

# 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

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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  $\pm 3^\circ$  -  $10^\circ$ . 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  $2^\circ$  from the bearings (it is assumed that all the bearings are probably accurate within  $2^\circ$ ). The black triangle in the illustration lies within the  $2^\circ$  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  $2^\circ$ , 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  $000^\circ$  obtains bearings of  $031^\circ$  and  $065^\circ$  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  $2^\circ$ . 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  $2^\circ$ .

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  $057.5^\circ$ . Find the Mercator bearing.

Lm (to nearest whole degree) =  $57^\circ$

DLo (to nearest half degree) =  $6^\circ$

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

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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.

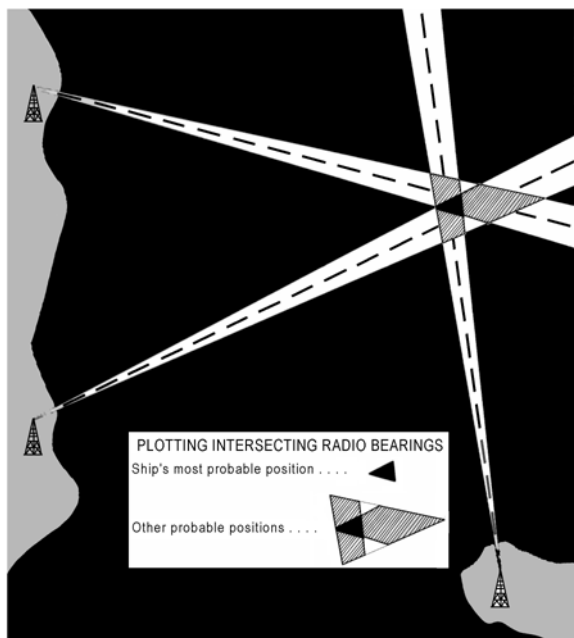


Figure 1.

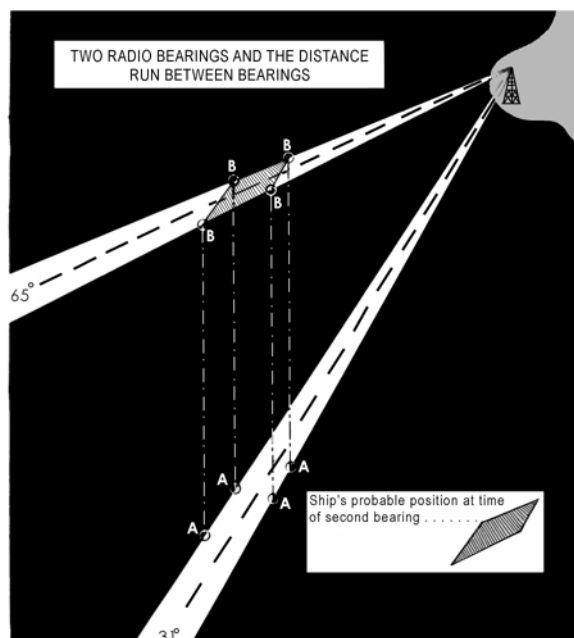


Figure 2.

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Mid Lat.	<b>Radio Bearing Conversion Table</b> <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			+			

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(1) No.	(2) Name	(3) Type	(4) Position Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
<b>CANADA</b>							
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).							
<b>1001 Cap-aux-Meules.</b>	RDF		47 23 14 N 61 51 40 W				MCTS Riviere-au-Renard (VCG).
<b>1001.1 Cap des Rosiers.</b> 2-4326	RDF		48 51 40 N 64 12 53 W				MCTS Riviere-au-Renard (VCG).
<b>1001.15 Cap Est.</b> 2-4326	RDF		48 22 55 N 70 41 25 W				MCTS Quebec (VCC).
<b>1001.2 Carleton.</b> 2-4326	RDF		48 08 00 N 66 07 20 W				MCTS Riviere-au-Renard (VCG).
<b>1001.25 Forillon.</b> 2-4326	RDF		48 50 02 N 64 15 30 W				MCTS Riviere-au-Renard (VCG).
<b>1001.3 Fortune Head.</b> 2-4326	RDF		47 03 54 N 55 51 04 W				MCTS Placentia (VCP).
<b>1001.35 Grosses-Roches.</b> 2-4326	RDF		48 54 51 N 67 06 38 W				MCTS Les Escoumins (VCF).
<b>1001.4 Harrington Harbor.</b> 2-4326	RDF		50 30 00 N 59 29 17 W				MCTS Riviere-au-Renard (VCG).
Seasonal operation: April 1-December 31.							
<b>1001.45 Havre St.-Pierre.</b> 2-4326	RDF		50 16 15 N 63 40 44 W				MCTS Riviere-au-Renard (VCG).
<b>1001.5 La Romaine.</b> 2-4326	RDF		50 12 57 N 60 41 13 W				MCTS Riviere-au-Renard (VCG).
Seasonal operation: April 1-December 31.							
<b>1001.55 La Verniere.</b>	RDF		47 21 26 N 61 55 36 W				MCTS Riviere-au-Renard (VCG).
<b>1001.6 Lac D'aigle (Sept 2-4326 Iles).</b>	RDF		50 17 21 N 66 18 43 W				MCTS Les Escoumins (VCF).
<b>1001.65 Lauzon.</b> 2-4326	RDF		46 48 45 N 71 09 33 W				MCTS Quebec (VCC).
<b>1001.7 Les Escoumins.</b>	RDF		48 19 03 N 69 25 13 W				MCTS Les Escoumins (VCF).
<b>1001.75 Mont Belair.</b> 2-4326	RDF		46 49 22 N 71 29 45 W				MCTS Quebec (VCC).
<b>1001.8 Mont Joli.</b> 2-4326	RDF		48 36 30 N 68 13 45 W				MCTS Les Escoumins (VCF).
<b>1001.85 Mont-Louis.</b> 2-4326	RDF		49 12 48 N 65 46 27 W				MCTS Les Escoumins (VCF).
<b>1001.9 Montmagny.</b> 2-4326	RDF		46 55 42 N 70 30 45 W				MCTS Quebec (VCC).
<b>1001.95 Natashquan.</b> 2-4326	RDF		50 08 40 N 61 48 00 W				MCTS Riviere-au-Renard (VCG).
<b>1002 Newport.</b> 2-4326	RDF		48 13 37 N 64 47 33 W				MCTS Riviere-au-Renard (VCG).
<b>1002.1 Pointe Heath.</b> 2-4326	RDF		49 05 05 N 61 42 09 W				MCTS Riviere-au-Renard (VCG).
<b>1002.15 Riviere-au-Renard.</b> 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
<b>1002.2</b> Riviere du Loup. 2-4326		RDF	47 45 26 N 69 36 14 W				MCTS Quebec (VCC).
<b>1002.25</b> Sacre Coeur. 2-4326		RDF	48 12 45 N 69 52 15 W				MCTS Quebec (VCC).
<b>1002.3</b> Trois-Rivieres. 2-4326		RDF	46 23 50 N 72 27 17 W				MCTS Quebec (VCC).
<b>1002.35</b> Twillingate. 2-4326		RDF	49 41 16 N 54 48 03 W				MCTS St. Anthony (VCM).
<b>1002.36</b> Banks.		RDF	44 28 30 N 80 20 56 W				MCTS Thunder Bay (VBA).
<b>1002.37</b> Brougham.		RDF	43 55 13 N 79 06 51 W				MCTS Prescott (VBR).
<b>1002.38</b> Cape Croker.		RDF	44 57 30 N 80 57 53 W				MCTS Thunder Bay (VBA).
<b>1002.4</b> Cobourg.		RDF	44 04 02 N 78 12 38 W				MCTS Prescott (VBR).
<b>1002.45</b> Pointe au Baril.		RDF	45 33 50 N 80 19 18 W				MCTS Thunder Bay (VBA).
<b>1002.5</b> Tobermory.		RDF	45 09 42 N 81 29 22 W				MCTS Thunder Bay (VBA).
<b>1002.55</b> Trafalgar.		RDF	43 29 41 N 79 43 47 W				MCTS Prescott (VBR).
Seasonal operation: April 1-December 31.							
<b>1002.6</b> Barry Inlet. 2-3510		RDF	52 34 30 N 131 45 13 W				MCTS Prince Rupert (VAJ).
<b>1002.65</b> Calvert Island. 2-3510		RDF	51 35 21 N 128 00 43 W				MCTS Prince Rupert (VAJ).
<b>1002.7</b> Cumshewa. 2-3510		RDF	53 09 33 N 131 59 47 W				MCTS Prince Rupert (VAJ).
<b>1002.75</b> Dundas Island. 2-3510		RDF	54 31 16 N 130 54 55 W				MCTS Prince Rupert (VAJ).
<b>1002.8</b> Klemtu. 2-3510		RDF	52 34 45 N 128 33 45 W				MCTS Prince Rupert (VAJ).
<b>1002.85</b> Mount Gil. 2-3510		RDF	53 15 46 N 129 11 42 W				MCTS Prince Rupert (VAJ).
<b>1002.9</b> Mount Hays. 2-3510		RDF	54 17 12 N 130 18 49 W				MCTS Prince Rupert (VAJ).
<b>1002.95</b> Naden Harbor. 2-3510		RDF	53 57 18 N 132 56 30 W				MCTS Prince Rupert (VAJ).
<b>1003</b> Van Inlet. 2-3510		RDF	53 15 08 N 132 32 31 W				MCTS Prince Rupert (VAJ).
<b>NORWAY</b>							
<b>1005</b> Rogaland (LGQ). 2-0727		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°.
<b>1006</b> Lista Lt. (LGZ). 2-0722		RDF	58 07 03 N 6 34 14 E			Call Farsund Radio (LGZ).	
<b>1007</b> Hillersoy (LGL). 2-0752		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
<b>1065 Berry Head.</b> <i>2-0001</i>		RDF	50 23 58 N 3 29 03 W				MRSC Brixham.
<b>1066 Boniface.</b> <i>2-0001</i>		RDF	50 36 13 N 1 12 02 W				MRSC Solent.
<b>1070 Compass Head.</b> <i>2-0001</i>		RDF	59 52 03 N 1 16 18 W				MRSC Shetland.
<b>1072 Crosslaw.</b> <i>2-0001</i>		RDF	55 54 30 N 2 12 12 W				MRSC Forth.
<b>1073 Cullercoats.</b> <i>2-0001</i>		RDF	55 04 00 N 1 28 00 W				MRSC Humber.
<b>1075 Dunnet Head.</b> <i>2-0001</i>		RDF	58 40 18 N 3 22 31 W				MRCC Aberdeen.
<b>1080 Easington.</b> <i>2-0001</i>		RDF	53 39 08 N 0 05 57 E				MRSC Humber.
<b>1082 East Prawle.</b> <i>2-0001</i>		RDF	50 13 06 N 3 42 30 W				MRSC Brixham.
<b>1086 Fairlight.</b> <i>2-0001</i>		RDF	50 52 11 N 0 38 44 E				MRCC Dover.
<b>1087 Fife Ness.</b> <i>2-0001</i>		RDF	56 16 47 N 2 35 15 W				MRSC Forth.
<b>1088 Flamborough.</b> <i>2-0001</i>		RDF	54 07 05 N 0 05 07 W				MRSC Humber.
<b>1089 Great Ormes Head.</b> <i>2-0001</i>		RDF	53 19 59 N 3 51 07 W				MRSC Holyhead.
<b>1090 Grove Point.</b> <i>2-0001</i>		RDF	50 32 56 N 2 25 12 W				MRSC Portland.
<b>1090.5 Guernsey.</b> <i>2-0155</i>		RDF	49 26 16 N 2 35 46 W				
<b>1091 Hartland.</b> <i>2-0001</i>		RDF	51 01 12 N 4 31 19 W				MRCC Swansea.
<b>1091.2 Hartlepool.</b> <i>2-0001</i>		RDF	54 41 47 N 1 10 28 W				MRSC Humber.
<b>1092 Hengistbury Head.</b> <i>2-0001</i>		RDF	50 42 57 N 1 45 38 W				MRSC Portland.
<b>1093 Inverbervie.</b> <i>2-0001</i>		RDF	56 51 06 N 2 15 39 W				MRSC Forth.
<b>1093.5 Jersey.</b> <i>2-0155</i>		RDF	49 10 51 N 2 14 18 W				
<b>1094 Kilchiaran.</b> <i>2-0001</i>		RDF	55 45 54 N 6 27 11 W				MRCC Clyde.
<b>1094.1 Lands End.</b> <i>2-0001</i>		RDF	50 08 08 N 5 38 11 W				MRCC Falmouth.
<b>1094.2 Langdon Battery.</b> <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
<b>1094.5 Law Hill.</b> 2-0001		RDF	55 41 46 N 4 50 28 W				MRCC Clyde.
<b>1095 Lizard.</b> 2-0001		RDF	49 57 36 N 5 12 04 W				MRCC Falmouth.
<b>1095.5 Lowestoft.</b> 2-0001		RDF	52 28 36 N 1 42 12 E				MRCC Yarmouth.
<b>1096 Newhaven.</b> 2-0001		RDF	50 46 54 N 0 03 08 E				MRSC Solent.
<b>1097 Newton.</b> 2-0001		RDF	55 31 01 N 1 37 06 W				MRSC Humber.
<b>1098 North Foreland.</b> 2-0001		RDF	51 22 30 N 1 26 49 E				MRCC Dover.
<b>1098.2 Noss Head.</b> 2-0001		RDF	58 28 48 N 3 03 00 W				MRCC Aberdeen.
<b>1098.5 Orlock Head.</b> 2-0175		RDF	54 40 25 N 5 34 58 W				MRSC Belfast.
<b>1105 Rame Head.</b> 2-0001		RDF	50 18 59 N 4 13 06 W				MRSC Brixham.
<b>1105.2 Rhiw.</b> 2-0001		RDF	52 49 59 N 4 37 41 W				MRSC Holyhead.
<b>1106 Rodel.</b> 2-0001		RDF	57 44 54 N 6 57 24 W				MRSC Stornoway.
<b>1108 St. Ann's Head.</b> 2-0001		RDF	51 40 58 N 5 10 31 W				MRSC Milford Haven.
<b>1109 St. Mary's, Isles of Scilly.</b> 2-0001		RDF	49 55 42 N 6 18 10 W				MRCC Falmouth.
<b>1110 Sandwick.</b> 2-0001		RDF	58 12 39 N 6 21 16 W				MRSC Stornoway.
<b>1115 Selsey.</b> 2-0001		RDF	50 43 49 N 0 48 12 W				MRSC Solent.
<b>1116 Shoeburyness.</b> 2-0001		RDF	51 31 20 N 0 46 41 E				MRSC Thames.
<b>1117 Skegness.</b> 2-0001		RDF	53 09 00 N 0 21 00 E				MRCC Yarmouth.
<b>1120 Snaefell.</b> 2-0001		RDF	54 15 50 N 4 27 40 W				MRSC Liverpool.
<b>1150 Tiree.</b> 2-0001		RDF	56 30 37 N 6 57 41 W				MRCC Clyde.
<b>1155 Trevoze Head.</b> 2-0001		RDF	50 32 54 N 5 01 53 W				MRCC Falmouth.
<b>1160 Trimingham.</b> 2-0001		RDF	52 54 34 N 1 20 36 E				MRCC Yarmouth.
<b>1165 Tynemouth.</b> 2-0001		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 2-0001	Walney Island.	RDF	54 06 37 N 3 16 00 W				MRSC Liverpool.
1171 2-0175	West Torr.	RDF	55 11 54 N 6 05 36 W				MRSC Belfast.
1172 2-0001	Whitby.	RDF	54 29 24 N 0 36 15 W				MRSC Humber.
1175 2-0001	Wideford Hill.	RDF	58 59 17 N 3 01 24 W				MRSC Shetland.
1180 2-0001	Windyhead.	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 2-0815	Gris-Nez.	RDF	50 52 12 N 1 35 00 E				Controlled by CROSS.
1182.1 2-0815	Jobourg.	RDF	49 41 06 N 1 54 36 W				Controlled by CROSS.
1182.2 2-0815	Roches-Douvres.	RDF	49 06 30 N 2 48 48 W				Controlled by CROSS-Jobourg.
1182.3 2-0815	Dunkerque.	RDF	51 03 24 N 2 20 24 E				Controlled by signal station.
1182.35 2-0815	Sangatte.	RDF	50 57 11 N 1 46 23 E				Controlled by signal station.
1182.4 2-0815	Boulogne.	RDF	50 44 00 N 1 36 00 E				Controlled by Signal Station. Day service only.
1182.5 2-0815	Ault.	RDF	50 06 30 N 1 27 30 E				Controlled by Signal Station. Day service only.
1182.6 2-0815	Dieppe.	RDF	49 56 00 N 1 05 12 E				Controlled by signal station. Day service only.
1182.7 2-0815	Fecamp.	RDF	49 46 06 N 0 22 12 E				Controlled by signal station.
1182.8 2-0815	La Heve.	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
<b>1182.9 Villerville.</b> <i>2-0815</i>		RDF	49 23 12 N 0 06 30 E				Controlled by signal station. Day service only.
<b>1183 Port-en-Bessin.</b> <i>2-0815</i>		RDF	49 21 06 N 0 46 18 W				Controlled by signal station.
<b>1183.05 Saint-Vaast.</b> <i>2-0815</i>		RDF	49 34 30 N 1 16 30 W				Controlled by signal station. Day service only.
<b>1183.1 Barfleur.</b> <i>2-0815</i>		RDF	49 41 54 N 1 15 54 W				Controlled by signal station.
<b>1183.15 Levy.</b> <i>2-0815</i>		RDF	49 41 42 N 1 28 12 W				Controlled by signal station. Day service only.
<b>1183.2 Homet.</b> <i>2-0815</i>		RDF	49 39 30 N 1 37 54 W				Controlled by lookout station.
<b>1183.25 La Hague.</b> <i>2-0815</i>		RDF	49 43 36 N 1 56 18 W				Controlled by signal station. Day service only.
<b>1183.3 Carteret.</b> <i>2-0815</i>		RDF	49 22 24 N 1 48 18 W				Controlled by signal station. Day service only.
<b>1183.35 Le Roc.</b> <i>2-0815</i>		RDF	48 50 06 N 1 36 54 W				Controlled by signal station. Day service.
<b>1183.4 Creac'h (Ile d'Ouessant).</b> <i>2-0815</i>		RDF	48 27 36 N 5 07 48 W				Controlled by CROSS-Corsen.
<b>1183.45 Grouin (Cancale).</b> <i>2-0815</i>		RDF	48 42 36 N 1 50 36 W				Controlled by signal station. Day service only.
<b>1183.5 Saint-Cast.</b> <i>2-0815</i>		RDF	48 38 36 N 2 14 42 W				Controlled by signal station. Day service only.
<b>1183.55 S. Quay Portrieux.</b> <i>2-0815</i>		RDF	48 39 18 N 2 49 30 W				Controlled by signal station.
<b>1183.6 Brehat.</b> <i>2-0815</i>		RDF	48 51 18 N 3 00 06 W				Controlled by signal station. Day service only.
<b>1183.65 Ploumanach.</b> <i>2-0815</i>		RDF	48 49 30 N 3 28 12 W				Controlled by signal station.
<b>1183.7 Batz.</b> <i>2-0815</i>		RDF	48 44 48 N 4 00 36 W				Controlled by signal station. Day service only.
<b>1183.75 Brignogan.</b> <i>2-0815</i>		RDF	48 40 36 N 4 19 42 W				Controlled by signal station.
<b>1183.8 Creac'h (Ile d'Ouessant).</b> <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
<b>1183.85 Saint-Mathieu.</b> <i>2-0815</i>		RDF	48 19 48 N 4 46 12 W				Controlled by lookout station.
<b>1183.9 Toulanguet</b> <b>2-0815 (Camaret).</b>		RDF	48 16 48 N 4 37 30 W				Controlled by signal station. Day service only.
<b>1183.95 Cap de la Chevre.</b> <i>2-0815</i>		RDF	48 10 12 N 4 33 00 W				Controlled by signal station. Day service only.
<b>1184 Pointe du Raz.</b> <i>2-0815</i>		RDF	48 02 18 N 4 43 48 W				Controlled by signal station.
<b>1184.05 Penmarc'h.</b> <i>2-0815</i>		RDF	47 47 54 N 4 22 24 W				Controlled by signal station.
<b>1184.1 Beg-Meil.</b> <i>2-0815</i>		RDF	47 51 18 N 3 58 24 W				Controlled by signal station. Day service only.
<b>1184.15 Etel.</b> <i>2-0815</i>		RDF	47 39 48 N 3 12 00 W				Controlled by CROSS.
<b>1184.2 Beg Melen.</b> <i>2-0815</i>		RDF	47 39 12 N 3 30 06 W				Controlled by signal station. Day service only.
<b>1184.25 Port-Louis.</b> <i>2-0815</i>		RDF	47 42 36 N 3 21 48 W				Controlled by lookout station.
<b>1184.3 Saint-Julien.</b> <i>2-0815</i>		RDF	47 29 42 N 3 07 30 W				Controlled by signal station. Day service only.
<b>1184.35 Taillefer.</b> <i>2-0815</i>		RDF	47 21 48 N 3 09 00 W				Controlled by signal station. Day service only.
<b>1184.4 Le Talut.</b> <i>2-0815</i>		RDF	47 17 42 N 3 13 00 W				Controlled by signal station. Day service only.
<b>1184.45 Piriac.</b> <i>2-0815</i>		RDF	47 22 30 N 2 33 24 W				Controlled by signal station. Day service only.
<b>1184.5 Chemoulin.</b> <i>2-0815</i>		RDF	47 14 06 N 2 17 48 W				Controlled by signal station.
<b>1184.55 Saint-Sauveur.</b> <i>2-0815</i>		RDF	46 41 42 N 2 18 48 W				Controlled by signal station. Day service only.
<b>1184.6 Les Baleines.</b> <i>2-0815</i>		RDF	46 14 36 N 1 33 42 W				Controlled by signal station. Day service only.
<b>1184.65 Chassiron.</b> <i>2-0815</i>		RDF	46 02 48 N 1 24 30 W				Controlled by signal station. Day service only.
<b>1184.7 La Coubre.</b> <i>2-0815</i>		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
<b>1184.75</b> <i>2-0815</i>	<b>Pointe de Grave.</b>	RDF	45 34 18 N 1 03 54 W				Controlled by signal station. Day service only.
<b>1184.8</b> <i>2-0815</i>	<b>Cap Ferret.</b>	RDF	44 37 30 N 1 15 00 W				Controlled by signal station. Day service only.
<b>1184.82</b> <i>2-0815</i>	<b>Messanges.</b>	RDF	43 48 48 N 1 23 54 W				Controlled by signal station. Day service only.
<b>1184.85</b> <i>2-0815</i>	<b>Socoa.</b>	RDF	43 23 18 N 1 41 06 W				Controlled by signal station.
<b>1185.5</b> <i>2-1040</i>	<b>La Garde.</b>	RDF	43 06 18 N 5 59 30 E				Controlled by CROSS.
<b>1185.6</b> <i>2-1040</i>	<b>Cap Bear.</b>	RDF	42 30 48 N 3 08 00 E				Controlled by signal station.
<b>1185.7</b> <i>2-1040</i>	<b>Cap Leucate.</b>	RDF	42 55 06 N 3 03 42 E				Controlled by signal station. Day service only.
<b>1185.8</b> <i>2-1040</i>	<b>Sete.</b>	RDF	43 23 48 N 3 41 30 E				Controlled by signal station.
<b>1185.9</b> <i>2-1040</i>	<b>L'Espiguette.</b>	RDF	43 29 18 N 4 08 30 E				Controlled by signal station. Day service only.
<b>1186</b> <i>2-1040</i>	<b>Cap Couronne.</b>	RDF	43 20 06 N 5 03 18 E				Controlled by signal station.
<b>1186.1</b> <i>2-1040</i>	<b>Pomegues.</b>	RDF	43 16 00 N 5 17 42 E				Controlled by signal station. Day service only.
<b>1186.2</b> <i>2-1040</i>	<b>Bec de L'Aigle.</b>	RDF	43 10 30 N 5 34 36 E				Controlled by signal station. Day service only.
<b>1186.3</b> <i>2-1040</i>	<b>Cap Cepet.</b>	RDF	43 04 48 N 5 56 30 E				Controlled by lookout station.
<b>1186.4</b> <i>2-1040</i>	<b>Porquerolles.</b>	RDF	43 00 00 N 6 13 42 E				Controlled by signal station. Day service only.
<b>1186.5</b> <i>2-1040</i>	<b>Cap Camarat.</b>	RDF	43 12 06 N 6 40 30 E				Controlled by signal station. Day service only.
<b>1186.6</b> <i>2-1040</i>	<b>Cap du Dramont.</b>	RDF	43 24 48 N 6 51 12 E				Controlled by signal station. Day service only.
<b>1186.7</b> <i>2-1040</i>	<b>La Garoupe.</b>	RDF	43 34 00 N 7 08 12 E				Controlled by signal station. Day service only.
<b>1186.8</b> <i>2-1040</i>	<b>Cap Ferrat.</b>	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 Rx Tx	(5) Frequency	(6) Range	(7) Procedure	(8) Remarks
<b>1186.9</b> <i>2-1040</i>	<b>Cap Corse.</b>	RDF	43 00 18 N 9 21 36 E				Controlled by signal station. Day service only.
<b>1187</b> <i>2-1040</i>	<b>Ile Rousse.</b>	RDF	42 37 54 N 8 55 24 E				Controlled by signal station. Day service only.
<b>1187.1</b> <i>2-1040</i>	<b>La Parata.</b>	RDF	41 54 06 N 8 36 48 E				Controlled by signal station. Day service only.
<b>1187.2</b> <i>2-1040</i>	<b>Pertusato.</b>	RDF	41 22 24 N 9 10 42 E				Controlled by signal station.
<b>1187.3</b> <i>2-1040</i>	<b>La Chiappa.</b>	RDF	41 35 36 N 9 21 54 E				Controlled by signal station. Day service only.
<b>1187.4</b> <i>2-1040</i>	<b>Alistro.</b>	RDF	42 15 36 N 9 32 30 E				Controlled by signal station. Day service only.
<b>1187.5</b> <i>2-1040</i>	<b>Sagro.</b>	RDF	42 47 48 N 9 29 24 E				Controlled by signal station. Day service only.
<b>BULGARIA</b>							
<b>1187.6</b> <i>2-1279</i>	<b>Maslen Nos Lt.</b>	RDF	42 18 30 N 27 47 42 E	297.5 kHz, A2A.	10	On request to Hydrographic Service, Varna.	Transmits <b>MN</b> .
<b>1187.61</b> <i>2-1282</i>	<b>Nos Galata Lt.</b>	RDF	43 10 17 N 27 56 49 E	297.5 kHz, A2A.	5	On request to Hydrographic Service, Varna.	Transmits <b>DG</b> .
<b>PAKISTAN</b>							
<b>1188</b> <i>2-2147</i>	<b>Karachi (ASK).</b>	RDF	24 52 44 N 24 51 05 N 67 09 50 E 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°.
<b>INDIA</b>							
<b>1188.1</b> <i>2-2200</i>	<b>Calcutta (VWC).</b>	RDF	22 28 56 N 22 38 37 N 88 21 26 E 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
<b>RUSSIA</b>							
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.
<b>LATVIA</b>							
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.
<b>LITHUANIA</b>							
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.
<b>POLAND</b>							
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.
<b>SWEDEN</b>							
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).
<b>NORWAY</b>							
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
<b>GERMANY</b>							
<b>1205 Die Elbe.</b>		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).
<b>1210 Hamburg.</b>		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).
<b>1215 Die Weser.</b>		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, Lankenau 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.
<b>1216 Die Jade.</b>		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.
<b>1217 Die Ems.</b>		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
<b>NETHERLANDS</b>							
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.	
<p>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.</p>							
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, Europoort 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
<b>UNITED KINGDOM</b>							
<b>1237</b>	<b>Lerwick.</b>	RA		Ch.12.		Call Lerwick Harbour Radio.	Vessels should report at N and S Entrances. Covers N Entrance, S Entrance and Inner Harbour.
<b>1240</b>	<b>Sullom Voe Harbour.</b>	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.
<b>1245</b>	<b>Tees.</b>	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.
<b>1250</b>	<b>Medway.</b>	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.
<b>1254</b>	<b>Gravesend Radio.</b>	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.
<b>1255</b>	<b>Woolwich Radio.</b>	RA		Ch.14,16,22.			Inbound and outbound vessels should make notification 24 hrs. in advance. Covers Thames R. from Crayford Ness to Greenwich.
<b>1262</b>	<b>Harwich.</b>	RA		Ch.14,20.			Inbound and outbound vessels should make notification 24 hrs. in advance.
<b>1265</b>	<b>Southampton Vessel Traffic Services Centre.</b>	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.
<b>1270</b>	<b>Liverpool.</b>	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
<b>FRANCE</b>							
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.
<b>PORTUGAL</b>							
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
<b>SPAIN</b>							
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.
<b>UKRAINE</b>							
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.
<b>MOROCCO</b>							
1320	Casablanca.	RA		Ch.12.		Call CNP2.	Vessels should send notification of arrival to the Port Captain through Casablanca (CNP) 24 hrs. in advance.
<b>THAILAND</b>							
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.
<b>REPUBLIC OF KOREA</b>							
1520	Busan.	RA		Ch.12,14,16,20,22.		Call Busan Port Control.	Radar assistance is available during limited visibility.
<b>JAPAN</b>							
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
<b>1560 Tokyo Wan.</b>		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.
<b>1570 Kushiro.</b>		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).
<b>NEW ZEALAND</b>							
<b>1625 Auckland.</b>		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.
<b>1630 Otago Harbour.</b>		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).
<b>1635 Wanganui.</b>		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).
<b>1640 Westport.</b>		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.
<b>AUSTRALIA</b>							
<b>1665 Port Hedland.</b>		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.
<b>1675 Port Dampier.</b>		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
<b>UNITED STATES</b>							
<p>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.</p>							
<b>1720 New York, NY.</b>		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.
<b>1730 Berwick Bay, LA.</b>		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.
<b>1735 LOOP Deepwater Port (Louisiana Offshore Oil Port).</b>		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.							
<b>1740 Houston-Galveston , TX.</b>		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.
<b>1750 San Francisco, CA.</b>		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.
<b>1760 Puget Sound, WA.</b>		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.
<b>COLOMBIA</b>							
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.
<b>CHILE</b>							
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.