

PART II
COMMUNICATION FACILITIES AND PROCEDURES

201. General

Upon the outbreak of war or other declared national emergency, the communication facilities and procedures listed and prescribed in this chapter shall be used by all U.S. Government owned vessels (excluding the operating forces of the U.S. Navy); privately owned U.S. Flag merchant vessels; and merchant vessels considered to be under the effective control of the U.S. Government.

202. Message Forms and Procedures

a. Since commercial form is not suitable for handling messages within Naval Communications, a modified "FROM" and "TO" message form will be used on messages addressed to or originated by government agencies. This modified message form, consisting of three parts - preamble, address, and text - provides an easy method of handling those messages containing "information addressees", eliminates the need for a "signature" and reduces the number of words necessary to effect the delivery of the message. An explanation of the basic parts of the message form follows:

(1) PREAMBLE.—The preamble consists of the call up, the serial number (if used), the precedence designator and the date-time group.

(2) ADDRESS.—The address contains the originator, the action addressee(s), the information addressee(s) (if any) and the group count.

(3) TEXT.—The text contains the message thought and includes everything after the address. The text is preceded and followed by the International Morse Code signal "break (BT (— • • • —))." These signals serve to identify the text of the

message, but are not counted as groups of the text.

b. The following shows an example of the message form, with an explanation of the various elements:

NPM DE WEDI	(1) (Call)
P 012345Z	(2) (Precedence designator and date-time group)
FM SS AMERICA	(3) (Originator)
TO COMHAWSEAFRON	(4) (Action addressee)
INFO NCSO PEARL HARBOR	(5) (Information addressee)
GR 4	(6) (Group count)
BT ARRIVED PEARL HARBOR	(7) (text)
012345Z BT	

c. A further explanation of the various elements of the three basic message parts follows:

(1) *Call up and serial number.*—As in commercial procedure, the call up consists of the call sign of the station called, the word "DE" followed by the call sign of the station calling. A serial number is not used on messages to naval authorities. If used on other traffic, it is assigned by the transmitting station commencing with number one at 0001 GMT and continuing in sequence until 2400 GMT. A new series is used for each station to whom traffic is transmitted. (Note: For serial numbers assigned messages on broadcast schedules by shore stations see paragraph 204.f.).

(2) *Precedence.*—The precedence assigned to a message indicates the required speed of delivery and the relative order in which the message should be handled by communication personnel and noted by the addressee. The precedence designators shown below with their meanings are for use as indicated:

Precedence Designator	Precedence	Used for Messages Pertaining to	Time Standards (Delivery Objectives)
Z	FLASH	Initial enemy contact in matters of the greatest urgency, such as war warnings.	Handled as fast as humanly possible with an objective of less than 10 minutes.
O	IMMEDIATE	Typhoon and hurricane warnings. Distress. Storm conditions. Amplifying contact reports.	30 minutes to 1 hour. Processed, transmitted and delivered ahead of all messages of lower precedence.
P	PRIORITY	Ship diversions. Normal weather conditions. Ship movement reports.	1 to 6 hours. Immediate delivery on receipt at addressee destination.
R	ROUTINE	Matters which justify transmission by rapid means unless of sufficient urgency to require higher precedence.	3 hours to start of business the following day.

(3) *Date-Time Group*.—The time of origin of the message expressed in six digits, followed by the letter "Z" to indicate GMT. The first pair of digits indicate the date, the second pair the hour, and the third pair the minutes. If the day of the month is the ninth or earlier a zero will be used as the first digit in order to complete the six digit group; e.g. 071454Z indicates the 7th day of the month at 1454 GMT.

(4) *Originator*.—The originator is indicated by "FM" followed by the name of the ship or activity.

(5) *Action Addressee*.—The action addressee is indicated by "TO" followed by the name of the activity required to take action on the message.

(6) *Information Addressee*.—The information addressee is indicated by "INFO" followed by the name of the activity which needs to know the contents of the message for information purposes only.

(7) *Group Count*.—"GR" followed by a number indicates the number of words in the text of the message. Messages originated by ships should have a group count indicated. Shore stations may transmit messages with the group count "GRNC", indicating that the words in the text are not counted. The group count includes all groups between the BT's.

(8) *Text*.—The thought or idea the originator desires communicated. The text is preceded and followed by "BT".

203. Merchant Ship Broadcast System (MERCASST)

a. The primary method of delivering messages from Naval shore radio stations to merchant ships at sea is by a broadcast system known as MERCASST. Under the MERCASST system the U.S. Navy operates a number of shore radio stations, geographically located to provide the widest possible coverage, with each station assigned an area of responsibility within which it delivers traffic by means of scheduled broadcasts. Ships copying MERCASST will guard the appropriate schedules when in the respective station areas of responsibility as shown on the chart on page 10-10, and as directed by sailing or diversion orders issued by competent authority. The MERCASST is a broadcast concept under which no acknowledgement from ships addressed is required or desired.

b. Upon the declaration of a state of emergency or the commencement of hostilities all U.S. Flag merchant ships will begin to copy the appropriate MERCASST area broadcast.

c. The MERCASST area stations listed below are shown on the chart on page 10-10 of this publication. The frequencies and times employed for MERCASST by these stations are as follows.

<u>Station</u>	<u>Call</u>
RADIO WASHINGTON	NSS
<u>Time, GMT</u>	<u>Frequencies**</u>
0230-0330	6162, 5870,
0630-0730*	9425, 13575,
1030-1130	17050.4, 23650
1430-1530*	
1830-1930	
2230-2330*	

<u>Station</u>	<u>Call</u>
RADIO HONOLULU	NPM
<u>Time, GMT</u>	<u>Frequencies**</u>
0200-0400*	131.05, 4525,
0600-730*	9050, 13655,
1030-1130	16457.5,
2000-2200*	20575, 22593

Note.—6162 kcs except 1400-2000 Thursday during which 121.95 kcs is used.

<u>Station</u>	<u>Call</u>
RADIO PHILIPPINES	NPO
<u>Time, GMT</u>	<u>Frequencies</u>
0230-0330*	4445
0630-0730	12200
1030-1130*	15925
1430-1530	
1830-1930*	
2230-2330	

<u>Station</u>	<u>Call</u>
RADIO GUAM	NPN
<u>Time, GMT</u>	<u>Frequencies**</u>
0200-0300*	484, 4955,
0700-0800	8150, 13530,
1055-1150*	17530, 21760
1400-1500	
1830-1930*	
2300-2345	

Station
RADIO BALBOA

Time, GMT

0200-0330
0800-0930*

1400-1530
2000-2130*

Call
NBA

Frequencies**

147.85, 5448.5,
11080, 17697.5

Station
RADIO LONDON DERRY

Time, GMT

0300-0400*
0700-0800
1100-1200*
1500-1600
1900-2000*
2300-2400

Call
NST

Frequencies**

2634, 5052, 5167, 6487,
7535, 9318, 13110.

Station
RADIO SAN FRANCISCO

Time, GMT

0200-0255*
0600-0655
1000-1055*
1400-1455
1800-1855*
2200-2255

Call
NPG

Frequencies**

114.95, 4010,
8428.5, 9277.5,
12968, 17055.2,
22635

Station
RADIO ASMARA

Time, GMT

0300-0400
0600-0700*
1050-1145
1450-1545*
1800-1900
2250-2345*

Call
NKA

Frequencies**

3220, #4515, 9060, 12817.5,
17510, 22760.
3220 1900-0500 only.
#4515 1800-0600 only.
17510 0630-2100 only.

* One operator schedules.

** Simultaneous transmission on all frequencies, except as indicated, for all schedules.

MERCAST station, frequencies, and schedules are also shown in BROADCAST SCHEDULES of U.S. NAVY AND COAST GUARD STATIONS which should be posted in the radio room for ready reference.

204. Operation of MERCAST

a. Broadcast will commence at scheduled times and run until traffic on hand is cleared. If no traffic is awaiting transmission at a scheduled time the station will transmit the preliminary call up and the signal QRU for a period of five minutes.

b. In some cases schedules will be interrupted for the transmission of time signals. All stations transmitting MERCAST cease transmission of traffic during the international silent periods at which times they run a call tape on all frequencies (except those between 480-520 kcs.) to permit ships to remain on or return to the MERCAST frequency.

c. Traffic for ships with only one radio operator will be transmitted on "one-operator" schedules only. Traffic for ships with two or more radio operators will be transmitted on any schedule and these ships will be required to copy all schedules. (See Broadcast Schedules of U.S. Navy and Coast Guard Stations.)

d. Material for broadcast on MERCAST schedules will be transmitted in the following order:

- (1) Emergency warning (if any).
- (2) Traffic list.
- (3) Traffic.

e. The traffic list will consist of the call sign (transmitted twice) and the date time group of each message awaiting transmission, listed in order of precedence.

f. Messages will be transmitted in the same sequence as indicated in the traffic list. Each message transmitted on MER-

CAST will carry a serial number. Such numbers will be in sequence commencing with zero hours GMT the first day of each month. The transmitting stations' broadcast designator letters as shown in the chart on page 10-10, will precede the serial number. An additional serial number, immediately following the original serial number but separated therefrom by a slant sign (/) will be used for messages which are transmitted to one-operator ships. This latter number will be preceded by the letter "A",

EXAMPLE: Washington (NSS) MERCAST message number 32, when transmitted on a one-operator schedule as message number 12 of the one-operator series would carry the number: WM NR32/A12.

g. Should a message of Priority or higher precedence be received too late for inclusion in the traffic list, it may be transmitted on the schedule in progress. Such transmissions will be considered as extra. The transmission on the following appropriate schedule, in which the message is included in the traffic list, will be considered as the first transmission. MERCAST stations will indicate that a schedule is being interrupted for transmission of a high precedence message by "Q" signal, followed by a call-up to the ship for whom the message is intended.

h. Ships directed to copy MERCAST will copy the entire traffic lists of all appropriate schedules. When all messages addressed to the ship, as indicated by the traffic list, have been copied, or if no messages addressed to the ship are included in the traffic list, the operator may discontinue copying that schedule.

i. Speed of transmission on MERCAST schedules shall not exceed sixteen words per minute.

j. Each word or group of the preamble and address will always be transmitted twice. When the ship's name is used as the address, it will be transmitted only once.

k. The following is an illustration of a MERCAST schedule: Approximately five minutes prior to commencement of a schedule the MERCAST station will run a test call consisting of a series of V's, the from sign DE, the station call sign and the area broadcast designator transmitted three times, thus:

VVV VVV VVV DE NSS NSS NSS WM WM WM

At the prescribed time the broadcast begins:

Call up: NUKO NUKO NUKO DE NSS NSS NSS MERCAST QTC 4 BT

Traffic List:	WAYQ WAYQ 011635Z (O)	
	NUKO NUKO 011644Z (O)	Traffic listed in order
	NBUR NBUR 011722Z (P)	of precedence
	KIMK KIMK 010345Z (R)	

Traffic: WM NR 116 WM NR 116
O O 011635Z 011635Z
FM FM COMEASTSEAFRON
TO TO SS SILVERPEAKE
GR6 GR6 BT
ORDERS CANCELLED RETURN TO PORT IMMEDIATELY
BT AR

WM NR 117 WM NR 117
O O 011644Z 011644Z
FM FM NAVY WEATHER WASHDC NSS
TO TO ALL SHIPS COPYING MERCAST
GR30 GR30 BT
GALE WARNING EAST COAST-----ETC-----BT AR

NOTE: At this point NSS has on hand a message OPERATIONAL IMMEDIATE for NDTX. Since it was not included in the traffic list, NSS transmits:

NUKO DE NSS AS O O
NDTX NDTX NDTX DE NSS NSS NSS
WM NR 118 WM NR 118 NDTX NDTX
O O 011245Z 011245Z
FM FM ECEA ECEA
TO TO NDTX NDTX
GR28 GR28 BT
-----ENCRYPTED TEXT-----BT AR

NUKO NUKO NUKO DE NSS NSS NSS RESUME MER-
CAST BT
WM NR 119/A42 WM NR 119/A42
P P 011722Z 011722Z
FM FM COMHAWSEAFRON
TO TO USNS MISSION SANFRANCISCO
GR5 GR5 BT
REPORT CONDITION TANKS PRIOR ARRIVAL BT AR

WM NR 120 WM NR 120
R R 010345Z 010345Z
FM FM COMEASTSEAFRON
TO TO SS TRADEWIND
GR19 GR19 BT
AT POSITION BRAVO FOXTROT DIVERT TO THAT PORT
BEARING 179 DEGREES 214 MILES FROM ROMEO DELTA
X ETA 0142100Z BT AR

NUKO NUKO NUKO DE NSS NSS NSS GRU AR

205. Ship-to-Shore Transmission

a. Upon the receipt of a general emergency message, Masters will ensure compliance with paragraph 103a (2) with regard to ship-to-shore transmissions. When absolutely necessary to transmit in extreme emergency, merchant ships will use naval facilities as explained below.

b. During wartime, or national emergency prior to an outbreak of hostilities, certain U.S. Naval shore radio stations may be contacted by merchant ships on the following frequencies: 2092.5, 4185, 6277.5, 8370, 12555, 16740 and 22260. These frequencies are available to merchant ships to transmit traffic to Naval Operational Control Authorities only when the breaking of radio silence is justified. Merchant ships which have traffic to transmit to naval authorities via naval radio stations on the above frequencies should call NQO (any or all U.S. Naval shore radio stations) and clear traffic with the answering station.

c. Naval and Coast Guard stations make every effort to provide adequate coverage of the distress frequencies 500 kcs. and 8364 kcs. A list of Navy and Coast Guard coastal stations, with the frequencies guarded, appears on pages 4-4 and 4-5.

H.O. PUB. NO. 117B
RADIO NAVIGATIONAL AIDS[illegible]

10-10a

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2

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PART III
SHIPPING CONTROL PROCEDURES

301. General

This section explains the responsibilities of Masters of Vessels sailing under the operational control of the Naval Control of Shipping Organization (NCSORG). While under this control Masters will comply with the provisions of this section and their voyage instructions which supersede any conflicting instructions they may have received previously from their owner, operator, or normal operational commander. If Masters have a thorough knowledge of the part they play in the system of shipping control, the utmost protection can be afforded their ship against enemy operations or other possible dangers. The Masters' cooperation is absolutely essential to the success of the task of shipping protection.

302. Naval Control of Shipping Organization

a. The mission of the Naval Control of Shipping Organization is to provide for the safety of merchant vessel movements in time of war or emergency. Where possible enemy operations make peacetime routes and sailing procedures unsafe, selected routes are used, a system of communication is organized, and ship movements are plotted closely so that naval authorities responsible for protection of shipping will, at all times, know the location of each ship.

b. The control of the movements of certain classes of ships within defined areas, by the NCSORG in peacetime, using modified methods to meet the requirements of current conditions is called Modified (Limited) Control of Shipping. Modified control is exercised for training purposes and facilitates rapid transition to wartime control of shipping.

303. Abbreviations and Terms used in NCSORG operations

The following abbreviations and terms have been adopted for use:

a. NCSORG (Naval Control of Shipping Organization) - The naval organization exercising control of movements of shipping during time of war or emergency.

b. OCA (Operational Control Authority) - The naval commander responsible for the control of the movement and for the protection of merchant shipping within specified geographical limits. The sea areas of the world are divided into zones of responsibility. U.S. OCA areas are shown in Part I.

c. NCSO (Naval Control of Shipping Officer) - A naval officer designated for duty within the Naval Control of Shipping Organization, who is the direct representative of his OCA. As such, he coordinates the procedures involved, and delivers orders concerning the routing and movements of OCA controlled ships into or out of the port in which he is located.

d. NCSLO (Naval Control of Shipping Liaison Officer) - A naval officer assigned to the staff of a foreign allied NCSO for the performance of shipping control duties.

e. REPTOF (Reporting Officer) - An officer of the armed services, a consular official in a foreign country, or a civilian official who, in addition to other duties, reports the movements of merchant shipping to the OCA in whose command he may be located or to such other authority the OCA may direct. He may

also be required to route merchant shipping as directed by the OCA. A reporting Officer may be designated in peacetime as well as in war. In general, reporting officers are required at minor ports or bases where the volume of merchant shipping does not justify establishing NCSO offices.

f. SAILING ORDERS - Each master of a vessel being sailed under the Naval Control of Shipping Organization receives a Sailing Orders Folder for each voyage containing general sailing orders which include the following:

- (1) Departure communications and instructions.
- (2) Channel information.
- (3) Communication plan.
- (4) General orders and bulletins.
- (5) Routing instructions if sailing independently.
- (6) Entrance instructions for ports.
- (7) Miscellaneous special instructions.

g. CHOP (Change of Operational Control) - The date and GMT at which the responsibility for the naval operational control of a ship or group of ships passes from one Operational Control Authority to another. (See Article 304).

h. SHIFT - The date and time at which controlled shipping shifts its radio watch from one Mercast area or sub area broadcast to the next.

i. DESCHA (Destination Change) - A change from the original destination made by an OCA at the request of the ship's destination authority. Destination changes may be required in order to conform to modified logistics requirements and the availability of port facilities. (See Article 307).

j. DIVERSION - An alteration to a route ordered by an OCA for an operational reason. (See Article 307).

k. REFERENCE DIVERSION POINTS - Geographical positions selected by the authority ordering the route in order to facilitate diversions at sea.

l. EVASION - An alteration to a route, ordered by the Escort Force Commander, the convoy Commodore, or the Master of an independent, in order to avoid local dangers after the voyage has commenced. If the evasion amounts to more than 15 miles to either side and more than 50 miles ahead or astern of the originally ordered route, the OCA must be informed by a corrected position report. (See Article 306).

m. DTG (Z) - GMT Date-time group.

n. DECLARED SPEED - The continuous speed which a Master declares his ship can maintain over the ground on a forthcoming voyage under moderate weather conditions; that is, a moderate sea, and not more than wind force 4 on the Beaufort Scale. He should have due regard to her present condition; that is, state of bottom, state of machinery and quality of bunkers.

o. SOA (Speed of Advance) - This is the speed made good over the ground along the route and is the basis upon which movements are plotted.

p. ETA - Estimated time of arrival.

q. **MERCO** - A method of reporting a movement of and information relating to the control of merchant ships by the NCSORG in war and when operating under modified shipping control procedures during peacetime.

r. **R.O.B.** (Reserve on Board) - Publications to be carried aboard but not used until directed.

304. Change of Operational Control (CHOP)

The date and time (GMT) at which a ship changes from the control of one OCA to another (CHOP Time) is given in the sailing orders. It is emphasized that control changes at the time stated in the sailing orders even though the ship's actual crossing of the boundary line might not be made exactly at that hour. Times of change of operational control will always be given in the sailing orders and are always automatic. No message from the ship is necessary when CHOPPING from one OCA to another.

305. General Instructions Pertaining to the Voyage.

a. **Safe Navigation** - Although, when sailing in convoy, the commodore is responsible for the safe conduct and cruising order of the convoy, *Masters of merchant ships, whether sailing in convoy or independently, are at all times responsible for the safe navigation and handling of their ships.* For example, instructions to keep "as close to the coast as safe navigation permits" must be interpreted literally, however, a Master must never take any navigational risk in order to comply with such instructions. Further, if as the result of regular reckoning or calculation of his ship's navigational position, the Master judges that the convoy is standing into danger, he must advise the Convoy Commodore immediately.

b. **Security of routes** - Masters are cautioned that the routes sailed by their ships under the wartime NCSORG are classified matters. The practice of posting information as to the ship's track and/or noon positions is not permitted. All deck officers and communications personnel must be fully conversant with the security requirements engendered by the control of the ship's movements by naval authorities.

306. Corrected Position Report

a. **Purpose:** Each OCA keeps a plot of his area showing the position of all ships sailing under naval control. It is of utmost importance that any significant deviation from the prescribed route be reported in order that these authorities can maintain a high degree of accuracy on their plots for the purpose of providing the maximum protection for the vessel.

b. **Corrected Position Reports** are made (under the conditions of radio silence imposed by the OCA) when the following situations occur:

(1) When the actual position of the ship varies:

(a) More than 50 miles ahead or astern, or

(b) More than 15 miles to either side of the predetermined dead reckoning position.

(2) When it becomes evident, after the CHOP to the OCA of the area of the terminal port, that the actual time of arrival will be more than four hours earlier or later than the last ETA given.

(3) When the new ETA given in a diversion message cannot be met within four hours.

c. The dead reckoning position is based on the speed of advance and the sailing track designated in the sailing orders, or the speed of advance which may have been stated in a previously sent Corrected Position Report.

d. Reports are sent to the OCA's of the areas through which the convoy or vessel (if sailing independently) is moving or

will move at the time the corrected position is reported. The reports are to be encrypted in accordance with the communications instructions which the Master will receive prior to sailing.

e. **Contents of a Corrected Position Report** - Detailed instructions pertaining to the required sequence of items to be included in a "CORRECTED POSIT" report will be provided in communications instructions to be issued to all merchant vessels sailing under the NCSORG.

307. Diversion and Destination Changes

a. **Orders.**

(1) A ship may be diverted from its track (operational diversion), or to a port of destination different from that given in the sailing orders (destination change). If this happens, the Master will receive orders from the Operational Control Authority under whose control he is at the time the message is sent.

(2) Diverting a ship at sea from the original route will be known as **DIVERSION**.

(3) Changing the destination of a ship from its original destination will be known as **DESCHA**.

b. **Acknowledgement of Orders** - Acknowledgement of diversion and DESCHA orders shall not be made unless specifically requested by the OCA in the order message. The order message will not normally include a request for acknowledgement of receipt. However, if the position is such that the Master cannot meet, within four hours, the ETA specified in the order message, he will transmit a Corrected Position Report which will contain the new ETA. (See Article 306).

c. **Specific Instructions contained in Diversion Orders** - The Operational Control Authority will, when diverting a ship, provide the Master with a complete route to destination or the point of rejoining the original route.

d. **Procedural details applicable to Diversion and Destination Change messages** will be included (together with examples) in separate communications instructions.

308. Darken Ship Arrangements

Upon receipt of the general emergency message described in Part I of this chapter, masters at sea must darken ship. All doors, alleyways, skylights, or other openings capable of permitting light to escape to outside spaces must be fitted with heavy canvas screens or other devices of opaque material. The darken ship arrangements for doors opening on outer decks should include "stagger screens" and red "standing" lights, or other lighting of low power considered best for night vision adaptation.

309. Precautions in the Use of Electronic Equipment in War Zones

Normally, electronic silence must be maintained within danger zones, except when use of electronic navigation equipment is necessary for safe navigation. In this regard, it should be borne in mind that many electrical devices in common use on board ship are capable of producing noise in radio receivers, and in extreme cases, this electrical noise may be detected at some distance from the ship. The noise source may be located by process of elimination. Accordingly, every effort should be made to locate and remedy the trouble. Certain communication and direction finding receivers radiate sufficient energy to permit enemy vessels operating nearby to obtain direction finder bearings. Turn off receivers which have not been tested and approved as being non-radiating; however, in certain circumstances, the importance of receiving diversion and other official messages may outweigh the possible danger from use of non-approved receivers.

Including N.M. 37/66
Sept. 10, 1966

PART IV
NUCLEAR FALLOUT WARNING SYSTEM FOR MERCHANT SHIPS AT SEA

401. Introduction

a. Radioactive fallout resulting from nuclear explosions both on sea targets and land targets, but particularly from the latter, may affect large areas of adjacent waters from the outset of a Nuclear War. The areas affected will depend upon the prevailing weather conditions. Any merchant ship close to, or approaching these areas, will be in grave danger. It is therefore essential that shipping should be warned of the fallout hazards in order that:

- (1) Passive defense measures, such as switching on a wash-down system, may be taken, and
- (2) An emergency alteration of course away from the danger area may be made.

402. Danger Zones

a. All shipping at sea in waters out to 200 miles from coasts at the outset of a nuclear war, must regard themselves as being in an area of possible fallout danger from nuclear attacks on shore. Ships sailing in the following areas must be particularly regarded as being in serious danger from nuclear fallout:

- (1) Atlantic Areas
 - (a) The North Sea south of 57°N.
 - (b) The English Channel, east of 5°W.
 - (c) The Baltic Sea.
 - (d) The Mediterranean north of 40°N. and west of 20°E. including the Adriatic Sea.
 - (e) The Aegean Sea.
 - (f) The Eastern Seaboard of North America, south of 50°N. to the Gulf of Mexico.
- (2) Pacific Areas
 - (a) The West Coast of the United States.
 - (b) The Gulf of Alaska.
 - (c) The Hawaiian Islands, Midway and Guam Island areas.
 - (d) The Panama Canal.
 - (e) The Pacific Ocean east of Honshu Island, Japan and Luzon, Philippines.
 - (f) The Sea of Japan.
 - (g) The East China Sea.
 - (h) The South China Sea north of 5°N.
 - (i) The North Pacific Ocean north of 45°N.
 - (j) Eastern Indian Ocean during period December through May.

403. Fallout Pattern

a. To simplify the presentation of fallout information in ships, while preserving reasonable accuracy, a pattern is provided in Appendix B which is constructed so as to indicate Surface Zero, and the axis of the pattern (FALLOUT AXIS) with a boundary enclosing the area of potentially serious radioactive dosage (which corresponds to an estimated dose of 200 Roentgens (R) or greater in the first 48 hours after the burst). It is likely that fallout will be experienced in the area adjacent to, but outside, this boundary, but its intensity should not reach militarily significant levels.

404. Area Fallout Warnings

a. In the event of nuclear attack, or threatened nuclear attack, area fallout forecasts for merchant shipping will be originated by naval authorities, and for this purpose the following standard warning messages are established:

(1) MERWARN - PREBURST Messages

A PRE-BURST prediction of likely fallout data for nuclear bursts, valid over a specified sea area for a specified period.

Aim. To allow a master of a merchant ship at sea observing a nuclear detonation to be able to plot immediately the likely fallout pattern resulting.

(2) MERWARN - FALLOUT Messages

A POST-BURST prediction of the sea areas effected by fallout as the result of a nuclear burst, or general nuclear attack, for a specified period.

Aim. To inform masters of merchant ships at sea of the actual sea areas rendered dangerous over a particular period, as a result of nuclear bursts.

405. Method of Promulgation

a. All MERWARN PREBURST/FALLOUT messages will be transmitted in plain language, using GMT, preceded by the International Safety Signal (TTT on CW circuits and SECURITE on Voice) from the appropriate MERCASST station and from all the coastal radio stations of the area concerned. Thus, Masters need not concern themselves with the identity of MERWARN originators, but only with the sea areas covered by each message.

406. MERWARN-PREBURST Messages

a. These will be issued continuously at 12 hourly intervals from the time of activation of the MERCASST system. They will be valid up to the time stated in the text. Each message will give the Effective Fallout Wind (EFW) and the Down Wind Distance (DWD) from surface zero (SZ) to the limit of dangerous fallout.

b. The following standard format will be used by the Naval MERWARN originating authority:

- (1) Message Identifier - MERWARN PREBURST followed by time to which valid (GMT).
- (2) Specified sea areas.
- (3) EFW and DWD.

EXAMPLE

- (a) MERWARN - PREBURST to 190600Z.
- (b) Mediterranean west of 2° east.
- (c) 030/30, 55.

NOTE: Items (b) and (c) may be repeated by the originating naval authority for different sea areas, thus covering the whole MERCASST area should this be considered necessary.

407. Action by Masters

a. Detailed instructions for using the information in a MERWARN PREBURST message are contained in Appendix A and Appendix B.

b. Detailed instructions to be taken by Masters against nuclear fallout in emergencies are contained in Appendix C.

408. MERWARN FALLOUT Messages

a. These will be issued immediately after a nuclear burst or general nuclear attack has taken place and at 6 hourly intervals (to the nearest hour) thereafter, for as long as FALLOUT danger exists.

The following standard format will be used:

(1) Message Identifier - MERWARN FALLOUT followed by time to which valid (GMT).

(2) Surface zero and time of detonations if possible, or dangerous zone(s) delineated by any of the following:

- (a) Latitude and longitude (to the nearest degree).
- (b) Stretch of coast between well known navigational features including distance to seaward.
- (c) Self-evident terms (e.g. English Channel).
- (d) Weather forecast areas, using the preamble "weather area".

(3) Estimated movement of danger area(s) and/or any information of interest or, if available, EFW and DWD. If only surface zero, EFW and DWD are given, the pattern at Appendix B should be used to obtain the Fallout Area.

EXAMPLE - (1)

- (a) MERWARN FALLOUT to 020900Z.
- (b) NORFOLK to HATTERAS out to 100 miles.
- (c) Extending east at 15 knots.

EXAMPLE - (2) (2nd 6 hourly MERWARN FALLOUT for this area)

- (a) MERWARN FALLOUT to 261900Z.
- (b) NORFOLK to HATTERAS from 25 out to 150 miles.
- (c) Moving E-SE 10 knots - disappearing.

EXAMPLE - (3)

- (a) MERWARN FALLOUT to 092300Z.
- (b) LISBON 091700Z.
- (c) 120/10, 30.

409. Amending MERWARN Messages

a. For both the PREBURST and FALLOUT messages, it may be necessary, due to a change in wind or further nuclear bursts, for originating authorities to issue additional or amending information during the period covered by a particular message. In these cases, this will always be done in the form of an amending message referring specifically to the PREBURST/FALLOUT message concerned, by sea area and time period.

EXAMPLE (1)

MERWARN - PREBURST message for Mediterranean west of 2° east to 190800Z amend (c) 210-30, 20.

EXAMPLE (2)

MERWARN FALLOUT message for NORFOLK to HATTERAS up to 261900Z amend (c) New concentration up to 30 miles from coast moving south-east 20 knots.

410. MERWARN DIVERTORD Messages

a. In addition to the origination of the MERWARN PREBURST/FALLOUT messages, naval authorities may, if circumstances dictate, broadcast general diversion orders, based upon the FALLOUT threat, whereby merchant ships proceeding independently will be passed evasive routing instructions of a general nature, using the Standard Naval Control of Shipping identifier DIVERTORD.

EXAMPLE

- (a) MERWARN DIVERTORD.
- (b) English Channel closed. All evacuating shipping in North Sea remain north of 52°N. until 021500Z.

APPENDIX A
MERWARN PREBURST PLOTTING

ACTION BY MASTERS

1. Immediately after a nuclear detonation is observed, the master of a merchant ship should attempt to estimate the position of the Surface Zero.
2. A plot of the likely area of fallout can now be prepared using the appropriate data for the area concerned from the current MERWARN - PREBURST message as follows:
 - a. Plot the position of the burst on a chart, plotting sheet or maneuvering board.
 - b. Through the position of burst, plot the fallout axis in the downwind direction of the EFW.
 - c. Along the fallout axis lay off the DWD signalled.
 - d. Place the pattern (Appendix B) over the plotting sheet with Surface Zero over the point of burst and its axis along the fallout axis.
 - e. Select the contour which crosses the axis nearest to the point obtained by c above.
 - f. Prick off this contour, remove the pattern and complete the contour on the plotting sheet.All points outside the area enclosed by this contour may

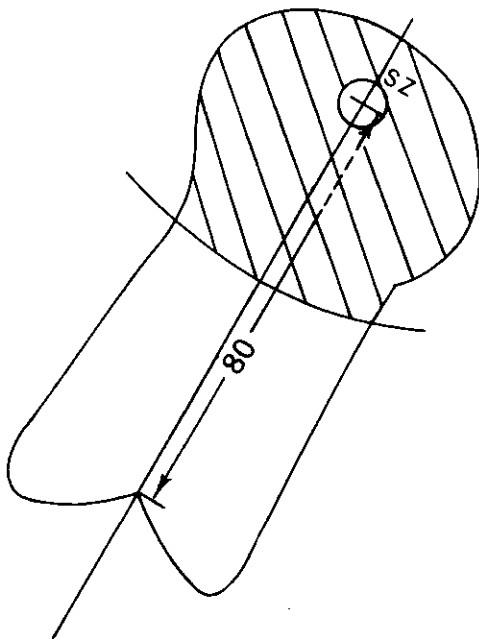
be expected to receive a total dose less than 200 R in 48 hours. The intensity of contamination will be greatest on the fallout axis.

3. Time of Fallout

Fallout will not occur simultaneously within the entire area contained by this boundary. It will commence in the vicinity of Surface Zero and may be expected to move down the fallout pattern (i.e., in the direction of the fallout axis) with approximately the speed of the EFW. The approximate zone in which deposition at the surface is taking place at a given time after the burst may be determined by the following procedure:

- a. Multiply the EFW speed by the time (in hours) after the burst.
- b. To this distance add and subtract a safety distance of 15 miles, to allow for finite cloud size, diffusion and wind fluctuations.
- c. With Surface Zero as center and the distances obtained in b above as radii, describe arcs across the fallout pattern.
- d. The zone enclosed between these arcs will contain, in most circumstances, the area of deposition.

EXAMPLE (See below)



EXAMPLE

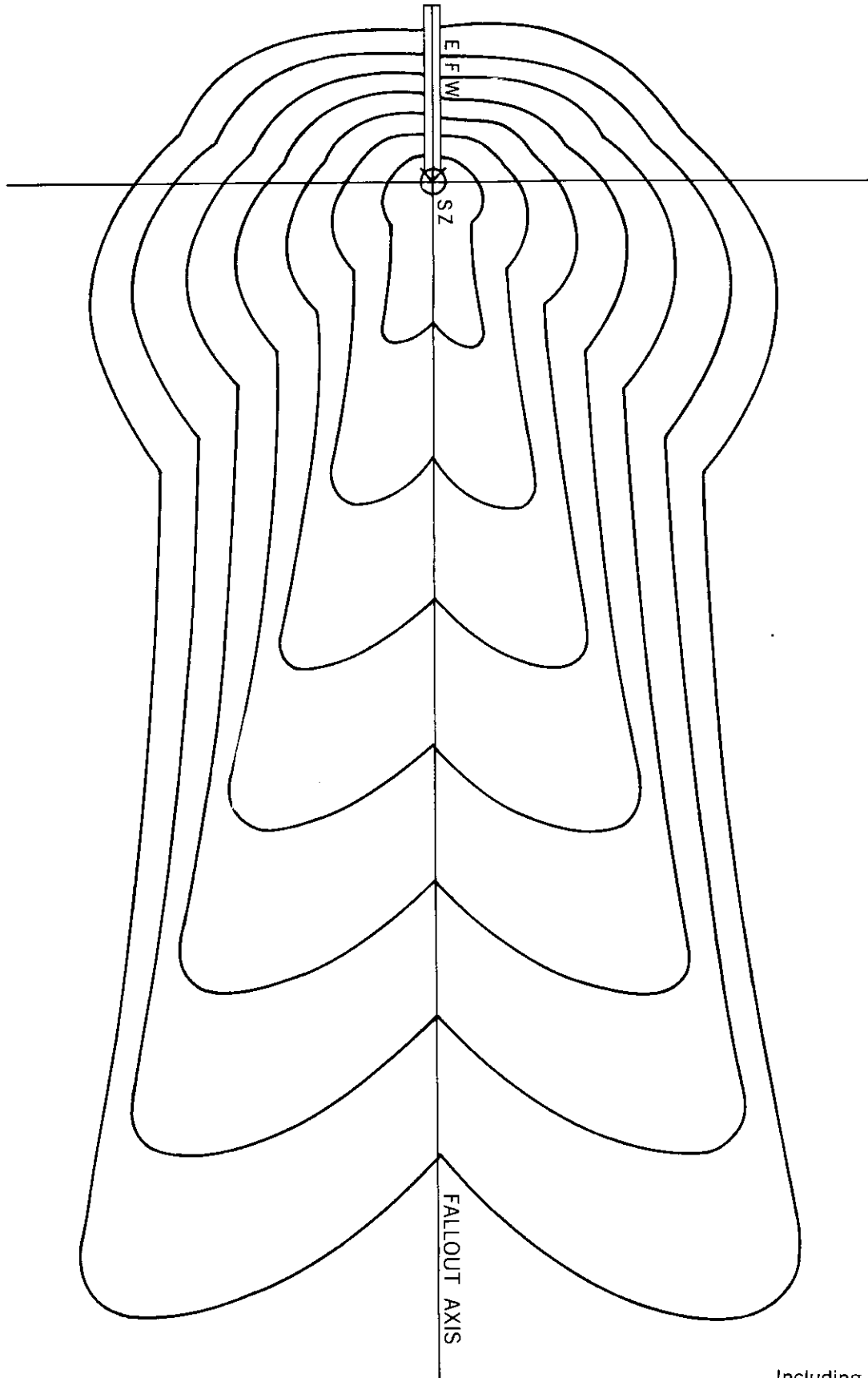
Find (a) total fallout area (b) the area in which fallout is falling after $\frac{1}{2}$ hour.

PREBURST

- a. To 190600Z.
- b. Mediterranean W. of 2°E.
- c. 030/40, 80.

- (a)
 - (i) Plot SZ.
 - (ii) Lay off axis down-wind of EFW.
 - (iii) Place pattern on SZ with axis along 210°.
 - (iv) Mark off 80 miles on axis and draw curve. This is dangerous area.
- (b)
 - (i) Center of fallout is $\frac{1}{2} \times 40$ down-wind = 20 miles.
 - (ii) Safety distance from SZ 15.
 - (iii) Draw arcs 5 miles and 35 miles radius.
 - (iv) Shaded area is dangerous area $\frac{1}{2}$ hour after burst.

APPENDIX B
PREBURST PLOTTING PATTERN



APPENDIX C
INSTRUCTIONS TO MASTERS IN AN EMERGENCY ON DEFENSE
AGAINST NUCLEAR FALLOUT

1. Attacks with nuclear weapons may be expected on land targets adjacent to your route. Such attacks are likely to result in radioactive fallout being deposited over large areas of sea, through which you may have to pass. It may be possible to issue a general warning to indicate which areas are likely to be dangerous at any particular time.

2. As fallout will probably be in the form of fine dust which may well be invisible, you should observe the following precautions at all times when in the sea areas:

ENGLISH CHANNEL	-	East of 5° West
NORTH SEA	-	South of 57° North
NORTH PACIFIC	-	North of 45° North
SEA OF JAPAN		
EAST CHINA SEA		

3. If your ship is equipped with the necessary instruments to detect fallout, these precautions may be relaxed accordingly.

PRECAUTIONS TO BE TAKEN

4. If your ship has a pre-arranged radioactive countermeasure plan prepared, ensure that all the measures laid down in that plan are carried out. If no such plan is in existence, improvise measures as indicated below:

a. Select a group, or groups, of compartments as low down in the ship and as far removed from the ship's side as possible within which the crew can take shelter. These spaces should be equipped with washing and lavatory facilities, and sufficient food should be stowed there to last for the passage through the dangerous area. Spaces selected should be capable of being completely shut down with all ventilation and other openings secured.

b. Strike below, or cover, as much gear on the weather decks as possible, particularly absorbent materials such as rope, awnings, etc. Ensure that food stores and galleys are closed down with all openings closed. Stop all ventilation fans and close or cover all ventilation and other openings which are not essential for running machinery and continued steaming. In the absence of suitable closures, the use of adhesive tape, etc., is recommended.

c. Rig all available fire-fighting/wash-deck hoses and nozzles to spray water continuously over as much of the weather decks and superstructure as possible, to prevent contamination settling. If complete coverage is impossible, concentrate effort on the navigating position, over the top of the shelter position(s) and above the machinery spaces.

d. If a continual spraying of the upper-works is impracticable, organize working parties at frequent intervals to wash down the weather decks and superstructure to reduce the build-up of contamination.

e. Reduce the number of your crew who must remain on the weather decks or in positions near the weather decks, or in machinery spaces, to the bare minimum required for safe steaming, and keep the remainder in the selected shelter position(s).

f. Ensure that all men who must remain in exposed positions (including machinery spaces, unless ventilation can be stopped) are fully clothed, preferably in 'foul weather' clothing, with all the skin covered so far as practicable.

g. During your passage, so far as the numbers of appropriately skilled personnel allow, change round these men manning exposed or relatively unsheltered positions (including the machinery spaces) as often as possible, in order to spread the radiation dosage. Remember that this advice also applies to YOU; take as much shelter as the safe navigation of your ship will permit.

h. Ensure that all men who have been exposed remove at least their outer clothing on returning to shelter, wash thoroughly their exposed skin, especially the hands, face and neck, as soon as possible, and in any case before drinking or eating.

i. Restrict unnecessary movement throughout the ship, to minimize the possible spread of contamination.

j. Unless essential, do not distil water for drinking while in the dangerous area.

k. As soon as possible after clearing the dangerous area, carry out a thorough hosing down of the entire weather decks and superstructure.

Chapter 11

ALLIED MERCAT SYSTEM

1101. This chapter contains information on the Allied Mercat System which is the radio communication organization whereby official messages are transmitted to merchant ships at sea when under the Allied Naval Control of Shipping Organization. It is promulgated in peacetime in order that U.S. merchant ships at sea or in foreign ports will have this information available for immediate use in the event of an outbreak of hostilities. **THIS MERCAT WILL NOT BE USED IN LIEU OF THE U.S. MERCAT UNTIL DIRECTED BY COMPETENT U.S. NAVAL AUTHORITY.**

1102. In the Allied MERCAT System, the world's ocean areas are divided into Allied MERCAT Areas, each identified by a number. Each Allied MERCAT area is covered by a high power shore radio station. Medium power coast stations are also available in certain areas. The high power radio stations known as "Allied MERCAT Area Stations" broadcast simultaneously on two or more frequencies on fixed schedules and provide long range communications. The medium power radio stations known as "Coast Stations" provide short range communications and are used to broadcast Allied MERCAT messages to merchant ships known to be within range. Allied MERCAT Area boundaries are established for communication purposes only and are not boundaries for command purposes.

1103. Details of frequencies, call signs and operating schedules of Allied MERCAT Area Stations and Coast Stations are given below:

a. The MERCAT is not a continuous service. Transmissions will commence at scheduled times at four-hour intervals from 0000 GMT. This spacing of schedules coincides with the international watchkeeping periods for ships carrying less than three radio operators and ensures that ships with two operators in any part of the world can copy all schedules of their appropriate MERCAT. The schedules copied by ships with only one radio operator will vary depending on the MERCAT area watch being maintained.

b. One-operator schedules carry general messages and messages for one operator ships. The schedules to be copied by ships with only one operator are listed below according to area.

c. Ships with two or more operators are required to copy all schedules of the appropriate MERCAT.

d. Transmissions of traffic by MERCAT Area Stations will commence precisely at the scheduled time and will continue within the indicated time limits of the schedule until traffic on hand is cleared. Schedules normally last for a maximum of two hours.

e. All MERCAT Area Stations will cease transmission of traffic during the international silence periods in order to permit ships to ensure watch on 500 kcs. During these periods a call tape will be run on all MERCAT frequencies in use (except those between 485 kcs. and 515 kcs.) to permit ships to remain on or return to the MERCAT frequencies expeditiously.

f. MERCAT Area Stations may also interrupt scheduled transmissions of traffic to transmit time signals.

g. Defects or damage may occur to any of the MERCAT Area Stations. If nothing is heard of the MERCAT Area Station on any of its listed frequencies for two schedules under conditions in which reception is possible, ships are to shift to the adjacent MERCAT, but are to check reception of their proper station during the calling period at each schedule thereafter, until they are able to report the shift of watch. Such emergency shifts are to be made to the next MERCAT Area Station in the direction in which the ship is proceeding.

1104. Ship-to-Shore Communications

a. The need for radio silence in wartime cannot be over-emphasized. However, should the Master deem it necessary to break radio silence, ships are authorized to use any of the Allied coast stations. Radio officers are warned of the possibility that some stations may have been closed down without notice. Ships are responsible for ensuring that adequate passing (relay) instructions are included with all messages.

b. Instructions on when the breaking of electronic (radio) silence is permitted are contained in ACP 149, but should merchant ships not holding this publication be in doubt, the Master should be guided by consideration of whether in his opinion the need for transmitting a message (e.g. to report damage or breakdown) outweighs the danger of enemy interception and DF of his transmission. Unless specifically ordered otherwise, merchant ships in convoy should always pass such traffic to the convoy commodore or an escorting warship for relay to addressees. (Visual communications must always be used where possible before resorting to the use of radio.)

1105. General Messages

a. General messages are those which require a wide distribution. They are given an identifying title and serial number. General messages of an urgent nature are transmitted by radio in order to effect timely delivery. Less urgent messages which do not warrant transmission to ships on MERCAST are disseminated to Naval Control of Shipping Officers (NCSOs) ashore who will retain them for collection by Masters on arrival in port.

b. General messages to merchant ships will be broadcast by both MERCAST Area Stations and Coast Stations and will use the following collective titles and call signs:

TITLE	CALL SIGN	MEANING
ALMERBEL	ONXA	All Belgian Merchant Ships
ALMERBRIT	GBMS	All British Merchant Ships
ALMERCAN	VGGG	All Canadian Merchant Ships
ALMERDEN	OXXO	All Danish Merchant Ships
ALMERFRA	FBBA	All French Merchant Ships
ALMERGER	DAAZ	All German Merchant Ships
ALMERGRK	SWOL	All Greek Merchant Ships
ALMERITAL	IAAC	All Italian Merchant Ships
ALMERNETH	PAAB	All Netherlands Merchant Ships
ALMERNOR	LMKO	All Norwegian Merchant Ships
ALMERPORT	CSAA	All Portuguese Merchant Ships
ALMERTURK	TCTQ	All Turkish Merchant Ships
ALMERUS	NADN	All United States Merchant Ships
ALMERLANT	NRMS 2/4/6	All Allied Merchant Ships in the Atlantic (see note (1) below)
ALMERMED	NRMS 8	All Allied Merchant Ships in the Mediterranean
ALMERPAC	NRMS 1/3/5/7/9/13/14/15/16	All Allied Merchant Ships in the Pacific (see note (1) below)
ALMERIND	NRMS 11/12	All Allied Merchant Ships in the Indian Ocean (see note (1) below)
ALMERSOLANT	NRMS 10	All Allied Merchant Ships in the South Atlantic Area
ALMERGEN	NRMS	All Allied Merchant Ships
ALMERCAS	NUKO	All Ships copying MERCAST

Note: (1) When it is desired to address only Allied Merchant Ships in a particular MERCAST Area this will be achieved by the addition of the appropriate area suffix only (e.g.: NRMS 2-All Allied Merchant Ships in MERCAST Area II.) Similarly, these suffixes may be applied to other call signs listed above (e.g. GBMS 3-All British Merchant Ships in MERCAST Area III.)

1106. Call Signs

a. Merchant ships transmitting messages are to employ the following call signs:

- (1) International Call Signs—Only when communicating with a neutral station. If the other call signs referred to in (2) below have not been allocated, ships not in convoy may use their International Call Sign.
- (2) Other call signs—In accordance with instructions in ACP 149 and amplified if necessary by further instructions issued separately.

b. If it is necessary for merchant ships to communicate by radio with an Allied warship, it is essential not to divulge the identity and nationality of the warship. Instructions for use of call signs in convoy are included in ACP 149 and will be amplified as necessary in NCSO's orders issued before sailing. Under any other circumstances, in the absence of instructions to the contrary, messages are to be made to "NAWS" meaning "any or all Allied warships".

1107. Masters and Radio Officers are urged to become familiar with this information and to retain it on board for use if needed. It will serve to provide information on additional MERCAST and ship/shore services, and, as such, supplements but does not supersede the provisions of Chapter 10.

1108. ALLIED MERCAT AREAS

AREA I
MARIANAS-BONINS

From 23-00N, 132-00E by rhumb line to 30-00N, 145-00E; thence due East to 160-00E; thence due South to 3-30N, 160-00E; thence due West to 3-30N, 132-00E; thence due North to 23-00N, 132-00E.

<u>MERCAT AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Guam	0000-0200*	NPN	484 kc/s	Simultaneous transmissions on all frequencies on all schedules
	0400-0600*		4955	
	0800-1000*		8150	
	1200-1400*		13530	*One-operator schedules
	1600-1800		17530	
	2000-2200		21760	
<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES</u>	
Guam	NPN	470 kc/s	Same as for Guam MERCAT Area Station including one-operator schedules	

AREA II
NORTH WEST ATLANTIC

Meridian 67-00W from the USA-Canada border due South to parallel 43-00N; thence along a rhumb line to position 42-00N, 65-00W; thence due south along meridian 65-00W to parallel 38-00N; thence Easterly along a rhumb line to position 41-00N, 44-00W; thence along a rhumb line to position 51-30N, 31-00W; thence along a rhumb line to position where meridian 43-00W meets the coast of Greenland (NE of Cape Farewell); thence Westerly along the south coast and Northerly along the west coast of Greenland into Baffin Bay; from the opposite side of Baffin Bay South along the east coast of Canada to meridian 67-00W.

<u>MERCAT AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Halifax	0000-0200*	CFH	115.3 kc/s	Continuous
	0400-0600		4356.5	Continuous
	0800-1000		6449.5	Continuous
	1200-1400*		8662	Continuous
	1600-1800*		12984	Continuous
	2000-2200*		17218.4	Continuous
			22587	On request
				*One-operator schedules

EMERGENCY PROCEDURES AND
COMMUNICATION INSTRUCTIONS

H. O. PUB. NO. 117B
RADIO NAVIGATIONAL AIDS

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Belle Isle, Labrador	VCM	489 kc/s	†1305, 2100, 0210 Winter schedule: 1115-1930, 2100-0115
Cape Hopes Advance, Que.	VAY	446	†1350, 0150
Cape Race, Nfld.	VCE	420	1310, 2120, 0150
St. John's, Nfld.	VON	478	
Goose Bay, Labrador	VAZ	416	†
Cartwright, Labrador	VOK	416	†
Hopedale, Labrador	VOQ	416	†
Resolution Is., N.W.T.	VAW	484	†1320, 0120
Nottingham Is., N.W.T.	VCB	458	†
Port Harrison, Quebec	VAL	430	†
Churchill, Manitoba	VAP	420	1210, 0010
Halifax, N.S.	VCS	484	1200, 2100
Cornerbrook, Nfld.	VOJ	416	
Canso, N.S.	VAX	446	1220, 2140
Yarmouth, N.S.	VAU	489	1310, 2130
Sept Iles, Quebec	VCK	420	
Fox River, Quebec	VCG	434	1240, 0040
Mont Joli, Quebec	VCF	446	1230, 0030
Grindstone, Miquelon Is.	VCN	440	1230, 0350
North Sydney, N.S.	VCO	489	1300, 0100
Quebec, Quebec	VCC	434	1220, 1720, 0020
Three Rivers, Quebec	VBK	478	† Hourly 30 minutes past the hour
Montreal, Quebec	VFN	420	†1210, 1710, 0010 Winter schedule: 1200-2359
St. John, N.B.	VAR	430	1200, 2200
Argentia, Nfld.	NJN	427	0000-0200* 1200-1400* 0400-0600 1600-1800* 0800-1000 2000-2200*

†Continuous during navigation season

*One-operator schedules

AREA III
CENTRAL PACIFIC

From 20-00S, 177-00W, thence due North to 3-30N, 177-00W; thence due West to 3-30N, 160-00E; thence due North to 40-00N, thence due East to 150-00W, thence by rhumb line to 5-00S, 110-00W; thence due South to 20-00S; thence due West to 20-00S, 177-00W.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Honolulu, Hawaii	0000-0200* 0400-0600* 0800-1000* 1200-1400 1600-1800 2000-2200*	NPM	131.05 kc/s 4525 9050 13655 16457.5 20575 22593	*One-operator schedules Simultaneous transmissions on all frequencies on all schedules.
<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>	
Honolulu, Hawaii	NMO	440 kc/s	0000-0200* 1200-1400 0400-0600* 1600-1800 0800-1000* 2000-2200* *One-operator schedules	

AREA IV
EASTERN ATLANTIC

A rhumb line from the point where meridian 43-00W meets the coast of Greenland (NE of Cape Farewell); Southerly to a position 42-00N, 20-00W; thence due South to the Tropic of Cancer at 23-30N; thence due East to the African Coast and along the African Coast to parallel 33-00N; thence due West to meridian 10-00W; thence North along meridian 10-00W to parallel 38-00N, thence due East to the Portuguese coast; thence Northerly along the west coast of the European mainland, including the Baltic Sea to 45-00E; thence due North to the Arctic; thence from the Arctic South along the East coast of Greenland to the point where meridian 43-00W meets the coast of Greenland.

MERCAST AREA STATION	SCHEDULES GMT	CALL SIGN	FREQUENCIES	REMARKS
Portishead	0000-0200	GKU	129.95 kc/s	129.95 and 1612 continuous all schedules. Other frequencies in use according to time and season.
	0400-0600	GRL	1612	
	0800-1000*	GKA2	4267.9	
	1200-1400*	GKA3	6397	
	1600-1800*	GKA4	8581.6	
	2000-2200*	GKA5	12858	*One-operator schedules
		GKA6	17136.8	
		GKA7	22431	

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Stonehaven	GND	458 kc/s	3-operator ships: 30 mins. past every even hour.
Humber	GKZ	441	2-operator ships: 0030, 0230, 0430, 0630, 1030, 1230, 1630, 2030.
Niton	GNI	464	1-operator ships: 0830, 1230, 1630, 2030.
Ilfracombe	GIL	476	
Portpatrick	GPK	472	
Wick	GKR	432	3-operator ships: 48 mins. past every even hour.
Cullercoats	GCC	484	2-operator ships: 0048, 0248, 0448, 0648, 1048, 1248, 1648, 2048.
North Foreland	GNF	418	1-operator ships: 0848, 1248, 1648, 2048.
Land's End	GLD	438, 522	
Englesey	GLV	447	
Arcachon Radio	FFC	421	35 mins. past every even hour.
Brest, LeConquet Radio	FFU	487	Beginning of every odd hour.
Boulogne Sur Mer Radio	FFB	450	Beginning of every even hour.
Scheveningen Radio	PCH	421, 461, 500	Keeps watch in accordance with particulars listed in the ITU publication "List of Coast Stations".
Blaavand	OXB	429	0150, 0350, 0550, etc. (See Notes 1 and 2 below)
Lynby	OXZ	487	0150, 0350, 0550, etc. (See Notes 1 and 2 below)
Skagen	OXP	464	0150, 0350, 0550, etc. (See Notes 1 and 2 below)

Notes: 1. All stations operated by PTT personnel.

2. Traffic list covering all three stations will be broadcast by Blaavand on even dates and Skagen on odd dates. Traffic for ships will follow immediately after traffic lists in the following way: The station transmitting traffic list will continue with traffic for ships in 10 minutes. Next station will take over and transmit for 10 minutes in succession as follows:

a. Even dates—Blaavand, Lynby, Skagen.

b. Odd dates—Skagen, Lynby, Blaavand.

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Norddeich Radio	DAN	474 kc/s	Schedules as per ITU publication "List of Coast Stations".
Kiel Radio	DAO	474	
Lisbon	CUL	435	Continuous
Apullia	CTN	516	Continuous when CUL (Lisbon) inoperative. Station to be selected in accordance with prevailing operating circumstances.
Cascais	CTC	516	
Sagres	CTS	516	

AREA V
EASTERN PACIFIC

From the West coast of North America at 54-50N, due West to 54-50N, 140-00W; thence by rhumb line to 40-00N, 150-00W; thence by rhumb line to 05-00S, 110-00W; thence by rhumb line to the Mexico-Guatemala border at 14-38N, 92-19W; thence northerly along the West Coast of North America to 54-50N.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
San Francisco	0000-0200*	NPG	114.95 kc/s	Simultaneous transmissions on all frequencies on all schedules
	0400-0600*		4010	
	0800-1000		6428.5	
	1200-1400		9277.5	
	1600-1800*		12966	
	2000-2200*		17055.2	*One-operator schedules
			22635	

<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>
Alert Bay, B.C.	VAF	430 kc/s	
Bull Harbor, B.C.	VAG	484	1620
Prince Rupert, B.C.	VAJ	420	0430, 1630, 2030
Sandspit, B.C.	VAH	478	
Tofino, B.C.	VAE	478	0420, 1620, 2020
Vancouver, B.C.	VAI	420	
Victoria, B.C.	VAK	430	
Westport, Wash.	NMW	440	0000-0200* 1200-1400
			0400-0600* 1600-1800*
			0800-1000 2000-2200*
			*One-operator schedules
San Francisco, Calif.	NMC	486	(Same as Westport, Wash.)
Long Beach, Calif.	NMQ	472	(Same as Westport, Wash.)

AREA VI
WESTERN ATLANTIC

From the U.S. Canadian Border southward along the Atlantic and Gulf Coast of North America to the Mexican-British Honduras border on Yucatan peninsula; thence due East along 18-00N to 85-00W; thence North along 85-00W to the Western tip of Cuba; thence East along the North Coast of Cuba to Cape Maisi; thence by rhumb line to Mathewtown on Great Inagua; thence along the south coast of Great Inagua departing due east along 21-00N to 60-00W; thence by rhumb line to 20-00N, 65-00W; thence by rhumb line to 19-00N, 62-00W; thence by rhumb line to 17-00N, 00-00W; thence to Bardos Island; thence to the British Guiana-Venezuela border; thence southwesterly along the coast of South America to 12-00S; thence by rhumb line to the west coast of Africa at the equator; thence North along the west coast of Africa to 23-30N; thence west to 23-30N, 20-00W; thence north to 42-00N, 20-00W; thence by rhumb line to 51-30N, 31-00W; thence by rhumb line to 41-00N, 44-00W; thence by rhumb line to 38-00N, 65-00W; thence north to 42-00N, 64-00W; thence by rhumb line to 43-00N, 67-00W; thence North to the USA-Canada border.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Washington	0000-0200*	NSS	162 kc/s	162 kc/s replaced by 121.95 kc/s at 1400-2000 on Thursdays
	0400-0600		5870	
	0800-1000		9425	Simultaneous transmissions on all frequencies except as noted above.
	1200-1400*		13575	
	1600-1800*		17050.4	*One-operator schedules
	2000-2200*		23650	

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Pt. Delgada, Azores	CTH	487 kc/s	Continuous
Horta, Azores	CTD	487	Continuous when CTH (Pt. Delgada) inoperative.
Bermuda	VRT	426	Continuous watch on 500 kc/s. Transmits traffic lists on 426 kc/s at 0100, 0400, 0600, 0935, 1300, 1700, 2100 after navigational warnings.
Turks Island	VSI	458	
Nassau	VPN	426	
Demerara, B.G.	VRV	422	
Bermuda	NOC	440	0000-0200* 1200-1400* 0400-0600 1600-1800* 0800-1000 2000-2200*
Boston, Mass.	NMF	472	(Same as for Bermuda, NOC)
New York, N.Y.	NMY	486	(Same as for Bermuda, NOC)
Norfolk, Va.	NMN	466	(Same as for Bermuda, NOC)
Jacksonville, Fla.	NMV	430	(Same as for Bermuda, NOC)
Miami, Fla.	NMA	440	(Same as for Bermuda, NOC)
New Orleans, La.	NMG	428	(Same as for Bermuda, NOC)
Galveston, Texas	NOY	457	(Same as for Bermuda, NOC)

*One-operator schedules

AREA VII EASTERN SOUTH PACIFIC AND CARIBBEAN

Pacific portion: From the Antarctic North along 110-00W to 05-00S; thence by rhumb line to the Mexico-Guatemala border at 14-38N, 92-19W; thence Southerly along the Central and South American coast to 87-00W; thence due South to the Antarctic. Atlantic portion: From the Mexican-British Honduras border on Yucatan Peninsula, due East along 18-00N to 85-00W; thence North along 85-00W to the western tip of Cuba; thence East along the North Coast of Cuba to Cape Maisi; thence by rhumb line to Mathewtown on Great Inagua; thence along the South Coast of Great Inagua departing due East along 21-00N to 70-00W; thence by rhumb line to 20-00N, 65-00W; thence by rhumb line to 19-00N, 62-00W; thence by rhumb line to 17-00N, 60-00W; thence to Barbados Island; thence to the British Guiana-Venezuela border.

MERCAST AREA STATION	SCHEDULES GMT	CALL SIGN	FREQUENCIES	REMARKS
Balboa, C.Z.	0000-0200* 0400-1600 0800-1000 1200-1400* 1600-1800* 2000-2200*	NBA	147.85 kc/s 5448.5 11080 17697.5	Simultaneous transmissions on all frequencies on all schedules

*One-operator schedules

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Balboa, C.Z.	NBA	470 kc/s	0000-0200* 1200-1400* 0400-0600 1600-1800* 0800-1000 2000-2200*
San Juan, P.R.	NMR	466	*One-operator schedules
North Post, Trinidad	VPL	476	(Same as for Balboa, C.Z.)
Kingston, Jamaica	VQI	458	
Barbados	VPO	484.5	
Montserrat	ZBA	458	

AREA VIII
MEDITERRANEAN

This area embraces the Mediterranean Sea, the Black Sea, that part of the Red Sea North of latitude 15-00N and that part of the Atlantic Ocean bounded as follows: From Gibraltar Westward and Northward along the coast of Spain and Portugal to parallel 38-00N; thence due West to meridian 10-00W, thence South along meridian 10-00W to parallel 33-00N; thence East along parallel 33-00N to the African coast; thence Northeast along the African Coast to Gibraltar.

MERCAST AREA STATION	SCHEDULES GMT	CALL SIGN	FREQUENCIES	REMARKS
Rome	0000-0200 0400-0600 0800-1000* 1200-1400* 1600-1800* 2000-2200*	IAR	118.45 kc/s 4310 6442.5 8646 12741	118.45 all schedules. Other frequencies in use according to time and season.

*One-operator schedules

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Gibraltar	ZDK	464 kc/s	Transmits traffic lists on 464 kc/s after call on 500 kc/s at 0448, 0848, 1048, 1248, 1648, 2048.
Malta	VPT	461	Every odd hour
Marseilles	FFM	432	30 min. past every odd hour
Alcona	ICA	489	Continuous
Augusta	IGJ	429	Continuous
Cagliari	IDC	488	Continuous
Taranto	ICT	432	Continuous
Genoa	ICB	487	Continuous
Naples	IQH	435	Continuous
Trieste	IQX	476	Continuous
Rome	IAR	516	Continuous
La Maddelena	ICH	473	Continuous
Athens	SVA	418	Continuous
Iskenderun	TAM4	516	Continuous
Mersin	TAM5	516	0700-1500
Antalya	TAM6	516	0700-1500
Izmir	TAN2	458	Continuous
Canakkale	TAN7	458	0700-1500
Istanbul	TAH	441	Continuous

AREA IX
SOUTH PACIFIC

From the Antarctic North along 160-00E to 45-00S; thence by rhumb line to 30-00S, 170-00E; thence due North to 01-00S; thence due West to 169-00E; thence due North to 03-30N; thence due East to 177-00W; thence due South to 20-00S; thence due East to 110-00W; thence South to the Antarctic.

MERCAST AREA STATION	SCHEDULES GMT	CALL SIGN	FREQUENCIES	REMARKS
Wellington	0000-0200 0400-0600 0800-1000 1200-1400 1600-1800 2000-2200	ZLW4 ZLW5 ZLW6	8702 kc/s 13056 17170.4	Continuous. One-operator schedules: West of 140-00W 0000-0200, 0400-0600, 0800-1000, 2000-2200. East of 140-00W 0000-0200, 0400-0600, 1600-1800, 2000-2200.

COAST STATION	CALL SIGN	FREQUENCY	BROADCAST SCHEDULES GMT
Auckland	ZLD	524 kc/s	
Wellington	ZLW	417.5	
Awarua	ZLB	515	
Apia	5WA	483	
Rarotonga	ZKR	483	
Chatham Islands	ZLC	483	

AREA X
SOUTH ATLANTIC

From the Antarctic North along 67-00W to Cape Horn; thence northward along the East coast of South America to 12-00S; thence by rhumb line to the West coast of Africa at the equator; thence southward along the West coast and northward along the east coast of Africa to 11-00S; thence due East to 55-00E; thence due South to 30-00S; thence due East to 80-00E; thence due South to the Antarctic.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Capetown	0000-0200	ZSL	119.15 kc/s	119.15 continuous all schedules. Other frequencies in use according to time and season. One-operator schedules: Between 30-00E and 80-00E 0400-0600, 0800-1000, 1200-1400, 1600-1800. Between 30-00W and 30-00E 0800-1000, 1200-1400, 1600-1800, 2000-2200. West of 30-00W 0000-0200, 1200-1400, 1600-1800, 2000-2200.
	0400-0600	ZSL2	3741.5	
	0800-1000	ZSL3	6467	
	1200-1400	ZSL4	8502	
	1600-1800	ZSL5	12772.5	
	2000-2200	ZSL6	17228	
		ZSL7	22455	

<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>
Port Stanley, Falkland Is.	VPC	125, 417 kc/s	
Capetown	ZSC	418, 435, 441, 484	
Durban	ZSD	429, 432 438	
Port Elizabeth	ZSQ	472, 524	
Walvis Bay	ZSV	458, 519	
Ascension	ZBI	472	
St. Helena	ZHH	461	

AREA XI
EASTERN INDIAN OCEAN

From the Antarctic North along 160-00E to 45-00S; thence by rhumb line to 30-00S, 170-00E; thence due North to 01-00S; thence due West to 169-00E; thence due North to 03-30N, 169-00E; thence due West to 125-00E; thence due South to the Celebes; thence westerly and southerly along the North and West Coasts of the Celebes to 120-00E; thence due South along 120-00E to 11-30S; thence due West to 11-30S, 95-00E; thence due South to 30-00S; thence due West to 80-00E; thence South along 80-00E to the Antarctic.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Sydney	0000-0200*	VIX	44 kc/s	44, 8478, 12907.5 and 17256.8 continuous all schedules. Other frequencies in use according to time and season.
	0400-0600*	VIX2	4286	
	0800-1000*	VIX3	6428.5	
	1200-1400*	VIX4	8478	
	1600-1800	VIX5	12907.5	
	2000-2200	VIX6	17256.8	
		VIX7	22485	

*One-operator schedules

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<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>
Wewak	VJW	440 kc/s	
Madang	VIV	445	
Manus	VJV	435	
Kavieng	VJY	435	
Rabaul	VJZ	430	
Samarai	VIJ	472	
Port Moresby	VIG	484	
Thursday Island	VII	464	
Darwin	VID	445	
Wyndham	VIW	464	
Broome	VIO	440	
Geraldton	VIN	420.5	
Perth	VIP	484	
Esperance	VIE	435	
Adelaide	VIA	472	
Melbourne	VIM	430	
Hobart	VIH	440	
Sydney	VIS8	476	
Brisbane	VIB	435	
Rockhampton	VIR	472	
Townsville	VIT	420.5	
Cairns	VIK	476	
Willis Islets	VIQ	445	

AREA XII
CENTRAL INDIAN OCEAN

The ocean area to Northward of a line commencing from the East coast of Africa at 11-00S, due East to 55-00E; thence due South to 30-00S; thence due East to 95-00E; thence due North to 00-00N, 95-00E; thence by rhumb line to position 22-00N, 89-00E including the southern part of Red Sea bounded on the North by 15-00N.

<u>MERCANTILE AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Mauritius	0000-0200	GZC	123 kc/s	123 and 12988.5 continuous all schedules.
	0400-0600*	GZC2	4295	
	0800-1000*	GZC3	6519.5	Other frequencies in use according to time and season.
	1200-1400*	GZC4	5726	
	1600-1800*	GZC5	12988.5	*One-operator schedules
	2000-2200	GZC6	16978.4	
		GZC7	22587	

<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>
Aden	ZNR	476 kc/s	
Bombay	VWB	476	
Bahrain	GNV	487	
Mombasa	5ZF	524	
Mauritius	VRS	421, 522, 480	
Seychelles	ZCQ	432	

AREA XIII
SOUTHEAST ASIA

From the Thailand-Cambodia border South to 10-00N, 102-45E; thence by rhumb line to 08-00N, 103-30E; thence due East to 08-00N, 119-00E; thence by rhumb line to 03-30N, 120-00E; thence due East to 125-00E; thence due South to the Celebes; thence westerly and southerly along the North and West coast of the Celebes to 120-00E; thence South to 11-30S; thence due West to 11-30S, 95-00E; thence due North to 00-00N, 95-00E; thence by rhumb line to position 22-00N, 89-00E; thence along the coast of East Pakistan, Thailand, Malaya, and Thailand to the Thailand-Cambodia border.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Singapore	0000-0200*	GYS	112.85 kc/s	112.85 continuous all schedules. Other frequencies in use according to time and season.
	0400-0600*	GYS2	4334	
	0800-1000*	GYS3	6481	
	1200-1400*	GYS4	8630	
	1600-1800	GYS5	12781.5	
	2000-2200	GYS6	17266.4	
		GYS7	22521	
			*One-operator schedules	
<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>	
Singapore	VPW	419.5, 516 kc/s		
Penang	9VG	522.5		

AREA XIV
SOUTH CHINA SEA-PHILIPPINES

From the China coast at 32-00N due East to 32-00N, 123-00E; thence due South to 23-00N; thence due East to 23-00N, 132-00E; thence due South to 03-30N, 132-00E; thence due West to 120-00E; thence by rhumb line to 08-00N, 119-00E; thence due West to 08-00N, 103-30E; thence by rhumb line to 10-00N, 102-45E; thence North to the Thailand-Cambodia border; thence along the coasts of Vietnam and China to 32-00N.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
San Miguel, R.P.	0000-0200*	NPO	464 kc/s	Simultaneous transmissions on all frequencies on all schedules.
	0400-0600*		4445	
	0800-1000*		12200	
	1200-1400*		15925	
	1600-1800			
	2000-2200			
				*One-operator schedules
<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>	
Hong Kong	VPS	435 kc/s		
		527.5		

AREA XV
NORTH PACIFIC

From Point Shipunski on Kamchatka Peninsula South along 160-00E to 40-00N; thence due East to 150-00W; thence by rhumb line to 54-40N, 140-00W; thence due East to the west coast of North America.

<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>
Kodiak	0000-0200*	NHB	73.25 kc/s	Simultaneous transmissions on all frequencies on all schedules.
	0400-0600*		147.15	
	0800-1000*		4328	
	1200-1400		8676	
	1600-1800		10712.5	
	2000-2200*		13045	
				*One-operator schedules
<u>COAST STATION</u>	<u>CALL SIGN</u>	<u>FREQUENCY</u>	<u>BROADCAST SCHEDULES GMT</u>	
Kodiak	NHB/NOJ	470 kc/s	0000-0200*	1200-1400
			0400-0600*	1600-1800
			0800-1000*	2000-2200*
			(Same as Kodiak)	
Ketchikan	NMJ	466	*One-operator schedules	

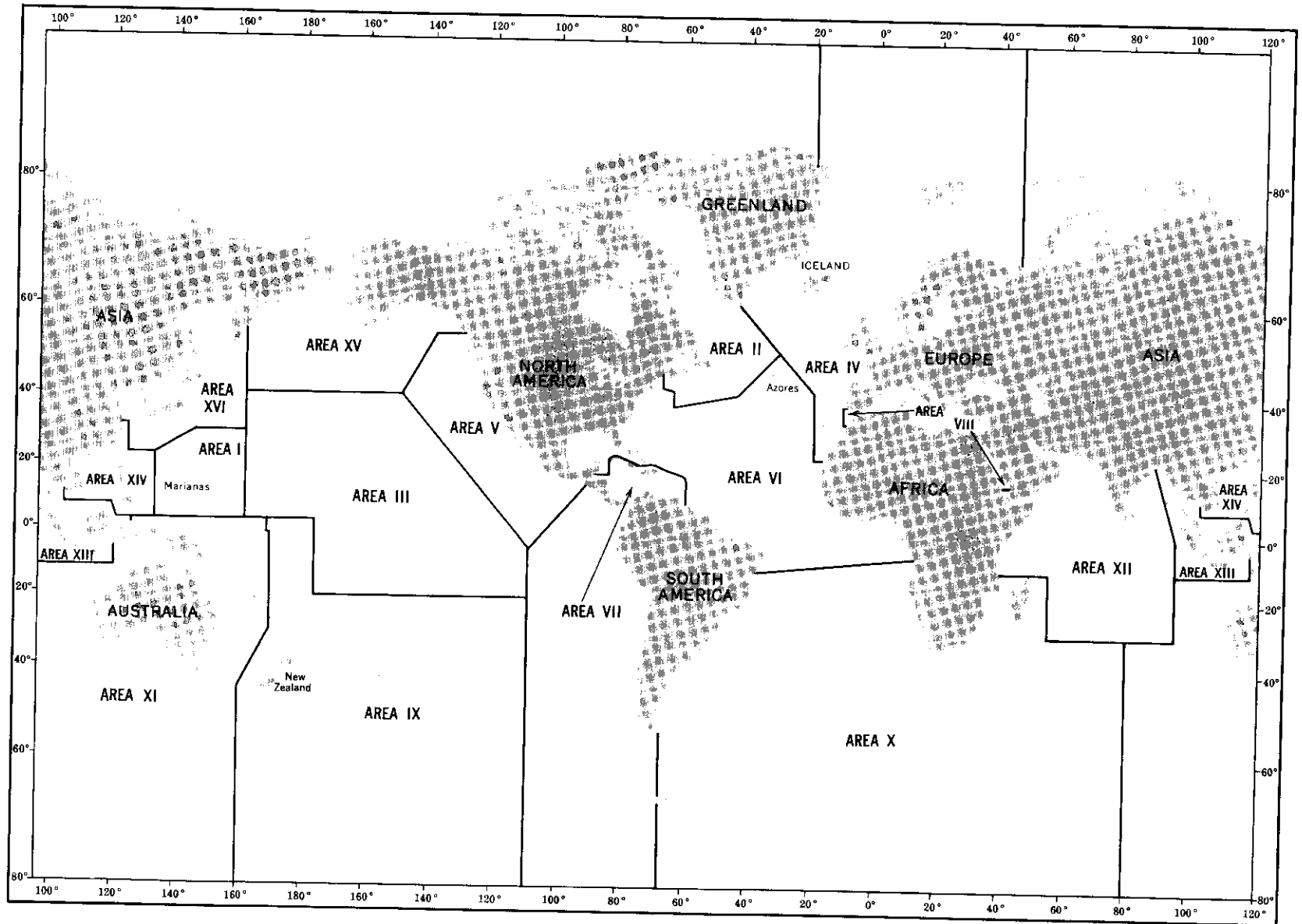
AREA XVI
NORTH WEST PACIFIC

From the China coast at 32-00N due East to 32-00N, 123-00E; thence due South to 23-00N, thence due East to 132-00E; thence by rhumb line to 30-00N, 145-00E; thence due East to 160-00E; thence due North along 160-00E to the Kamchatka Peninsula; thence South along the coast of the USSR and China to 32-00N.

South along the coast of Japan					
<u>MERCAST AREA STATION</u>	<u>SCHEDULES GMT</u>	<u>CALL SIGN</u>	<u>FREQUENCIES</u>	<u>REMARKS</u>	
Yokosuka	0000-0200*	NDT	75.95 kc/s	Simultaneous transmissions on all frequencies on all schedules.	
	0400-0600*		3900		
	0800-1000*		4535		
	1200-1400*		7445		
	1600-1800		10265		
	2000-2200		13577.5		
			17210		
				*One-operator schedules	

ALLIED MERCAST AREA CHART

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EMERGENCY PROCEDURES AND
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1109. MERCHANT SHIP—SHORE WATCH

SHIP—SHORE STATION	CALL SIGN	ANSWERING FREQUENCY	HOURS (GMT) OF WATCHKEEPING	CALLING BAND
Portishead	GKH	4274 kc/s	Continuous	4177-4187
	GKV	6379.5	Continuous	6265.5-6280.5
	GKL	8558	Continuous	8354-8374
	GKG	12835.5	0400-2200	12531-12561
	GKS	17112.8	0800-2200	16708-16748
	GKI	22449	0800-1800	22220-22270
Malta	GYX3	6386.5	Continuous	6265.5-6280.5
	GYX4	8566	Continuous	8354-8374
	GYX5	12849	Continuous	12531-12561
Gibraltar	GYU2	4283	Continuous	4177-4187
	GYU4	8566	Continuous	8354-8374
Saint Lys	FFL	Will assume watch in accordance with frequencies and schedules listed in the ITU publication "List of Coast Stations"		
Lisbon	CTV8	8642	Continuous	8366-8376
	CTV3	13042.5	2000-0800	12534-12564
	CTU7	17088.8	0800-2000	16712-16752
Apulia	CTN6	6509	2000-0800	6267-6282
	CTN3	13123.5	0800-2000	12534-12564
Pt. Delgada, Azores	CTD4	4364	2000-0800	4178-4188
	CTD8	8642	0800-2000	8356-8376
Horta, Azores	CTH6	6522	2000-0800	6267-6282
	CTH3	13069.5	0800-2000	12534-12564
Halifax, N.S.	VCS	4293.5	0000-1000 (1000-2400 on request)	4177-4187
	VCS	6491.5	Continuous	6265.5-6280.5
	VCS	8710	Continuous	8354-8374
	VCS	13087.5	Continuous	12531-12561
Argentina, Nfld.	NJN	6477.5	Night-time only	6265.5-6280.5
		8734	Continuous	8354-8374
		12718.5	Day-time only	12531-12561
Boston, Mass.	NMF	8734	Continuous	8354-8374
New York, N.Y.	NMY	8710	Continuous	8354-8374
		4361	Night-time only	4177-4187
Washington, D.C.	NMH	12718.5	Continuous	12531-12561
		17002.4	Day-time only	16708-16748
Norfolk, Va.	NMN	8734	Continuous	8354-8374
Jacksonville, Fla.	NMV	8734	Continuous	8354-8374
Miami, Fla.	NMA	8710	Continuous	8354-8374
New Orleans, La.	NMG	4361	Night-time only	4177-4187
		8710	Day-time only	8354-8374
San Juan, P.R.	NMR	4361	Night-time only	4177-4187
		8710	Continuous	8354-8374
		12718.5	Day-time only	12531-12561
Balboa, C.Z.	NBA	4352	2300-1100	4177-4187
		8614	Continuous	8354-8374
		12883	Continuous	12531-12561
		17136.8	1100-2300	16708-16748
San Francisco, Calif.	NMC	8650	Continuous	8364 kc/s
Vancouver	CKN2	4277	Continuous	4177-4187
	CKN3	6393.5	Continuous	6265.5-6280.5
	CKN4	8554	0400-1800	8354-8374
	CKN5	12831	1600-0400	12531-12561
	CKN6	17108	1600-0400	16708-16748

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EMERGENCY PROCEDURES AND
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SHIP-SHORE STATION	CALL SIGN	ANSWERING FREQUENCY	HOURS (GMT) OF WATCHKEEPING	CALLING BAND
Honolulu, Hawaii	NMO	8650	Continuous	8364 kc/s
Bombay	VTF4	8566	Continuous	8354-8374
	VTF5	12849	Continuous	12531-12561
	VTF6	17132	0230-1430	16708-16748
Irirangi	ZLO2	4277	Continuous	4177-4187
	ZLO3	6393.5	0600-1800	6265.5-6280.5
	ZLO6	17108	1800-0600	16708-16748
Awarua	ZLB4	8554	Continuous	8354-8374
	ZLB5	12831	1800-0600	12531-12561
Sydney	VIS3	6463.5	0900-1800	6265.5-6280.5
	VIS4	8662	Continuous	8354-8374
	VIS5	12952.5	Continuous	12531-12561
	VIS6	17160.8	2230-0900	16708-16748
Darwin	VHM4	8554	1000-2200	8354-8374
	VHM5	12831	Continuous	12531-12561
	VHM6	17108	2200-1000	16708-16748
Canberra	VHK2	4277	1000-2400	4177-4187
	VHK3	6393.5	1800-1000	6265.5-6280.5
	VHK4	8554	Continuous	8354-8374
	VHK5	12831	1000-1800	12531-12561
	VHK6	17108	0001-1000	16708-16748
Vizagapatam	VTO4	8566	Continuous	8354-8374
	VTO5	12849	Continuous	12531-12561
Singapore	GYL4	8554	Continuous	8354-8374
	GYL5	12831	Continuous	12531-12561
Hong Kong	GZO5	12849	Continuous	12531-12561
Capetown	ZSJ2	4283	2000-0400	4177-4187
	ZSJ3	6386.5	2000-0400	6265.5-6280.5
	ZSJ4	8566	Continuous	8354-8374
	ZSJ5	12849	0400-2000	12531-12561
	ZSJ6	17132	0400-2000	16708-16748
Mauritius	GXO2	4277	1800-0300	4177-4187
	GXO3	6393.5	1500-0300	6265.5-6280.5
	GXO4	8554	1200-0600	8354-8374
	GXO5	12831	Continuous	12531-12561
	GXO6	17108	0300-1800	16708-16748
	GXO7	22533	0300-1500	22220-22270

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A

Abashiri	1559
Acapulco	1053
Active Pass	1162
Adak	1270
Adak	6220
Adelaide	1748
Adelaide	3680
Adelaide	4888
Adelaide	6660
Aden	1332
Afrika, Mys	1541
Agulhas, Cape	1286
Aitutaki	1925
Akkeshi Ko	1563
Akita	4776
Akyab	1397
Al Basrah	4570
Al Basrah	6310
Al Faw	4565
Al Faw	6320
Al Kuwayt	1358
Al Kuwayt	6300
Al Waziriyah	4560
Albert Head	1160
Alert Bay	4325
Alert Bay	6140
Alki Point	1147
Amboina	4836
Ambon	4836
Amphitrite Point	1129
Anacapa Island	1084
Anchorage	1226
Andaman Island	4595
Angeles, Punta	1016
Aniva, Mys	1475
Antalaha	1313
Antofagasta	1022
Aonae Misaki	1578
Aqaba	1329.7
Arago, Cape	1116
Arena, Point	1094
Arenas, Punta	1000
Arenas, Punta	3020
Arenas, Punta	4080
Arguello, Point	1068
Arica	1024
Ashburton	1800
Ashizuri Zaki	1632
Askol'd, Ostrov	1461
Asmara	4545

Assab	1328
Atkinson, Point	1152
Atoiya Misaki	1551
Auckland	2800
Auckland	2810
Auckland	4904
Auckland	6730
Avachinskiy	1535
Avalon	1072
Awarua	4908
Awarua	6750
Az Zahran	6290
Azaiba	1340

B

Bahia—see proper name	
Bahrain	1350
Bahrain	4555
Balboa	3120
Balboa	4100
Balboa	6010
Balikpapan	4815
Balyuzek, Mys	1468
Barbara, Santa	1086
Baring Head	1788
Barrow, Point	1256
Barter Island	1264
Baydukov, Ostrov	1500
Beale, Cape	1157
Beira	1305
Belawan Deli	1700
Belkina, Mys	1473
Biorka	1200
Blaize, Cape St	1288
Blanco, Cape	1115
Blunt, Point	1106
Blunts Reef	1095
Bol'shoy Shantar, Ostrov	1503
Bombay	4580
Bombay	4582
Bombay	6330
Bonilla Island	1178
Bonita Point	1104
Booby Island	1771
Borda, Cape	1750
Brinera, Mys	1469
Brisbane	4880
Brisbane	6620
Broome	1766
Broome	4896
Broome	6700

Bryusa, Mys	1455
Bukhta— <i>see proper name</i>	
Bull Harbor	4330
Bull Harbor	6130
Burgess Islet	1774
Byelkin	1473

C

Cagayan de Oro	1694
Cairns	1721
Cairns	4872
Cairns	6590
Calcutta	2350
Calcutta	3410
Calcutta	4592
Calcutta	6350
Callao	1030
Callao	2000
Callao	3110
Cam Ranh Bay	1417.8
Campbell, Cape	1796
Canberra	3665
Canton Island	1910
Cape— <i>see proper name</i>	
Capetown	4500
Capetown	6240
Car Nicobar	1404
Carmanah	1130
Carnarvon	1762
Ceduna	1754
Ch'i-hou Shan	1667
Chabunco	1000
Chaji Do	1444
Channgi Gap	1449.5
Chayvo	1513
Cheju	1443
Chibuynny, Mys	1528
Chi-lung	1680
Chi-lung	4785
Chiclayo	1036
Chikyu Misaki	1568
China Bay	1392
Chirikova, Mys	1522
Chittagong	1388
Chittagong	2370
Chittagong	4610
Choryong Do	1448
Choshi	4738
Choshi	6450
Chumunjin Dan	1451
Chuk To	1438

Cochin	1378
Cochin	4587
Coffs Harbor	1726
Cold Bay	1234
Colombo	1391
Colombo	3450
Colombo	4605
Colombo	6360
Columbia River Lightship	1118
Comox	1164
Comox	4320
Comox	6150
Concepcion	3060
Concepcion, Bahia	1010
Constitucion	1011
Cooktown	1720
Coolangatta	1724
Cooper	1298
Corona, Punta	1006
Coronado	1060
Cruz— <i>see proper name</i>	
Cubi Point	1686
Cuvier Island	1776

D

d'Aguilar, Cape	4655
Daio Zaki	1624
Danang	1419
Dar-es-Salaam	1318
Dar es Salaam	6280
Darwin	1770
Darwin	4900
Darwin	6720
Das Island	1346
Datta, Mys	1492
Decision, Cape	1198
Destruction Island	1126
Dhahran	1352
Diamond Head	1876
Diego Suarez	1314
Diego Suarez	4520
Disappointment, Cape	1119
Diu Head	1369
Djakarta	1708
Djakarta	3640
Djakarta	4820
Djibouti	1326
Djibouti	4540
Dog Island	1804
Doha	1348
Dolphins Nose	1383

Domingo, Santo.....	1012
Don Muang.....	1416
Driftwood Bay.....	1268
Dumai.....	4816
Dunedin.....	2880
Durban.....	4504
Durban.....	6250
Dzaoudzi.....	1316

E

East Cape.....	1782
Echizen Misaki.....	1651.5
Ediz Hook.....	1137
Efate.....	1895
Eldred Rock.....	1204
Elias, Cape St.....	1218
Eniwetok.....	1845
Erimo Misaki.....	2520
Erimo Saki.....	1566
Erimo Saki.....	2510
Esan Saki.....	1570
Esan Saki.....	2525
Esmeraldas.....	1042
Esperance.....	4890
Esperance.....	6670
Estero de Punta Banda.....	1058.5
Estevan Point.....	1166
Ethelda Bay.....	1185

F

False Point.....	1385
Farallon.....	1102
Fiji.....	1900
Five Fingers.....	1202
Flattery, Cape.....	1128
Flaxman Island.....	1262
Flinders Island.....	1732
Francis, Cape St.....	1291
French Frigate Shoals.....	1868
Fu-Kuei Chiao.....	1676
Fukuyama.....	1576
Fushiki.....	4772
Fushiki Ko.....	1652.2

G

Gabo Island.....	1731
Gamova, Mys.....	1460
George.....	1290
George Reef, St.....	1112

Geraldton.....	1760
Geraldton.....	4894
Geraldton.....	6690
Gisborne.....	1784
Goa.....	4584
Godley Head.....	1798
Grays Harbor.....	1125
Guam.....	1825
Guam.....	3800
Guam.....	4912
Guam.....	6770
Guard Island.....	1194
Guard Island.....	1196
Gustavus.....	1210

H

Hachijo Jima.....	1614
Hachijo Jima.....	2560
Hachinohe.....	4736
Hakodate.....	4730
Hakodate.....	6430
Hamada Ko.....	1648
Hanasaki.....	1560
Hanasaki Byachi.....	2500
Hassanudin.....	1712
Hekura Jima.....	1652
Heng-ch'un.....	1666
Hermes, Cape.....	1296
Hinchinbrook, Cape.....	1220
Hinchinbrook, Cape.....	1222
Hino Misaki.....	1628
Hiran Point.....	1386
Hiroo.....	1565
Hiroshima.....	4746
Hobart.....	4884
Hobart.....	6640
Hong Kong.....	3550
Honolulu.....	3900
Honolulu.....	4915
Honolulu.....	4920
Honolulu.....	6780
Hood Point.....	1294
Horsburgh.....	1412
Hsin-chu.....	1672
Hu-lu-tao.....	2450
Hua-lien.....	1662
Hua-niao Shan.....	1423
Hue.....	1419.2
Humboldt Bay.....	1110

I

I-lan	1682
Imai Saki	1528
Inch'on	4665
Inubo Saki	1610
Inubo Saki	2535
Inubo Saki	2540
Iro Saki	1620
Iro Saki	2570
Isla—see proper name	
Iso Saki	1608
Iwo Jima	1820
Iztapa	1050
Izu O Shima	1618
Izu O Shima	2565
Izuhara	4762

J

Jacques, Cap St.	1417
James, Cape St.	1174
James Island	1133
Jamnagar	1368
Jedda	1330
Jesselton	1696
Jiwani	1360
Johannesburg	3300
Johns, Port St.	1296
Johnston Island	1865
Johore Bahru	1408

K

Kadena	1659
Kagoshima	4758
Kains Island	1167
Kamen Opasnosti, Ostrov	1480
Kandla	4581
Kang-shan	1668
Kangnung	1450
Kangnung	4685
Kannon Saki	2545
Kao-hsiung	4790
Karachi	1364
Karachi	2300
Karachi	4575
Karwar	4585
Katsuura Ko	1611
Katunayake	1391
Kavieng	1880
Ketchikan	4350

Ketchikan	6200
Khanderi	1372
Kholmsk	4705
Khormaksar	1332
Kilauea Point	1870
King Island	1744
King Salmon	1232
Kiritappu	1562
Kloster-Kamp, Mys	1495
Kobe	4752
Kobe	6527
Kochi	4744
Kodiak	1230
Kodiak	4355
Kodiak	6210
Koggala	1394
Komakuk	1266
Komun Do	1446
Koror	1810
Korsakov	1482
Kota Bahru	1414
Kotzebue	1250
Krasnyy Partizan, Mys	1486
Kril'on, Mys	1476
Kronotskiy, Mys	1540
Kuantan	6380
Kuching	4810
Kuching	6540
Kunsan	4680
Kurbatova, Mys	1531
Kure	4748
Kushiro	4724
Kushiro Saki	1564
Kwajalein	1855
Lamanon, Mys	1491
Langara	1179
Lao-tieh-shan-hsi	1427
Las Salinas	3080
Las Salinas	4070
Lauthala Bay	1905
Lawn Point	1190
Lay, Point	1252
Leeuwin, Cape	1756
Lennard Island	1166.5
Likhacheva, Mys	1547
Lima	1030
Litke, Mys	1502

L

Labuan	1698
Lae	4868

Little Quoin Island	1342
Loma, Point	1065
Lonely	1258
Long Beach	1076
Long Beach	4200
Long Beach	6030
Lopatka, Mys	1532
Loran Stations, Asiatic Area	7040
Loran Stations, Central Pacific	7020
Loran Stations, Japanese Area	7060
Loran Stations, North Pacific	7010
Loran Stations, South Pacific	7030
Loran Stations, West Coast-U. S. A. . .	7050
Los Angeles	1066
Los Angeles	1078
Los Angeles	1082
Los Angeles	6040
Los Mochis	1056
Lourenco Marques	1302
Lourenco Marques	3350
Lourenco Marques	4508
Lovtsova, Mys	1551
Lucia, Cape St	1300

M

Mackay	1723
Macuti	1304
Madrass	1382
Madrass	4589
Madrass	6340
Mahina	4950
Maizuru	4768
Maizuru	6490
Majunga	1310
Majunga	4515
Majunga	6260
Makapuu Point	1874
Makassar	1712
Makassar	4830
Maki	1652.5
Mangalore	1376
Mangalore	4586
Manila	3630
Manila	3635
Manila	4795
Manila	4800
Manta	1040
Manus	4938
Marcus Island	1835
Marekan, Mys	1520
Marina del Rey	1080

Mary Island	1182
Masirah Island	1338
Massawa	1329
Matsumae	1576
Mauripur	1362
Mayachnyy, Mys	1538
Mazatlan	1054
Mazin	1397.5
Mbashe Point	1295
McInnes Island	1177
Me Shima	1638
Medan	4817
Melbourne	3670
Melbourne	4886
Melbourne	6650
Mergui	1402
Middleton Island	1224
Midway	1860
Mikoyanovskiy	1533
Mina al Ahmadi	1356
Mingaladon	1398
Miri	4805
Miri	6530
Miyako Jima	1660
Mogadiscio	1324
Mogadiscio	4535
Moji	4756
Mokp'o	4670
Mombetsu Ko	1558
Moneron, Ostrov	1477
Mormugao	6335
Morombe	1307
Morondava	1308
Morro Bay	1098
Moses Point	1246
Moskal'vo	1501
Mount Victoria	2800
Mount Victoria	2810
Muroto Zaki	1630
Mys--see proper name	

N

Nabil	1514
Nagaono Hana	1650
Nagasaki	4760
Nagasaki	6520
Nagoya	4742
Nagoya	6460
Nakhodka	1457
Nandi	1900
Nauru	1885

Nauru	6800
Neah Bay	1135
New Dungeness	1140
New Ireland	1880
Newchang	2460
Nemuro	4726
Newport Bay	1074
Nha Trang	1418
Niigata	4774
Niigata	6500
Nikolayevsk-na-Amure	4710
Nizmennyy, Mys	1464
Nobonotsu Misaki	1550
Nojima Saki	2555
Nojima Zaki	1612
Nojima Zaki	2550
Nome	1248
Norfolk Island	1890
Noumea	4940
Nyudo Saki	1655

O

Ocean Station Vessel November	1280
Ocean Station Vessel November	6235
Ocean Station Vessel Papa	1282
Ocean Station Vessel Victor	1284
Ocean Station Vessel Victor	6230
Ocean Station Vessels	2100
Oceanside	1070
Och'ong Do	1435
Ochiishi	4726
Ochiishi	6420
Ofunato Ko	1603
Oita	4754
Oita	6510
Okha	1366
Okhotsk	1520
Okinawa Jima	1656
Okino-erabu Shima	1655.5
Okuma	1658
Oliktok	1260
Omae Zaki	1622
Osaka	2580
Ose Zaki	1640
Ostrov—see proper name	
Ostrovnoy, Mys	1463
Otago Harbor	2870
Otaru	4732
Otaru	6440
Otway, Cape	1742
Ozemoy, Mys	1542

P

P'almi Do	1431
P'eng-hu	1684
Padang	1706
Pago Pago	1915
Pago Pago	4948
Palau Islands	1810
Palembang	4819
Pamanzi	1316
Panape	1840
Pangkalpinang	1704
Papeete	1930
Patos Island	1150
Paul Island, St	1240
Penang	4635
Penang	6382
Penasco, Punta	1058
Perak	1710
Perth	1758
Perth	3690
Perth	4892
Perth	6680
Peschanyy	1490
Phan Thiet	1417.5
Pigeon Point	1092
Pil'tun	1512
Pine Island	1169
Pinos, Point	1100
Pisco	1028
Point—see proper name	
Poluostrov Terpeniya	1488
Poona	3400
Poronaysk	1516
Port Angeles	4240
Port Blair	4595
Port Elizabeth	4502
Port Elizabeth	6245
Port Hardy	1172
Port Hardy	1170
Port Hedland	1764
Port Hueneme	1067
Port Kholmsk	1478
Port Moresby	4866
Port Moresby	6570
Port Shepstone	1296.5
Port St. Johns	1296
Portland Island	1786
Pos'yeta	1452
Posiette Bay	1452
Povorotnyy, Mys	1462
Prince Rupert	1192

Prince Rupert	4345
Prince Rupert	6180
Provideniya, Bukhta	1547
Puerto Armuelles	6020
Puerto Montt	3030
Punta— <i>see proper name</i>	
Pusan	4690
Puysegur Point	1806

Q

Quatsino	1167
Quintero	1018
Quiriquina, Isla	1010

R

Ra's at Tannurah	1354
Ra's at Tannurah	4550
Rabaul	4935
Rabaul	6790
Race Rocks	1144
Radio Australia	3650
Rangoon	1398
Rangoon	2400
Rangoon	4615
Rangoon	6370
Rarotonga	1920
Ras Serani	1320
Ratmalana	1396
Ratnagiri	4583
Recife, Cape	1292
Reinga, Cape	1772
Retreat, Point	1206
Reyes, Point	1108
Riyan	1334
Rockhampton	4878
Rockhampton	6610
Romanzof, Cape	1242
Rosario	1688
Ryori Saki	1602.3

S

Sada Misaki	2590
Sai Gon	4650
Sai Gon	6390
Saint-Denis	4530
Saipan	1828
Sakai	4770
Sakata	1654
Salalah	1336

Salinas	1032
Same Kaku	1600
San Francisco	3130
San Francisco	4210
San Francisco	4220
San Francisco	6050
San Francisco	6060
San Francisco	6065
San Francisco	7600
San Francisco Lightship	1093
San Jose	1690
San Juan	1026
San Luis Obispo	1090
Sand Heads	1151
Sand Island	1860
Sandoway	1397.5
Sandspit	1187
Sandspit	4340
Sandspit	6170
Sangley Point	4800
Santa— <i>see proper name</i>	
Santiago	3070
Santiago	4065
Santo— <i>see proper name</i>	
Sarichef, Cape	1238
Sasebo	4764
Saugor	1385.5
Schanck, Cape	1738
Scotch Cap	1236
Scott, Cape	1168
Seattle	4250
Seattle	6070
Seattle	6080
Shang-hai	3570
Shang-hai	4660
Shang-hai	6400
Sharjah	1344
Shikotan To.	1552
Shimizu	6525
Shimonoseki	4766
Shimonoseki	6480
Shinminato Ko.	1652.3
Shiogama	4728
Shiono Misaki	1626
Shiono Misaki	2575
Shiono Misaki	4750
Shiono Misaki	6470
Shioya Misaki	1606
Shioyazaki	1606
Shipunskiy, Mys	1539
Shiriya Saki	1598
Shpanberga, Ostrov	1552

Shumshu, Ostrov	1526
Shuyak Island	1228
Singapore	1410
Singapore	4640
Singapore	4645
Singapore	6380
Sinjon	1410
Sisters Island	1208
Sitka	1200
Skrypleva, Ostrov	1456
Smith Island	1141
Songkhla	1415
Soya Misaki	1556
Spafar'yeva, Ostrov	1521
Spencer, Cape	1212
St.—see proper name	
Stephens Island	1794
Strahan	1735
Sukarnapuro	4840
Sur, Point	1091
Surabaja	1710
Surabaja	4824
Susnova, Mys	1484
Suva	1905
Suva	4945
Suva	6810
Suyong Man	1449
Sydney	1728
Sydney	3655
Sydney	3660
Sydney	4882
Sydney	6630
Syurkum, Mys	1493

T

Ta-Chi Shan	1422
T'ai-nan	1670
T'ai-tung	1664
T'ao-yuan	1674
Ta-san-shan Tao	1428
Tabing	1706
Taboga, Isla	1046
Tafuna	1915
Tai Long Head	3500
Tai Long Head	4655
Taiaroa Head	1802
Taiaroa Head	2870
Taiaroa Head	2880
Talara	1038
Tamatave	1312
Tamatave	4525

Tamatave	6270
Tandjungpriok	4822
Tango	1651
Tappi Saki	1585
Tauranga	1780
Tavoy	1400
Temuco	3050
Tern Island	1868
Terpeniya, Mys	1515
Teshio	1581
Tetyukhe	1469
The Brothers	1790
Thursday Island	4870
Thursday Island	6580
Tientsin	3575
Tikyu Misaki	1568
Timaru	2860
Timaru Harbor	2850
Todo Saki	1602
Todos Santos, Islas	1059
Tofino	1155
Tofino	4335
Tofino	6120
Toi Misaki	1634
Tokyo	3610
Tokyo	3620
Tokyo	4720
Tomari Aniva, Mys	1482
Townsville	1722
Townsville	4876
Townsville	6600
Tree Point	1181
Trincomalee	1392
Triple Islands	1180
Trivandrum	1380
Troughton Island	1768
Troughton Island	2700
Trujillo	1034
Truk Island	1830
Tsuno Shima	1646
Tsurugi Saki	1616
Tulear	1306
Tulear	4510
Tumaco	1044
Tuticorin	4588
Tyl'skiy, Mys	1504

U

Ulneung	4695
Umatilla Reef Lightship	1127
Unalakleet	1244

Unalaska Island	1268
Unoo Saki	1605
Utarom	1714

V

Valdivia	3040
Valparaiso	1016
Valparaiso	3080
Valparaiso	4070
Vancouver	2200
Vancouver	2210
Vancouver	4310
Vancouver	6160
Van-der-Lind, Mys	1550
Vasil'yeva, Mys	1530
Vasiliya, Mys	1545
Vengurla Rocks	1373
Victoria	4300
Victoria	6110
Vila	1895
Vishakhapatnam	1384
Vishakhapatnam	4590
Vladivostok	4700
Vladivostok	6410
Vung Tau	1417

W

Wainwright	1254
Wakamiya Shima	1644
Wake Island	1850
Wakkanai	4734
Wakkanai Ko	1581.5
Wan-jen-t'ui Pi	1678
Wang Lan	1420
Wanganui	1792
Wellington	3700

Wellington	3710
Wellington	4906
Wellington	6740
West Island	1406
West Point	1143
Westport	2830
Westport	2840
Westport	4230
Whyalla	1752
Wickham, Cape	1746
Willapa Bay	1120
Wilson, Point	1142
Wonthaggi	1736
Wyndham	4898
Wyndham	6710
Wynyard	1734

Y

Yakataga	1216
Yakishiri Jima	1582
Yakutat	1214
Yangtze North	1424
Yap Island	1815
Yaquina Head	1117
Yegorova, Mys	1465
Yelizavety, Mys	1511
Ying-K'ou	2460
Yokohama	4740
Yokohama	6522
Yuan Tao	1429
Yuzhnyy, Mys	1523

Z

Zhonkiyer, Mys	1494
Zolotoy, Mys	1474