Sheets issued by Racal-Decca Marine Navigator Limited.

Mariners are strongly cautioned that, at distances of over 150 miles from the transmitting stations, particularly at night or dusk, the signals may be too weak to work the lane identification meter correctly. This can lead to sudden lane slipping and the loss of one or more lanes. Decca should not be relied upon as the sole aid to navigation in these circumstances.

610F. Notes

Ships fitted with receivers without lane identification facilities must know their position accurately when initially setting up the meters and when resetting them for any reason (for example, after failure of the transmitter or receiver, or when the ship enters the approved coverage area). The possibility of lane-slipping must also be borne in mind. Steps should be taken at all times to check that lanes have not slipped, e.g., by checking with the dead reckoning plot at regular intervals.

Ships fitted with MARK V and later receivers will, in the appropriate areas, be able to make use of the lane identification facilities provided. It is emphasized that before using lane identification, reference should be made to the following paragraphs and to Racal-Decca Marine Navigator Limited's special instructions.

Some Decca Chains emit two different sets of lane identification signals during each 1 minute transmission cycle. These are known as the MARK V and the multipulse lane identification systems. Details of these systems are to be found in the Operating Instructions and Marine Data Sheets which are issued to all Decca users.

Standard MARK V marine receivers (QM5, QM9, and QM10) are not designed to receive the multipulse lane identification system, but MARK 12 (QM12) receivers can

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operate in either the MARK V or the multipulse mode. The latest MARK 21 receivers receive only the multipulse mode.

In night conditions, the high probability of incorrect MARK V type lane identification may be reduced at ranges over 150 miles from the transmitting stations. Provided the instructions are followed rigidly, lane identification facilities in these conditions should ensure that information from the correct reading is used.

Earlier receivers do not incorporate the necessary circuits or meters to display lane identification signals, but a slight kick of the Decometer pointers will be observed on these receivers, as well as on MARK V (QM5, QM9, or QM10), at the start of each lane identification transmission. This may be neglected, since it in no way affects the performance of the receiver as a navigational aid.

Any break or disturbance of the normal transmissions of Decca stations is broadcast as a Decca Warning by coast radio stations in the vicinity.

These warnings are issued because the transmission failure may result in lane loss by Decca Navigator receivers. Whether a lane is lost or not depends on the position, course, and speed of the vessel at the time, and the duration of the failure. In some cases more than one lane may be lost.

Two types of warnings are used; here are examples:

DECCA HOKKAIDO CHAIN RED TRANSMISSION
INTERRUPTED 1315 TO 1330 GMT TENTH APRIL
CHECK LANE NUMBER.

(This warning implies that the whole number red lane reading is liable to be in error and that special care should be taken to check the Decca position indicated.)

DECCA HOKKAIDO CHAIN RED PATTERN
DISTURBED 1315 GMT CHECK LANE NUMBER.

(This message is sent when any pattern has been disturbed by severe interference with the ground station, which is likely to have caused the gain or loss of a lane.)

Any faults in lane identification transmissions will be apparent if the instructions for their use given in Racal-Decca Marine Navigator Limited's Data Sheets are followed, and no procedure for promulgation by broadcast is necessary.

610G. Station List

Decca stations, grouped geographically by chains, are contained in the following list. An approximate idea of coverage can be determined through the chain names and station locations.

NOTE: All Decca Station frequencies are in kilohertz.

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(1) No.	(2) Name	(3) Type	(4) Component	(5) Position	(6) Freq.	(7) Remarks
SALAYA CHAIN 2F						
6772 Kodal (A).		DECCA	Master	22 52 27N 69 24 00E	84.555	
Kuranga (B).			Red Slave	22 03 28N 69 10 30E	112.740	
Dhuvav (C).			Green Slave	22 28 49N 70 07 43E	126.832	
Naliya (D).			Purple Slave	23 15 04N 68 49 00E	70.462	

PART III SATELLITE NAVIGATION

620A. General

Satellite navigation presently consists of two global systems. Each may be considered a refinement of celestial navigation, using artificial earth-orbiting satellites to form an electronic “constellation”, serviced by land-based control and tracking stations, and passively “sighted” by mobile receivers. Both systems provide precise, global, and continuous position-fixing capabilities, in all weather, to a properly equipped user.

The U.S. Air Force system is the NAVSTAR Global Positioning System (GPS). GPS development began in 1973 and reached full operational capability in 1995. (The U.S. Navy system, the Navy Navigation Satellite System (NAVSAT, also known as Transit) became operational in 1964 and ceased operation as a positioning and timing system on December 31, 1996. Users should recognize that navigational equipment using the NAVSAT system should no longer be used since any signals received will no longer provide valid position or timing references.)

The Russian system is the Global Navigation Satellite System (GLONASS). GLONASS became fully operational in January 1996.

620B. GPS

GPS is a highly precise satellite-based radionavigation system providing three-dimensional positioning, velocity, and time information. GPS is an all-weather system with continuous and worldwide coverage. GPS consists of three segments: space, control, and user.

The Space Segment is composed of 24 operational satellites in six orbital planes. The satellites operate in circular 20,200 km (10,900 nm) orbits at an inclination angle, relative to the equator, of 55° and with a 12-hour period. The satellites are spaced in orbit so that at any time, a minimum of six satellites are observable from any position on earth, providing instantaneous position and time information.

Each satellite transmits on two L band frequencies: 1575.42 MHz (L1) and 1227.6 MHz (L2). Three pseudo-random noise (PRN) ranging codes are in use:

- The coarse/acquisition (C/A) code has a 1.023 MHz chip rate, a period of one millisecond, and is used primarily to acquire the P-code.
- The precise (P) code has a 10.23 MHz rate, a period of seven days, and is the principal navigation ranging code.
- The Y-code is used in place of the P-code whenever the anti-spoofing (A-S) mode of operation is activated.

L1 carries a P-code and a C/A-code. L2 carries the P-code. A navigation data message is superimposed on the codes. The same navigation data message is carried on both frequencies. This message contains satellite ephemeris data, atmospheric propagation correction data, and satellite clock bias.

Selective Availability (SA), the denial of full accuracy, is accomplished by manipulating the navigation message orbit data (epsilon) and/or the satellite clock frequency (dither). Anti-spoofing (A-S) guards against fake transmissions of satellite data by encrypting the P-code to form the Y-code.

The Control Segment consists of five monitor stations, three of which have uplink capabilities, located in Colorado, Hawaii, Kwajalein, Diego Garcia, and Ascension Island. The monitor stations use a GPS receiver to passively track all satellites in view, accumulating ranging data from the satellites’ signals. The information from the monitor stations is processed at the Master Control Station (MCS), located in Colorado Springs, Colorado, to determine satellite orbits and to update the navigation message of each satellite. The updated information is transmitted to the satellites via ground antennas. The ground antennas, located at Kwajalein, Diego Garcia, and Ascension Island, are also used for transmitting and receiving satellite control information.

The User Segment consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user. The GPS receiver makes time-of-arrival measurements of the satellite signals to obtain the distance between the user and the satellites. The distance calculations, known as pseudoranges, together with range rate information, are converted to yield system time and the user’s three-dimensional position and velocity with respect to the satellite system. A time coordination factor then relates the satellite system to earth coordinates. A minimum of four pseudoranges are needed to produce a three-dimensional fix (latitude, longitude, and altitude). GPS receivers compute fix information in terms of the World Geodetic System (1984), which may need datum shift correction before it can be accurately plotted on a chart.

There are three different types of receivers. Sequential receivers track only one satellite at a time, computing a fix after a series of pseudoranges have been sequentially measured; these receivers are inexpensive but slow. Continuous receivers have at least four channels to process information from several satellites simultaneously; these process fix information the fastest. Multiplex receivers switch at a fast rate from satellite to satellite, receiving and processing data from several satellites simultaneously, producing a fix by a sort of “round-robin” process.

GPS provides two levels of service for position determination:

- The Standard Positioning Service (SPS) for general public use. (Until 1 May 2000, the SPS signal accuracy was intentionally degraded to protect U.S. national security interests through the process of Selective Availability.)
- The encoded Precise Positioning Service (PPS) primarily intended for use by the Department of Defense.

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Accuracy of a GPS fix varies with the capability of the user equipment. SPS is the standard level of positioning and timing accuracy that is available, without restrictions, to any user on a continuous worldwide basis. SPS provides positions with a horizontal accuracy of approximately 100 meters. (This accuracy specification includes the effects of SA.) PPS provides full system accuracy to designated users. Selective Availability was set to zero (ceased) as of midnight (EDT) 1 May 2000. Users should experience a GPS horizontal accuracy of 10-20 meters or better.

NOTE: It has come to the attention of the U.S. Coast Guard and Federal Communications Commission that certain consumer electronics-grade active VHF/UHF marine television antennas are causing operational degradation in the performance of GPS receivers. This interference may be realized as a display of inaccurate position information or a complete loss of GPS receiver acquisition and tracking ability and the interference interactions have been reported up to 2000 feet from the interference source. This interference has been associated in some instances with temperature extremes or proximity to a television broadcast site.

If you are experiencing recurring outages or degradation of your GPS receiver you should perform an on-off test of your TV antenna. If turning off the power to the antenna results in improvement in the GPS receiver performance, the antenna may be the source of interference in the GPS band. In that case, you should contact the manufacturer of the antenna and identify the symptoms. If the test is not positive and the GPS interference persists, you may contact the U.S. Coast Guard, Office of Spectrum Management at:

E-mail: CGComms@comdt.uscg.mil

or through the Coast Guard Navigation Information Service at:

Telephone: (1) 703-313-5900.

E-mail: nisws@navcen.uscg.mil.

620C. DGPS

The U.S. Coast Guard Navigation Center operates the Maritime Differential GPS (DGPS) Service and the developing Nationwide DGPS Service, consisting of two control centers and over 60 remote broadcast sites. The service broadcasts correction signals on marine radiobeacon frequencies to improve the accuracy of and integrity to GPS-derived positions. The U.S. Coast Guard DGPS Service provides 10-meter (2 dRMS) navigation accuracy in all established coverage areas, integrity alarms for GPS and DGPS out-of-tolerance conditions within 10 seconds of detection, and an availability of 99.7% per month. Typically the positional error of a DGPS position is 1 to 3 meters, greatly enhancing harbor entrance and approach navigation. The system provides service for coastal coverage of the continental U.S., the Great Lakes, Puerto Rico/U.S. Virgin Islands, portions of Alaska and Hawaii, and a greater part of the Mississippi River Basin.

This service achieved Full Operational Capability (FOC) on 15 March 1999. The Coast Guard advises that Coast Guard DGPS broadcasts should not be used under any circumstances where a sudden system failure or inaccuracy could constitute a safety hazard. Users are further cautioned to use all available navigational tools to ensure proper evaluation of positioning solutions.

DGPS reference stations determine range errors and generate corrections for all GPS satellites in view. The DGPS signals are broadcast, using existing Coast Guard radiobeacons, on frequencies in the 285-325 kHz band. Monitor stations independently verify the quality of the DGPS broadcast. A complete list of U.S. Coast Guard DGPS broadcast sites is available from the Navigation Center.

For further information and/or operational questions regarding GPS or DGPS, contact:

COMMANDING OFFICER
U.S. COAST GUARD NAVIGATION CENTER
7323 TELEGRAPH ROAD
ALEXANDRIA VA 22315-3998

Telephone: (1) 703-313-5900.

Fax: (1) 703-313-5920.

The Navigation Information Service (NIS) is internet accessible through the U.S. Coast Guard Navigation Center Website at:

<http://www.navcen.uscg.gov/>

<http://www.nis-mirror.com> (Mirror site)

620D. GLONASS

The Russian Global Navigation Satellite System (GLONASS), similar to GPS, is a space-based navigation system that provides continuous, global, all-weather, precise position, velocity and time information. The space segment consists of 24 satellites in three orbital planes at an altitude of 19,100 km. The satellites operate in circular orbits with an inclination of 64.8° and a period of 11h 15m. All satellites transmit simultaneously, using two carrier frequencies in the L band, to allow users to correct for ionospheric delays of the transmitted signals. However, each satellite is allocated a particular frequency within the band, determined by the frequency channel number of the satellite. These different frequencies allow the user's receiver to identify the satellite. The L1 band ranges from 1602.5625 MHz to 1615.5 MHz in increments of 0.5625 MHz, while the L2 band ranges from 1246.4375 MHz to 1256.5 MHz in increments of 0.4375 MHz. Superimposed to the carrier frequency, the GLONASS satellites modulate their navigation message by using either or both a precision (P) code and/or a coarse/acquisition (C/A) code. The satellites also transmit ephemeris data, an almanac of the entire constellation, and correction parameters to the time scale. The coordinate system of the GLONASS satellite orbits is defined by the PZ-90 system, formerly the soviet Geodetic System 1985/1990.

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The Coordinational Scientific Informational Center (CSIC) of the Russian Space Forces provides official information on GLONASS status and plans, information and scientific method services to increase the efficiency of GLONASS applications. For further information contact:

CSIC OF RUSSIAN SPACE FORCES
PO BOX 14

MOSCOW 117279
RUSSIA

Telephone: 7 095 333 72 00.
Fax: 7 095 333 81 33.
E-mail: sfcsic@space.ru.

Internet: <http://www.rssi.ru/SFCSIC/english.html/>

CHAPTER 7

AUTOMATED MUTUAL-ASSISTANCE VESSEL RESCUE SYSTEM (AMVER)

700A. AMVER Participation Instructions

AMVER is a worldwide voluntary vessel reporting system operated by the U.S. Coast Guard to promote safety of life and property at sea. AMVER's mission is to quickly provide search and rescue (SAR) authorities, on demand, accurate information on the position and characteristics of vessels near a reported distress. Any merchant vessel on a voyage of greater than 24 hours to anywhere on the globe is welcome to participate in AMVER. In general, international participation is voluntary regardless of owner's nationality or vessel's flag, voyage origin, or destination. However, there are requirements for certain U.S. flag or U.S. interest vessels.

According to U.S. Maritime Administration (MARAD) regulations, the following vessels must report and regularly update their voyages and positions to the AMVER Center:

- United States flag merchant vessels of 1,000 gross tons or more, operating in foreign commerce.
- Foreign flag vessels of 1,000 gross tons or more, for which an Interim War Risk Insurance Binder has been issued under the provisions of Title XII, Merchant Marine Act, 1936.

In accordance with Title 47, Code of Federal Regulations (CFR), Ch. 1, Sec 80.905, the following vessels must participate in the AMVER system while engaged on any voyage where the vessel is navigated in the open sea for more than 24 hours:

- United States vessels which transport more than six passengers for hire, operated more than 200 nautical miles from the nearest land.

Information voluntarily provided by vessels to AMVER is kept strictly confidential, and is protected by the Coast Guard. It will be released only for safety purposes, and as a free service to AMVER participants to satisfy certain requirements of Title 33, Code of Federal Regulations for advance notification of arrival in U.S. ports.

AMVER's greatest use is in providing SURface PICTures, or SURPICs, to Rescue Coordination Centers (RCCs). A SURPIC either lists latitude/longitude or provides a graphical display of vessels near the position of a distress. It is used by RCCs to coordinate the efforts of merchant vessels and other resources to provide the best and most timely assistance possible to distressed vessels or persons at sea.

There are four types of AMVER reports: Sailing Plan, Position Report, Deviation Report, and Arrival Report. NOTE: Departure Reports have been eliminated in favor of the more common practice of filing a combined Sailing Plan/Departure Report upon departure. This combined report is now called simply a Sailing Plan and it should be sent within a few hours before or after departure. Nevertheless, Departure Reports will continue to be accepted indefinitely. The information required for Position and Deviation Reports has been increased to

ensure enough information is provided to keep AMVER accurate. Also, an end-of-report (Z line) line has been added to facilitate automatic processing of AMVER reports.

What and when to report to AMVER:

- Sailing Plan, containing complete routing information, should be sent within a few hours before, upon, or within a few hours after departure.
- Position Report should be sent within 24 hours of departure, and subsequently at least every 48 hours until arrival. The destination should also be included in Position Reports.
- Deviation Report should be sent as soon as any voyage information changes which could affect AMVER's ability to accurately predict the vessel's position. Changes in course or speed due to weather, ice, change in destination, or any other deviations from the original Sailing Plan should be reported as soon as possible.
- Arrival Report should be sent upon arrival at the port of destination.
- At the discretion of the Master, reports may be sent more frequently than the above schedule; for example, in heavy weather or under other adverse conditions.

AMVER also needs information that describes communications equipment, radio watch schedule, medical personnel on board, and so forth. This information is collected separately, retained in the automatic data processing system, periodically validated, and used only for search and rescue purposes.

700B. Communication Methods for Filing AMVER Reports

A worldwide radio station network of coastal facilities supports AMVER. Propagation conditions, location of vessel, and traffic density will normally determine which station may best be contacted to establish communications. To ensure that no charge is applied, all AMVER reports should be passed through specified radio stations. Those which currently accept AMVER reports and apply no coastal station, ship station, or landline charge are listed in each issue of the AMVER Bulletin. Also listed therein are the respective International Radio Call Signs, locations, frequency bands, and hours of operation. The AMVER Bulletin is available from:

AMVER MARITIME RELATIONS OFFICE
US COAST GUARD
USCG BATTERY PARK BUILDING
NEW YORK NY 10004-1499

Telephone: (1) 212-668-7762.

Fax: (1) 212-668-7684.

E-mail: RKenney@BatteryNY.uscg.mil.

AMVER

or:

COMMANDER
PACIFIC AREA
US COAST GUARD
COAST GUARD ISLAND
ALAMEDA CA 94051-5100

or U.S. Coast Guard District Offices, Marine Inspection Offices, and Captain of the Port Offices in major U.S. ports. Bulletin requests should state the language desired if other than English. Although AMVER reports may be sent through Inmarsat or non-participating radio stations, or directly via telex to 127594 AMVERNYK, the Coast Guard cannot reimburse the sender for any charges incurred through their use.

Vessels and radio stations sending reports to AMVER via telex should understand that all telex messages are delivered to AMVER via the Easylink (mailbox 62899122) electronic mail facility and go directly into the AMVER computer with no human intervention. AMVER's telex is in effect a receive-only circuit connected directly to a computer. There is no human operator or telex machine in the AMVER Center to acknowledge messages or otherwise interact with a human operator aboard the sending ship or radio station. ALL DISTRESS MESSAGES MUST BE SENT TO THE NEAREST RCC, NOT THE AMVER Center.

The following methods are recommended for ships to transmit AMVER reports:

ELECTRONIC MAIL VIA THE INTERNET: If a ship already has an inexpensive means of sending electronic mail to an internet address, this is a preferred method. Electronic mail may be sent via satellite or via HF radio, depending on the ship's equipment and arrangements with communications providers ashore. Ships must be equipped with a personal computer, an interface between the computer and the ship's communications equipment, and the appropriate software. NOTE: The e-mail path on shore to the AMVER Center is essentially free, but the communications service provider may still charge from ship-to-shore. AMVER Address: amvermsg@amver.org.

AMVER/SEAS "COMPRESSED MESSAGE" (INMARSAT-C VIA TELENOR): Ships equipped with an Inmarsat Standard C transceiver with floppy drive and capability to transmit a binary file (ship's GMDSS Inmarsat-C transceiver can be used); an IBM-compatible computer (not part of the ship's GMDSS System) with hard drive, 286 or better PC, VGA graphics; an interface between them; and the AMVER/SEAS software (available free of charge from the U.S. National Oceanic and Atmospheric Administration, NOAA), may send combined AMVER/Weather observation messages free of charge via Telenor Land Earth Stations at:

- 001 Atlantic Ocean Region-West (AORW)-Southbury.
- 101 Atlantic Ocean Region-East (AORE)-Southbury.
- 201 Pacific Ocean Region (POR)-Santa Paula.
- 321 Indian Ocean Region (IOR)-Aussaguel.

AMVER Address: NOAA phone number entered in the "addressbook" (for further information on how to find the NOAA phone number and to correctly setup the addressbook, see the instruction sheet for your specific brand of Inmarsat-C transceiver).

AMVER/SEAS software can be downloaded from the NOAA SEAS Website at:

<http://seas.nos.noaa.gov/seas/>
or requested from:

TELENOR SATELLITE SERVICES, INC.
6560 ROCK SPRING DRIVE
BETHESDA MD 20817

Telephone: (1) 301-214-3100 (option 1).
E-mail: customercare@telenor-usa.com

HF RADIOTELEX: AMVER reports may be filed via the HF radiotelex service of U.S. Coast Guard Communications Stations. Further information on how to send AMVER messages by this method is provided in Chapter 4, Appendix B (see COAST GUARD (HF RADIOTELEX)), or at the U.S. Coast Guard Navigation Center Website:

<http://www.navcen.uscg.mil/marcomms/cgcomms/call.htm>

AMVER reports may also be filed by HF radiotelex at no cost via U.S. Coast Guard contractual agreements with the following companies:

- Globe Wireless Maritime Data Network
<http://www.globewireless.com/>
- Mobile Marine Radio (WLO)
<http://www.wloradio.com>

TELEX: AMVER reports may be filed via telex using either satellite (code 43) or HF radio. Ships must pay the tariffs for satellite communications. Radio telex reports, if filed via a Coast Station participating in the AMVER program, may be sent free of charge. Participating Coast Stations are listed in the AMVER Bulletin magazine. Telex is a preferred method when less costly methods are not available. AMVER Address: 127594 AMVERNYK.

TELEFAX: In the event other communications media are unavailable or inaccessible, AMVER reports may be faxed directly to the AMVER Computer Center. However, this is the least desirable method of communications, since it involves manual input of information to the computer vice electronic processing. NOTE: Do not fax reports to the AMVER Maritime Relations Office in New York, since it is not staffed 24 X 7, and relay and processing of reports is delayed pending normal (Mon.-Fri.) business hours. The telefacsimile phone number to the U.S. Coast Guard Operations Systems Center in Martinsburg, West Virginia is (1) 304-264-2505.

The following method is discouraged:

CW (MORSE CODE): Due to the decline in its usage, the number of Coast Stations supporting it, its high cost, potential for error, and the mandatory carriage of upgraded GMDSS communications capabilities, ships are discouraged from using this medium.

AMVER

700C. Special Warnings to Mariners

Special Warnings reflect U.S. Government policy on international incidents with political ramifications. The content of such Special Warnings is the responsibility of the Department of State and National Imagery and Mapping Agency (NIMA). NIMA is the disseminating agency for such messages since its Radio Navigational Warning Broadcast System can be received by all U.S. flag merchant ships.

United States flag vessels in an affected area are required to acknowledge receipt of a Special Warning through the use of the Remarks line (X line) in their next regular AMVER report. For the purpose of this requirement, all vessels are deemed to be in an affected area if within 500 miles or 1 day's steaming of a reported incident.

700D. AMVER Voyage Report Types

There are four types of AMVER Reports: Sailing Plan, Position, Deviation, and Arrival Reports.

REPORTING FORMAT: Each AMVER message consists of report lines. There are 15 types of lines. The first line in every report begins with the word "AMVER" followed by a slash (/), a two letter code identifying the report type, and ends with a double slash (/). Each remaining line begins with a specific letter followed by a slash (/) to identify the line type. The remainder of each line contains one or more data fields separated by single slashes (/). Each line ends with a double slash (/). All reports should end with an end-of-report line (Z line).

REPORTING DATA: AMVER participants need to be familiar with the four types of reports. Report identifiers are as follows:

AMVER/SP// denotes Sailing Plan.

AMVER/PR// denotes Position Report.

AMVER/DR// denotes Deviation Report.

AMVER/FR// denotes Arrival Report.

An example and explanation of each of the four types of the AMVER reports follows. Numbers in parentheses refer to footnotes at the end of the section.

SAILING PLAN: A Sailing Plan should be sent within a few hours before, upon, or within a few hours after departure. It must include enough information to predict the vessel's actual position within 25 nautical miles at any time during the voyage, assuming the Sailing Plan is followed exactly. The L lines are used to report route information. These lines are the most complex lines in an AMVER report but they are critical to AMVER's success. Complete route information should be provided in all Sailing Plans and also in Deviation Reports when the vessel's route or destination changes.

Example:

```
AMVER/SP//  
A/SANDY JOAN/ABCD//  
B/110935Z//  
E/145//
```

```
F/126//  
G/NOVOROSSIYSK/4470N/03780E//  
I/GIBRALTAR/3600N/00600W/140730Z//  
L/RL/140/4130N/02910E/112000Z//  
L/RL/140/4010N/02620E/112300Z//  
L/RL/140/3630N/02330E/120300Z//  
L/RL/140/3650N/01520E/121500Z//  
L/RL/140/3760N/01000E/130100Z//  
L/RL/060//  
M/GKA/GKM//  
V/MD/NURSE//  
X/NEXT REPORT 120900Z//  
X/SITOR INSTALLED. SELCALL NUMBER IS 99999//  
Y/MAREP//  
Z/EOR//
```

Explanation:

Required items:

AMVER line/SP//
line A/vessel name/International Radio Call Sign//
line B/time//(1)
line E/current course//(5)
line F/estimated average speed//(6)
line G/port of departure/latitude/longitude//(2) (3)
line I/destination/latitude/longitude/ estimated time of arrival//(1)(2)(3)
line L/route information //(1)(3)(4)
line Y/relay instructions//(9)
line Z/end of report//(10)

Optional items:

line M/current coastal radio station or satellite number/next coastal radio station, if any//
line V/onboard medical resources//(7)
line X/up to 65 characters of amplifying comments//(8)

POSITION REPORT: A Position Report should be sent within 24 hours of departing port and at least once every 48 hours thereafter. The destination should be included, at least in the first few reports, in case AMVER has not received the Sailing Plan information.

Example:

```
AMVER/PR//  
A/SANDY JOAN/ABCD//  
B/120300Z//  
C/3630N/02330E//  
E/145//  
F/126//  
I/GIBRALTAR/3600N/00600W/140730Z//  
M/GKM//  
X/NEXT REPORT 131800Z//  
Y/MAREP//  
Z/EOR//
```

Explanation:

Required items:

AMVER line/PR//
line A/vessel name/International Radio Call Sign//
line B/time of position//(1)

AMVER

line C/latitude/longitude//(2)(3)
line E/current course//(5)
line F/estimated average speed//(6)
line Y/relay instructions//(9)
line Z/end of report//(10)

Recommended items:

line I/destination/latitude/longitude/ estimated time of arrival//(1)(2)(3)

Optional items:

line M/current coastal radio station or satellite number/next coastal radio station, if any//
line X/up to 65 characters of amplifying comments//(8)(9)

DEVIATION REPORT: Deviation Reports should be sent whenever the vessel deviates significantly from its Sailing Plan. Other situations in which Deviation Reports should be sent include, but are not limited to: Change in destination, diverting to evacuate a sick or injured crewmember, diverting to avoid heavy weather, any change of route (as, for example, change based on recommendations from a vessel routing service), stopping to make repairs or await orders, change in anticipated average speed of one knot or more, etc.

Example:

AMVER/DR//
A/SANDY JOAN/ABCD//
B/120600Z//
C/3600N/02245E//
E/095//
F/220//
I/NEW YORK US/4040N/07380W/180800Z//
L/GC/220//
M/GKA/WSL/NMN//
X/DIVERTING BEST SPEED TO NEW YORK//
Y/MAREP//
Z/EOR//

Explanation

Required items:

AMVER line/DR//
line A/vessel name/International Radio Call Sign//
line B/time of position//(1)
line C/latitude/longitude//(2)(3)
line E/current course//(5)
line F/estimated average speed//(6)
line Y/relay instructions//(9)
line Z/end of report//(10)

Required items if destination or route changes:

line I/destination/latitude/longitude/ estimated time of arrival//(1)(2)(3)
line L/route information//(4)

Recommended items (in cases when not required):

line I/destination/latitude/longitude/ estimated time of arrival//(1)(2)(3)

Optional items:

line M/current coastal radio station or satellite number/next coastal radio station, if any//

line X/up to 65 characters of amplifying comments//(8)

ARRIVAL REPORT: Arrival Reports should be sent upon arrival in the immediate vicinity of the destination port, such as at the sea buoy or pilot station. This report properly terminates the voyage in AMVER's computer and ensures the vessel will not appear on an AMVER SURPIC until its next voyage.

Example:

AMVER/FR//
A/SANDY JOAN/ABCD//
K/NEW YORK/4040N/07380W/180830Z//
X/PROBLEMS WITH MF XMTR. AGENT ADVISED//
Y/MAREP//
Z/EOR//

Explanation:

Required items:

AMVER line/FR//
line A/vessel name/International Radio Call Sign//
line K/port name/latitude/longitude/time of arrival//
(1)(2)(3)
line Y/relay instructions//(9)
line Z/end of report//(10)

Optional items:

line X/up to 65 characters of amplifying comments//
(8)

Footnotes:

- (1) Indicates the time associated with the position given in the C and G lines of the report. All times must be expressed as a six-digit group giving date of month (first two digits), hours and minutes (last four digits). Only Universal Coordinated Time (i.e., Greenwich mean time) is to be used. The six-digit date-time-group is to be followed by either Z, GMT or UTC. The month is optional. If addition of the month is deemed appropriate, the first three letters of the English language month are used. The following examples are acceptable:
B/290900Z//
B/290900Z DEC//
B/290900GMT//
B/290900UTC//
- (2) Both port name and geographic position are required from U.S. flag vessels.
- (3) Latitude is a four-digit group expressed in degrees and minutes, suffixed with N for north or S for south. Longitude is a five-digit group expressed in degrees and minutes, and suffixed with E for east or W for west. For example:
G/4000N/03500W//.
- (4) The L lines contain most of the sailing plan information. As many L lines as needed may be used to describe the vessel's intended route. Detailed route information caused by maneuvering over short distances near coasts should not be included. An approximate route using fewer turn points and the

AMVER

“coastal” navigation method should be provided. However, enough turn points should be provided to keep AMVER’s plot of the vessel’s position within 25 nautical miles of the vessel’s true position. All L lines except the last one in the report require the following information: /navigation method/leg speed/latitude/longitude/port or landmark name/ETA/estimated time of departure. For example:

L/RL/125/0258N/07710W/ABACO/111200Z//.

L/RL/125/0251N/07910W/NWPROVCHAN/112145Z//.

L/RL/125/0248N/08020W/120255Z//.

L/RL/125//.

The navigation method is required. There are three types of navigation methods recognized by AMVER: Rhumb Line (RL), Great Circle (GC) and Coastal (COASTAL).

Leg speed is useful, but is not required. See footnote (6).

Latitude/longitude are required. See footnote (3).

Port or landmark name is useful, but is not required.

ETA is required. See footnote (1).

ETD is required if the ship will layover at an intermediate point. See footnote (1).

A final navigation method is required to route the ship to its destination.

Final leg speed is useful, but not required.

- (5) True course is a three-digit group.
 - (6) Speed is a three-digit group in knots and tenths of knots. For example, 20.5 knots would be expressed as 205, without a decimal point.
 - (7) If the optional V line is used, one or more of the following is required:
 - /MD/ for medical doctor or physician.
 - /PA/ for physician’s assistant or paramedic.
 - /NURSE/ for trained nurse.
 - /NONE/.
- For example:
V/MD/NURSE//

It is important to accurately report a vessel’s medical resources EVERY VOYAGE. Medically trained personnel are very scarce on the high seas and this makes them extremely valuable in cases where a member of a vessel’s crew becomes ill or injured.

- (8) Any information provided in the remarks line will be stored in AMVER’s automatic data processing system for later review. However, no particular action will be taken, nor will the information be routinely passed to other organizations. The remarks line cannot be used as a substitute for sending information to other search-and-rescue authorities or organizations. However, AMVER will, at the request of other SAR authorities, forward remarks line information to the requesting agencies.

Changes in vessel data: When a vessel changes name, flag, owners, etc., it is important to include the number assigned the ship in Lloyds Register of Shipping to ensure the AMVER database is kept current.

- (9) The Y line is used to request relay of the AMVER report to certain other reporting systems. In accordance with Title 46 CFR, all U.S. flag merchant vessels and certain other vessels are REQUIRED to report their positions to MARAD via participation in the AMVER system. Such vessels must include the keyword “MAREP” in the Y line of every AMVER report.

Presently, AMVER and the Japanese Regional Reporting System (JASREP) cooperate with each other by accepting and complying with relay requests. For example:

Y/MAREP//

Y/JASREP//

Y/JASREP/MAREP//

Y/AMVER//

Y/AMVER/MAREP//

- (10) The Z line must be the last line in every AMVER report as it is used by the AMVER computer to signal the end of the report.

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