MERCHANT SHIP COMMUNICATIONS

A Guide for the Naval Communication Liaison Officer

Prepared by

BUREAU OF NAVAL PERSONNEL

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PREFACE

This book is designed primarily to be a guide for the naval communication liaison officer. Its emphasis is on maritime communications in wartime and on the NCLO as a liaison agent. The book may also be of value to armed guard officers and to any communicator who needs a general knowledge of merchant ship communications. It is desirable, but not absolutely necessary, for the reader to have some prior acquaintance with naval communication procedure.

The contents are not intended to be a substitute for any official reference.

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CHAPTER 1

PEACETIME MERCHANT SHIP COMMUNICATIONS

When you go aboard a merchant vessel as a naval communications liaison officer, it is well for you to remember that the merchant marine of the United States is a service as old as the country. Like the Navy, it has its customs, traditions, and regulations. Your job will include extensive dealings with the maritime service, and the more you know about it, the better qualified you will be for your duties.

To help you absorb some background, this chapter will look into the peacetime operation of merchant ship communications and show how it functions during times of normalcy.

RADIO SERVICE COMPANIES

The merchant marine is not a military organization and its communication needs are much simpler than those of the Navy. It does not have a vast network of communications with elaborate shipboard establishments, communication centers, land-line circuits, and round-the-clock operating personnel. The cost of such a system runs into many figures and would soon exhaust all profits in the peacetime merchant service.

Instead, radio service companies handle merchant service communications. Four major companies handle the communications for practically all vessels flying the United States flag. These companies are the Radiomarine Corporation of America (RMCA), MacKay Radio and Telegraph Company (MRT), Globe Wireless (primarily West Coast), and Tropical Radio (United Fruit Company). Prior to World War II, it was their practice to contract with shipping lines and independently owned vessels to handle all communications. They installed the equipment, serviced and maintained it, and furnished the radio officers.

In the great surge of shipbuilding during the last war, vessels were constructed by the War Shipping Administration for the maritime service and were equipped with radio, direction finding gear, and—in a great many cases—loran and radar. At war's end, the WSA sold many of these ships to commercial operators. The communication and electronic equipment went with the vessel. This resulted in most of the American companies owning their shipboard communication equipment but still contracting for the service supplied by the radio service companies.

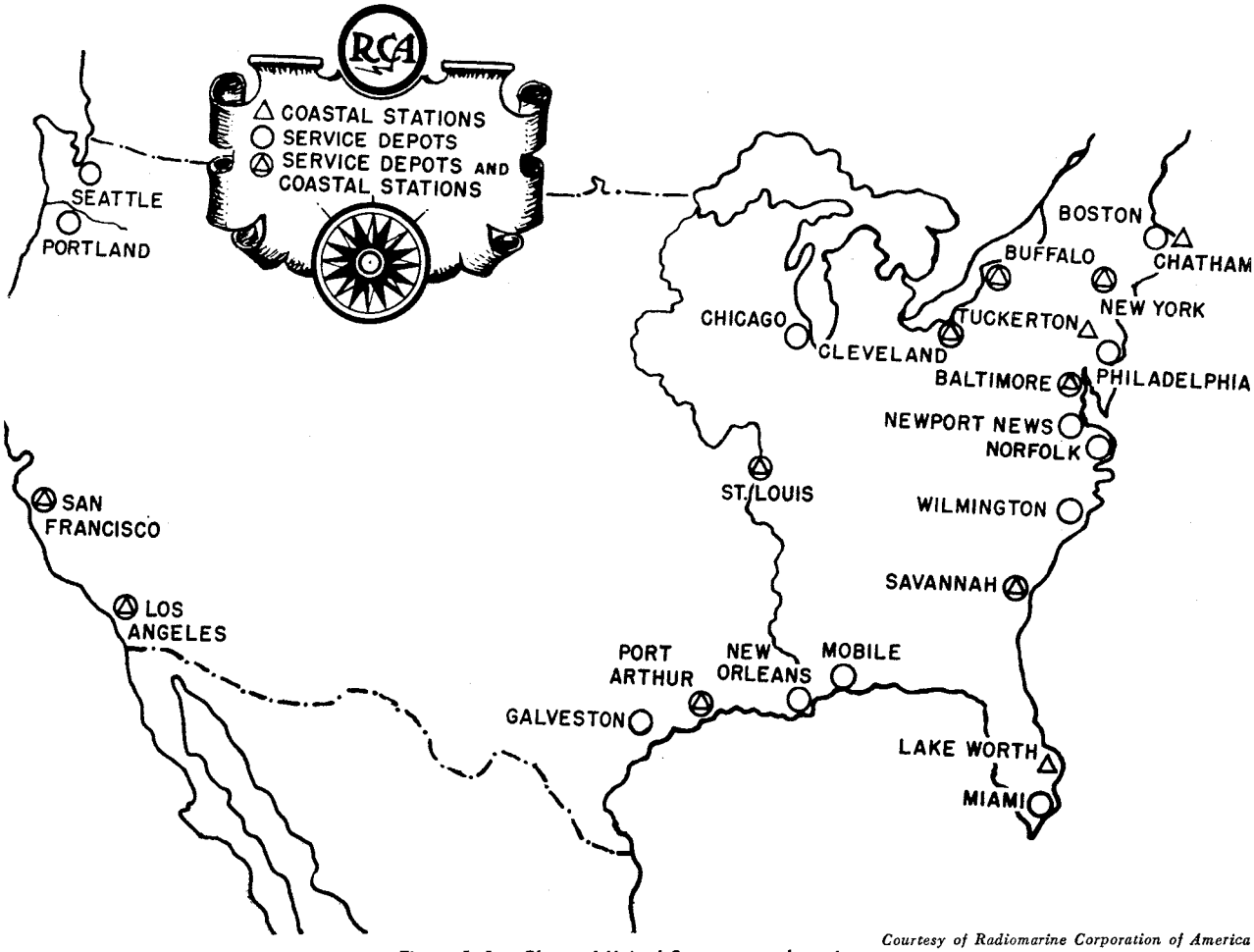
Service Contract

At present, a typical contract is something like this: A shipping line, owning 10 vessels, decides to enter into a contract with RMCA. The contract requires that RMCA inspect, maintain, and repair the communication equipment aboard vessels of the line, and provide spare parts and gear (to be paid for by the shipping company) for maintenance and repair; that RMCA handle the shore-based communications for the shipping company, and transmit and receive messages to and from vessels of the line; that the radio officers of the vessels of the line abstract the traffic and submit to RMCA the abstracts and money collected for radiotelegrams; and that RMCA account for the money received and expended, and act as billing and collection agent for the line insofar as communications are concerned.

There might be other clauses of the contract which would alter some of the items we have considered, since contracts are tailored to the needs of the shipping companies. As can be seen from the salient features of the contract, the two main differences since pre-World War II days are that the radio service company does not own the equipment on board and does not supply the radio officer.

Shore Stations

A radio service company is not confined to any one part of the United States nor is each given by law an exclusive area in which to operate. Globe Wireless does operate primarily on the Pacific coast, but Tropical Radio (throughout tropical America) has one station as far north as Hingham, Mass., while RMCA operates a station just a few miles away at Chatham, Mass. The stations are scattered along the coasts of the United States and throughout the Great Lakes and principal inland waterways. In addition to stations in the continental United States, some companies operate stations in American possessions abroad. They are also affiliated with foreign companies operating abroad. It is through these affiliations and subsidiary companies that a merchant ship can always remain in communication with its home port and company office.



Courtesy of Radiomarine Corporation of America

Figure 1–1.—Chart of United States coastal stations.

RADIOMARINE CORPORATION OF AMERICA

Operating Manual
Third Revised Page 48
Cancels Second Revised Page 48

SCHEDULE OF RADIO CHARGES IN THE MOBILE RADIOTELEGRAPH SERVICE

The through rate is the radio charge as indicated in the table below, plus the forwarding charge or charges, to destination.

Forwarding charges will be found on the following pages.

FROM MOBILE STATIONS AT SEA OR IN THE AIR

CLASS OF SERVICE	(1) COAST STATION CHARGES U.S.$ per word	(1) COAST STATION CHARGES Gold Francs per word	(2) SHIP STATION CHARGES (Ocean) U.S.$ per word	(2) SHIP STATION CHARGES (Ocean) Gold Francs per word	(2) SHIP STATION b/ CHARGES (Great Lakes) U.S.$ per word	(2) SHIP STATION b/ CHARGES (Great Lakes) Gold Francs per word
Full Rate radiotelegrams	.10	.52	.08	.40	.04	.20
Express Delivery radiotelegrams a/	.10	.52	.08	.40	.04	.20
Government radiotelegrams a/	.10	.52	.08	.40	.04	.20
Night radiotelegrams * a/	.09	.27	.08	.24	--	--
Paid Service Advices	.10	.52	.08	.40	.04	.20
Press radiotelegrams a/	.05	.26	.04	.20	.02	.10
Reply Paid radiotelegrams a/	.10	.52	.08	.40	.04	.20
Sea Letter a/ radiotelegrams c/ (per word in excess)	.06	.18	.04	.125	.04	.125
Secret Language radiotelegrams a/	.10	.52	.08	.40	.04	.20
Short Cruise radiotelegrams a/	.05	.26	.04	.20	.02	.10
Standard Text Gift Orders a/ d/	.75	2.25	.60	1.80	.60	1.80
Repeat Back radiotelegrams a/	Charge is the ordinary rate for the classification involved plus fifty per cent (50%).					

a/ These classes not available to aircraft.
b/ Not applicable to aircraft.
c/ Minimum charge 20 words.
d/ Flat rate per message.
Except Night radiotelegrams.
* Forwarding charges for NRT are shown on page 36.

Courtesy of Radiomarine Corporation of America

Figure 1-2.—Schedule of charges in the naval radio telegraph service.

RADIO OFFICER

The radio officer of a merchant ship holds rank without executive authority. He is assigned a cabin in officers' country and messes in the officers' saloon. His position is comparable to a communication officer not qualified in deck duties.

The majority of vessels carry only one radio officer, although large passenger liners (such as the SS *America*) may carry many more. The chief radio officer on large liners then has executive authority over his junior officers in the radio organization.

The radio officer is directly responsible to the master and receives his orders from him or his duly appointed subordinates. These include the chief mate and the watch officer, whose positions can be compared to the executive officer and the officer of the deck aboard naval vessels.

Qualifications

To qualify as radio officer, a candidate must attend radio school and learn the rudiments of radio both in theory and practice. He must have at least a second class radiotelegraph license, which is awarded upon the successful completion of the examination given by the FCC. If the ship is equipped with radiotelephone, he must also have a second class radiotelephone license. In addition to these two "tickets," he must obtain a certificate of identification and a certificate of service from the Bureau of Marine Inspection and Navigation, a Coast Guard identification card, and a seaman's passport.

The radio officer is required by law to display his licenses in the radio room along with the ship station license. In time of war, the regulation requiring the posting of licenses is suspended by Navy directives.

Radio Watch

Various regulations and agreements between the shipping companies and the unions have established the length of the radio officer's watch and the periods during which it normally will be stood. On large passenger liners which may carry three or more radio officers, a 24-hour watch is maintained. On ships having only one radio officer, only one 8-hour watch is maintained. The master has the authority to designate the hours of the watch, but he normally will let the radio officer set his own watch.

The waters through which the ship is passing often govern the hours of watch. For example, a ship in the tropics will find the morning hours much more convenient for transmission than the later daylight hours because there is less atmospheric disturbance. The radio officer has to establish his routine so that he may use the best time of day for transmission and yet perform other functions of the radio department, such as tuning in time signals and taking radio bearings when they are needed.

Officially, the radio officer is not required to assume his watch until his ship clears inland waters, but most operators will assume the watch when the ship gets under way. This is done in order to receive any last-minute instructions or changes in orders. The operator usually remains on watch for several hours after the ship has left port.

The radio officer is not required by law to stand a watch when his ship is in inland waters or at anchor, but he will usually consult the master before he secures. In time of war, Navy orders govern the standing of radio watches and the radio operator is bound by these.

Radio Officer's Log

Just after taking up watch, the radio officer turns his attention to the log. There may be as many as five activities that hold an interest in the radio officer's log; it is incumbent upon him to keep it accurately and efficiently. The FCC and the radio service companies have definite regulations concerning the keeping of the log, and the shipping company may have special requirements. In special cases, the Coast Guard and the Navy might have more than a cursory interest. In all courts, the radio log is considered an official document and can be intro-

duced as evidence, just as the ship's log kept by the master and the watch officers.

The log is usually supplied by the radio service company with which the shipping company has a contract. A new log is made up for each voyage, with the sheets numbered serially starting with number 1 for that particular voyage. Figure 1–3 shows a sample log sheet for the SS *America,* an RMCA contract vessel.

Each new sheet lists the name of the vessel, her call sign, port of departure, and destination. Time is carried as GMT (Greenwich mean time) and is the same as GCT. Most radio officers maintain accurate and concise logs. They have discovered through experience that trouble is avoided if complete information regarding their work during the voyage is part of a permanent record.

FORM ST-7

RADIOMARINE CORPORATION OF AMERICA

A Service of Radio Corporation of America

Radio Log — *S. S.* AMERICA — *Call Signal* WEDI

Sheet No. 1 — *Bound from* _____ *to* _____

GMT	CALL LETTERS		DATE AND PARTICULARS OF COMMUNICATIONS	FREQUENCY	STRENGTH OF SIGS.
	To	From	January 1 1946		
2200			ON BOARD: CHIEF OPERATOR		
			SECOND OPERATOR		
			THIRD OPERATOR		
			CHECKED RADIO ROOM CLOCK WITH NSS AT 2200: 23 SECONDS FAST, reset and wound, Test all transmitters on dummy antenna and found OK: Battery polarity checked: Receiver Batteries: 1220 Lifeboats: 1250 Auto Alarm: 1245 Emergency: 1285 ~~All Spares on hand. All publications on hand.~~		
0100			Leaving Dock: (Operators Signature) on watch		
0115–18			Silent Period observed, no signals heard		
0125	WNY	WEDI	Leaving NY for Southampton, QRU Nil from WNY		
2100	GKU	WEDI	Arriving Southampton QTP QRU QRU from GKU		
			Off Watch: (Operator's Signature.)		

Figure 1–3.—Log Sheet. *Courtesy of Radiomarine Corporation of America*

Regular Inspections of Equipment

During a voyage, the radio officer is required by law and company regulations to make regular checks of his equipment and enter the results in his log. Following is a list of daily inspections:

Check the ship's line voltage. Note polarity.

Check the charging rate of the emergency battery.

Test main transmitter. Note radiation.

Test receiver. Is B battery under load?

Test emergency battery. Note specific gravity.

Test receiver A battery. Note specific gravity.

Test auto-alarm A battery. Note specific gravity.

Test auto-alarm C battery. Note voltage.

Check auto-alarm with bridge. Note sensitivity.

Check generators. If they have been idle, turn them up for a couple of minutes.

You and the Radio Officer

When you go aboard a merchant vessel, make every effort to become friendly with the radio officer. Have him show you what equipment is carried on board. He can assist you in shaking down and getting acquainted with the ship. He will welcome your help in handling Navy traffic and relieving him of responsibility for military communications. Remember, the radio officer does much the same work as a Navy radio operator, but he is a ship's officer and receives many of his instructions from the master. Work with him.

AUTO-ALARM

Because most vessels carry only one radio officer, it is evident that he cannot guard the emergency circuit 24 hours a day. Therefore, a mechanical listening device was developed some years ago to listen for distress signals on 500 kcs. This instrument, known as the auto-alarm, is turned on whenever the operator is off watch or is working another frequency.

In essence, the auto-alarm is nothing more than an electrical device applied to a radio receiver tuned to 500 kcs. It has the ability of selection so that, when the international alarm signal is received, the apparatus will set off a series of alarms. The relay system consists of lights and bells on the bridge and in the radio room, and a bell in the radio officer's cabin.

The international alarm signal consists of twelve 4-second dashes spaced 1 second apart. It is not to be confused with the international distress signal S O S.

COMMERCIAL PROCEDURE

The merchant fleets of the world follow very much the same procedure. The United States merchant marine uses radio procedure closely akin to that employed by the Navy, but on a less formal basis.

"Q" signals play an important part in commercial communications. These signals give vessels the opportunity to talk to one another and to shore stations, even though neither of the radio operators may have the slightest knowledge of the other's language. The translations of the "Q" signals are international. Appropriate ones can be found in the effective JANAP 131.

There are small differences in commercial procedure which are not, in themselves, radical departures from Navy procedure. For example, $\overline{\text{IMI}}$ is used in the merchant service in much the same manner as $\overline{\text{INT}}$ is used by the military.

Call signs for United States controlled merchant vessels are 4-letter calls beginning with K or W. They are listed in the Treasury Department booklet, *Signal Letters of the United States Merchant Marine, 1950.* They are also contained in the Berne List, which carries the calls of vessels of all countries. United States commercial shore stations have 3-letter calls beginning with K or W.

ESTABLISHING COMMUNICATION

Establishing Communication on Leaving Port

When a vessel leaves port, the radio officer establishes communication by clearing through

a coastal station. He notifies the station that his ship is leaving port. He gives the hours he will be on watch and asks whether the coastal station has any traffic for him.

Assume that SS *Flying Eagle,* an RMCA ship, is leaving New York for Le Havre. The radio officer is on watch and *Flying Eagle* has just passed Ambrose Light. He opens his transmission with—

WNY WNY WNY DE KVFU KVFU KVFU
QRU IMI K

This means: WNY (RMCA radio station, New York) DE (from) KVFU *(Flying Eagle)* QRU IMI (Do you have any traffic for me?)

If WNY has no traffic for *Flying Eagle,* his answer will be—

KVFU KVFU KVFU DE WNY WNY WNY
QRU K

Flying Eagle should then send a clearing message—

WNY WNY WNY DE KVFU KVFU KVFU
QTO QTU 12ϕϕ to 16ϕϕ GMT and 193ϕ
to 223ϕ GMT AR K

Translation: "Radio New York from *Flying Eagle.* I have left port. This station is open for service from 1200 to 1600 GMT, and from 1930 to 2230 GMT. End of message. Go ahead".

New York would probably come back with the following—

KVFU KVFU KVFU DE WNY WNY WNY
OK BV OM

Which means: "O.K. Bon voyage old man."

The ship might end the exchange with—

WNY WNY WNY DE KVFU KVFU KVFU
TU VA

Which means: "Thank you. End of transmission." These little gestures of courtesy are common in maritime communicating.

Calling From At Sea

Five hundred kcs is, in addition to being the distress frequency, a frequency used in calling other vessels or in calling shore stations operating in the 365 to 515 kcs band. The vessel or station called on 500 kcs replies on the same frequency, and together they arrange another "working frequency" to use. In addition to calls, replies, and distress traffic, 500 kcs also may be used for safety messages and other urgent signals, and by aircraft wishing to enter into communication with a ship or coastal station.

Some stations operate almost exclusively on the lower frequency band of 100 to 160 kcs. The frequency for calling and answering in this band is 143 kcs. Coastal stations assigned a frequency in this band transmit and receive only by A–1 type emission, or CW.

In the box below is an example of SS *Flying Eagle* calling Chatham (Mass.) Radio. The call sign for Chatham Radio is WCC.

KVFU, *Flying Eagle,* has opened up on 500 kcs, calling WCC, Chatham Radio. Chatham replies on the same frequency and *Flying Eagle* returns the call, requesting a shift to 406 kcs. Then, on 406 kcs, *Flying Eagle* comes back with the "Q" signal meaning, "Have you anything for me?" (QRU IMI).

The above procedure is used when a vessel wants to call a particular station. If the radio operator has been out of contact with both ships and shore stations for several days, he may use the "CQ" call, an indefinite call to any ship or shore station. His call (on 500 kcs) would then be—

(On 500 kcs)	WCC WCC WCC DE KVFU KVFU KVFU AR K.....	*(Flying Eagle)*
(On 500 kcs)	KVFU KVFU KVFU DE WCC WCC WCC K.....	*(Chatham)*
(On 500 kcs)	WCC WCC WCC DE KVFU KVFU KVFU QSU 4ϕ6 K.....	*(Flying Eagle)*
(On 406 kcs)	WCC WCC WCC DE KVFU KVFU KVFU QRK IMI QRU IMI AR.....	*(Flying Eagle)*

CQ CQ CQ DE KVFU KVFU KVFU AR K

Any ship or station hearing this call would answer, then communication would shift to another frequency. There are also general radio calls, or what the military refers to as indefinite calls. Some of these are—

NERK.... Any or all United States naval vessels.
WGBC... Any or all United States merchant vessels.
NQO..... Any or all United States naval shore stations.
WAUS... Any or all United States commercial coastal stations.

If the station called does not answer after three calls, the calling station must cease and not attempt to call again until 15 minutes have elapsed. There is one exception to this rule: if the merchant vessel is calling an aircraft, the waiting period is only 5 minutes.

Radio officers must remember the silent periods (15 to 18 minutes past the hour and 45 to 48 minutes past the hour). An operator checks the time before he begins transmitting so that he will have completed his transmission before the commencement of a silent period. Silent periods are reserved for distress signals.

Calling From Shore

Messages to merchant ships from radio service company stations are rarely sent in the blind. Shore stations follow closely their published schedules of transmission. This does not mean that a station with an important message cannot send it immediately, but it does mean that most traffic is reserved for a particular time when it is certain that the majority of vessels are listening.

When shore stations transmit on scheduled times, they first send a traffic list. This list contains the call signs of vessels for which that station has traffic. Lists are not sent more frequently than every 2 hours.

If WCC at Chatham wished to send a traffic list, he would transmit (on 500 kcs)—

CQ CQ CQ DE WCC WCC WCC QTC QSW 428 K

This means: "WCC calling all ships. I have traffic which I am going to send on 428 kcs".

After changing to 428 kcs, receiving ships would hear a traffic list similar to this—

CQ CQ CQ DE WCC WCC WCC QTC ANS 4ø6 KDVI KDVU KKIJ KKUV WKIJ WKMM QTC DE WCC ANS 4ø6 K

The vessels called answer in order on the frequency assigned, which, in this case, is 4ø6 kcs.

CLASSES OF MESSAGES [1]

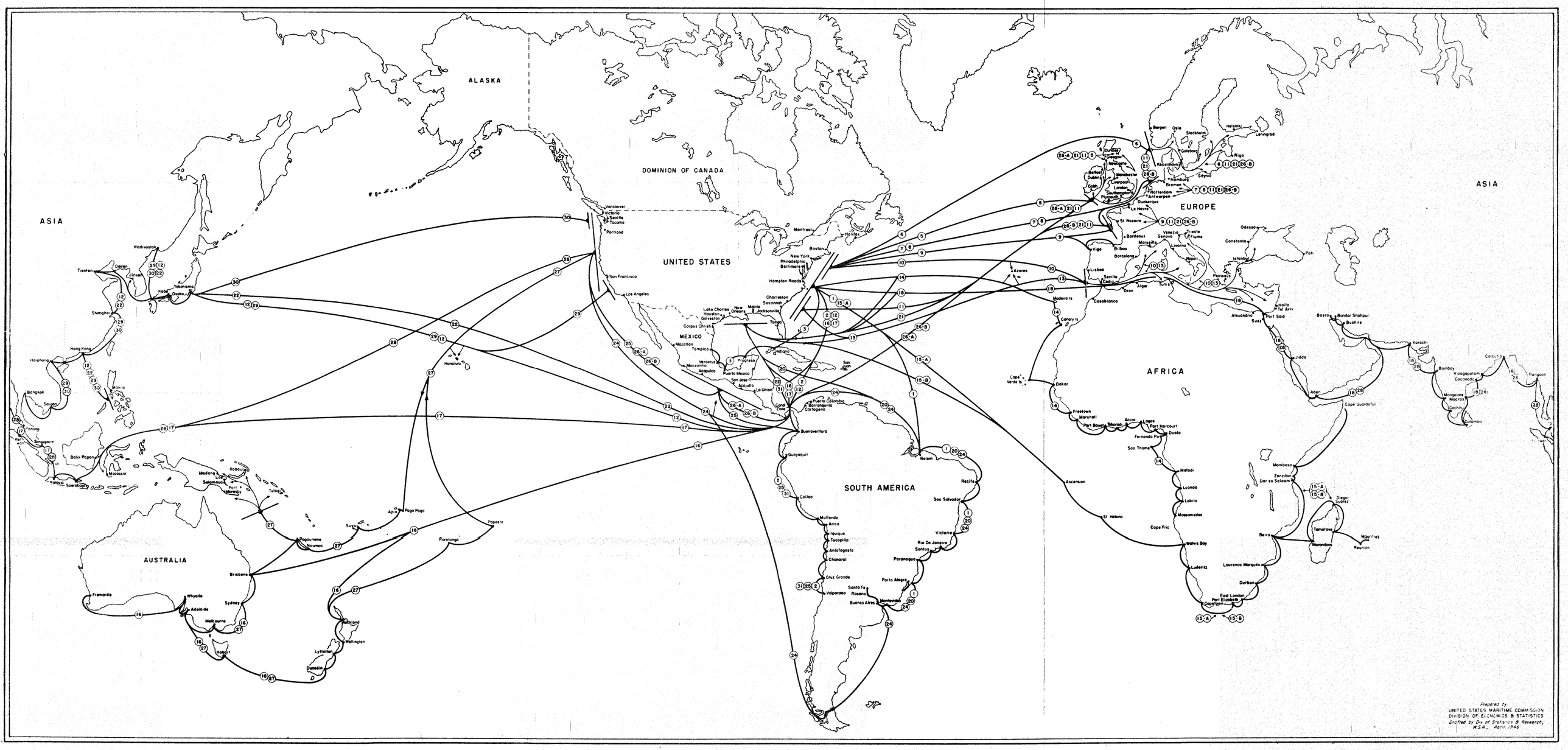
During peacetime, the greatest volume of radio traffic handled by the radio officer is commercial traffic, for which he must keep a strict accounting system. These messages can be compared to the Navy's class E messages. The radio officer is held accountable for funds collected and is required to turn the money over to the radio service company at the end of the voyage with a statement of the messages sent and received.

The ship will send or receive some messages for which there is no charge. These are usually company business, hydrographic messages, or weather messages.

The following is a list of the types of messages handled by the radio officer with the descriptive prefix used for each.

Class of Message	*Prefix*
Ordinary radiotelegram	P
Radio company business message	COOH
Government message	GOVT or ETAT
Collated (Repeat back)	TC
Meteorological radiotelegram	OBS
Radiogram for delivery by mail	POSTE
Radiogram for delivery by registered mail	PR

[1]This section, as well as certain information in this chapter on radio officer, silent periods, the auto-alarm, and DH MEDICO messages, is furnished by courtesy of the Radiomarine Corporation of America.



Prepared by
UNITED STATES MARITIME COMMISSION
DIVISION OF ECONOMICS & STATISTICS
Drafted by Div of Statistics & Research,
W.S.A., April 1946

ESSENTIAL UNITED STATES FOREIGN TRADE ROUTES

TRADE ROUTE	U.S. COASTAL AREA	FOREIGN AREA
1	Atlantic	East Coast South America
2	Atlantic	West Coast South America
3	Atlantic	East Coast Mexico
*4	Atlantic	Caribbean
5	North Atlantic	United Kingdom & Eire
6	North Atlantic	Scandinavia & Baltic Sea
7-8	North Atlantic	Antwerpen/Hamburg Range
9	North Atlantic	Atlantic France & Spain (Vigo to Bilbao)
10	North Atlantic	Mediterranean, Black Sea, Portugal, Spain (South of Portugal) & Morocco (Casablanca to Tangiers)
11	South Atlantic	United Kingdom, Bordeaux/Hamburg, Scandinavia & Baltic Sea
12	Atlantic	Far East
13	Gulf & S. Atlantic	Mediterranean, Black Sea, Portugal & Atlantic Spain
14	Atlantic & Gulf	West Coast of Africa
15A	Atlantic	South & East Africa & Madagascar
15B	Gulf	South & East Africa & Madagascar
16	Atlantic & Gulf	Australasia
17	Atlantic & Gulf	Straits Settlements, Netherlands East Indies
18	Atlantic & Gulf	India, Persian Gulf & Red Sea
*19	Gulf	Caribbean & East Coast Mexico
20	Gulf	East Coast South America
21	Gulf	United Kingdom, Bordeaux/Hamburg, Scandinavia & Baltic Sea
22	Gulf	Far East
*23	Pacific	Caribbean & East Coast Mexico
24	Pacific	East Coast South America
26A	Pacific	United Kingdom
26B	Pacific	Bordeaux/Hamburg, Scandinavia & Baltic Sea
27	Pacific	Australasia
28	Pacific	Straits Settlements, Netherlands East Indies, India, Persian Gulf & Red Sea
29	California	Far East
30	Washington/Oregon	Far East
31	Gulf	West Coast South America

* Caribbean trade route not shown due to limited space.

Figure 1–4.—Essential United States foreign trade routes.

207778 O - 52 (Face p. 8)

Radiogram for delivery by airmail	PAV
Very urgent message (shipboard)	X X X
Safety of navigation message	T T T
Medical assistance radiotelegram	DH MEDICO
Distress communication	SOS
Prepaid reply	RP
Press message	PRESSE
Paid relay radiotelegram	RM
Free relay radiotelegram	QSP
Franked radiotelegram (free radio and landline forwarding)	DH
Franked radiotelegram (other lines paid)	PDH
Sea letter telegram	SLT
Service message	SVC or A
Gift service radiotelegram	GFT
Paid service radiotelegram	ST

Medical Assistance

During peacetime, few merchant vessels engaged in cargo trade carry doctors. When an accident happens aboard ship or a man falls seriously ill, medical assistance may be received by radio. This medical assistance is furnished free of charge by the United States Public Health Service, which can be contacted by any shore station of any radio service company.

The 1931 *International Code of Signals* has a medical section which includes signals that describe a patient's symptoms or injuries. The master gathers complete information regarding the patient and has the radio officer transmit this information to a shore station, the message being prefixed by DH MEDICO.

Each vessel flying the American flag carries a standard medical chest, the contents of which are known to public health officers. Should the Public Health Service decide that the patient can be treated on board, medical advice is given by radio. If the injuries are grave, the patient probably will be taken off by a Coast Guard plane and flown to a marine hospital.

Most passenger liners carry physicians who will furnish medical advice if requested.

PLAIN LANGUAGE

The merchant service interpretation of "plain language" does not necessarily mean English. Messages may be considered plain language transmissions if they are sent in any widely spoken tongue, Latin, or Esperanto. The word count for languages is based on 15 letters to the word. From 16 to 30 letters, the count is two words; over 30, three words; etc. Code groups are counted as five characters to the word.

CHAPTER 2

NAVAL CONTROL OF SHIPPING

Merchant ship communications are inextricably tied to naval shipping control. The convoying, routing, reporting, and diversion of merchant ships all require the services of communication personnel, both ashore and afloat. It is important to the NCLO to understand our shipping control system, and the relationship of the Navy to the merchant marine.

Closely allied with control of shipping is protection of shipping. If ordered by the President, the Navy arms civilian-manned merchant ships and places United States armed guard units aboard, a procedure followed in both world wars. But neither this nor sending ships independently or in convoy over secret routes affords complete protection from enemy activities in the air, on the surface, or underseas. Therefore, escort carriers, patrol planes, blimps, escort ships, hunter-killer groups, and other units are also employed in the protection of shipping.

The smooth coordination of all the elements engaged in the control and protection of shipping depends in large measure upon the work of communication personnel. Coordination is made difficult by the fact that wartime merchant communication procedures differ from Navy procedures. Because the Navy administers its control organization and its protection organization separately, the naval communicator in either organization must supplement his knowledge of standard Navy procedures with merchant ship procedures.

Figure 2–1.—Navy armed guard unit on merchant vessel.

SHIPPING CONTROL, WORLD WAR II

Convoy and routing headquarters organizations. On 18 November 1941, only 19 days before Pearl Harbor, a convoy and routing section, which later became a division, was established in the office of the Chief of Naval Operations. In May 1942, Admiral Ernest J. King transferred the C&R division from the headquarters of CNO to the headquarters of COMINCH. A year later, May 1943, the TENTH Fleet was established "to exercise unity of control over United States anti-submarine operations in that part of the Atlantic Ocean under United States strategic control." On 29 June 1943 Convoy and Routing was incorporated into the staff organization of the TENTH Fleet without change in its world-wide responsibilities for routing, diverting, and reporting of shipping. From this time until VE Day, when C&R became a part of COMINCH operations, it was designated TENTH Fleet (convoy and routing), hereinafter called C&R headquarters.

By the time the United States entered World War II, the British had been operating convoys and maintaining a routing, reporting, and di-

verting service for two years under conditions of modern warfare. Taking advantage of this experience, our Navy held conferences on the subject with the British Admiralty. The outcome was the "Report of the Combined British-United States Staff Conferences" which divided the world into two zones for the control of merchant shipping. United States control embraced the Atlantic Ocean west of approximately 26° west and the entire Pacific Ocean to 100° east. The British naval control service was to continue to function in the United States' area until we were ready to assume full responsibility.

On 1 July 1942 the United States Navy took over the routing, reporting, and diversion of shipping in United States strategic areas except in the North Atlantic. C&R headquarters was charged with the performance of these duties.

Convoy and routing field personnel. The masters of merchant ships sailing in convoy thought of the C&R organization in terms of the people with whom they had to deal; they had no direct contact with C&R headquarters. While at sea they took orders from the convoy commodore, who was the naval or merchant marine officer designated by the port director to command the convoy. At sea the convoy commander, in turn, was subject to the orders of the naval escort force commander, from whom the masters sometimes received such curt direct orders as "stop making smoke!" or "douse that light!"

While the master had the final responsibility for the maintenance of equipment and conduct of communications aboard his ship, the Navy sometimes placed aboard an officer trained in convoy and independent ship procedures. This officer, a naval communication liaison officer (NCLO), was responsible to the master for supervising the conduct of visual and radio communications, but he was under the *command* of the armed guard commander, if one were aboard. The armed guard commander functioned as NCLO on ships carrying armed guard units, if no NCLO were assigned, although the AGC's primary duty remained the defense of the ship.

While in port a master received sailing orders from the local routing authority. If he was in the British zone he went to a naval control service office (NCSO). In British ports the United States Navy stationed routing liaison officers, who helped masters of United States flag merchant ships with routing and security matters, but they did not relieve the British of command over United States flag merchant ships. The British stationed their own routing liaison officers for similar duties with their ships in our principal ports.

In an important port under United States control, the master went to the United States Navy port director office, as did masters of other allied ships. His principal contacts in this office were the port director; the routing and reporting officer, usually called the convoy and routing officer; and the communication officer. Here he and his radio operator, along with the armed guard commander and the NCLO, attended a convoy conference and a convoy communication conference. In the convoy conference he received, either orally or in writing, necessary convoy instructions. Usually included with the convoy conference, but sometimes held separately, was the convoy communication conference, presided over by the communication officer of the port director office who, like NCLO, was well versed in convoy and independent ship procedures. At this conference the communication plan was discussed and all communication difficulties were ironed out.

When a master landed in a seldom-frequented port or a Russian port he found that civilians, too, were a part of our merchant ship control service. Arrangements were made with the State Department for about 40 American consuls in United States areas of responsibility to assume additional duties under the Navy Department of reporting movements in smaller ports where the volume of shipping was too limited to warrant the assignment of naval per-

sonnel. In certain South American and Russian ports where it was impossible to arrange for United States naval representation, consular shipping advisors were assigned as assistants to the consuls for reporting purposes.

Convoys vs. *Independents.* Throughout the war certain classes of ships were regularly sailed independently even though convoys were available. In general, these were ships incapable of a sustained speed of 8 knots which made them too slow for regularly scheduled convoys, and ships whose speeds in excess of 14.5 knots made their independent routing a justifiable risk. Due to the need for utilizing every available escort on convoy routes where enemy opposition was greatest, ships of all speeds were sailed independently across the south Atlantic and in most Pacific Ocean areas during most of the war.

At various times during the war, tankers and dry cargo ships of 11 knots and over were sailed independently in certain areas. Advantage was thus taken of "lulls" in enemy submarine activity to expedite shipping. Decisions as to whether ships were to be included in convoys or sailed independently were made by C&R headquarters and transmitted to port directors for action.

The MERCO Reporting System. The need for a system for reporting the movements of merchant shipping was recognized prior to our entry into the war. It also was evident that such a system, no matter how well integrated, would impose a heavy load of a highly specialized nature on our communication facilities.

Once again the United States Navy turned to the British for the "know how." Since the outbreak of the war in Europe, the British Navy had been using a modification of the world-wide reporting system used by Lloyds. This system of reporting merchant ship movements was called the Vessels and Cargo (VESCA) System. It was operated by routing officers and reporting officers in all ports of the world except those under Axis control.

Although the United States was not as yet at war, early in 1941 United States naval attaches, naval observers and American consuls were ordered to report merchant ship movements. These reports consisted of daily shipping summaries, which included arrivals, departures, and destinations of all merchant ships.

After our entry into the war, the need for more complete information on merchant ship movements resulted in the adoption in October 1942 of a new system of reporting called the MERCO system, which was based on the VESCA system. The outstanding advantage of the MERCO over the VESCA system was that the originator filed only one dispatch for all addressees, instead of one for each addressee as under the VESCA system. This was much more economical in cable tolls and, more important, substantially reduced the load on already overburdened Navy communication facilities.

The MERCO reporting center receiving a MERCO dispatch passed it without decrypting to the appropriate MERCO office, from where it was distributed to all addressees. No reporting centers were established in the continental United States; originators of MERCO messages in United States ports sent their dispatches direct to the nearest MERCO office, and this office made distribution direct to addressees. Dispatches originating in the Navy Department addressed to all port directors and routing and reporting officers were sent to reporting centers which made distribution to these officers in their areas.

Originally, the MERCO system was placed in effect in North America, Central America, South America, Hawaiian Islands, Alaska, and the Caribbean area. As the war in the Pacific progressed, shipping in the area west and south of the Hawaiian Islands came into greater prominence. On 26 July 1943 a proposal was submitted by C&R headquarters to CINCPac, Australian, and New Zealand authorities suggesting that the entire Pacific area be brought into the MERCO system. This was agreed to by all commands concerned, and by 7 January 1944 the system was in full effect throughout the Pacific.

Minor modifications of the MERCO system were required from time to time in both the Atlantic and Pacific to meet new demands and changing conditions. As originally established in the Pacific, the MERCO system was used solely for reporting the movements and routes of independent shipping. The system was later expanded to include convoy movements. During the winter of 1944–45 the MERCO system in the Pacific was again expanded to include the movements of naval vessels, both combatant and auxiliary.

The BAMS system. Radio traffic with merchant ships at sea was handled throughout the war under the Broadcast to Allied Merchant Ships (BAMS) system. Under the BAMS system, the world was divided into three major zones, each covered by a powerful radio station. In addition to these zone stations, area stations were established to cover areas which were subdivisions of the three zones. Besides these major stations, numerous coastal stations, operating on intermediate frequencies, were utilized within each area to obtain even better coverage.

Masters were instructed to listen to all BAMS broadcasts for the particular area in which they were sailing. Messages were not receipted for, except upon request of the sender, so that the enemy was unable to locate with direction finders individual ships or convoys.

Convoy and routing in the Atlantic. As the convoy system was extended into a network covering most of the Atlantic Ocean included in the United States control zone, an increasingly important function of C&R headquarters was the scheduling of convoys and the establishment of sailing intervals. The efficient timing of convoy arrivals and departures prevented loss of ships' time in port and prevented undue congestion of harbors.

In the early months of 1942, prior to the institution of convoys, enemy submarines made determined attacks on shipping off the Atlantic coast. Two hundred and five merchant ships were sunk before coastal convoys were established in May. When these convoys commenced operating, enemy submarine activity moved southward, where an additional 120 ships were sunk in southern coastal and Caribbean waters by July. Convoy routes were extended to the South American coast by September 1942. After this, merchant ship losses due to enemy action never again reached critical proportions. From the time of our entrance into the war until VE day, 8680 convoys, averaging 11 ships per convoy, were sailed in the Atlantic.

Convoy and routing in the Pacific. C&R headquarter's duties in connection with convoys in the Pacific were of a minor nature and diminished in importance as the war progressed. In 1942, however, headquarters furnished the complete routing for trans-Pacific convoys originating on the east coast. It also furnished routes for large unescorted troop transports departing from the east coast and proceeding via the Panama Canal. Convoys sailing from the west coast were routed by Commander, Western Sea Frontier, and convoys from Pearl Harbor westward were routed by Commander, Hawaiian Sea Frontier. By means of abbreviated sailing and arrival messages, C&R headquarters was informed of the convoy destination, composition, route, time of sailing, estimated time of arrival, and actual time of arrival of all convoys in the Pacific. From these dispatches C&R headquarters plotted and recorded the daily position of principal convoys.

During the summer of 1943 convoys sailed

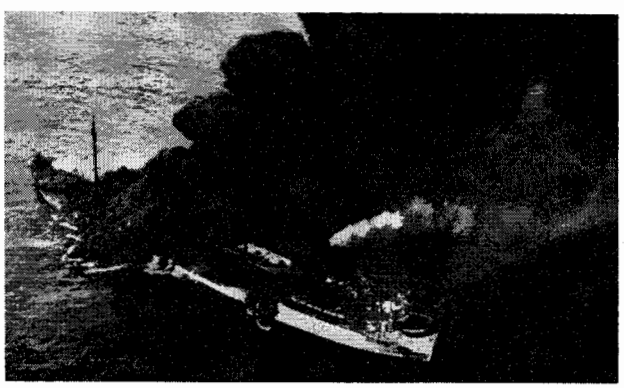


Figure 2–2.—Losses of merchant tonnage were heavy in the early days of World War II.

between San Francisco and Pearl Harbor, averaging one every seven or eight days. Voyage time was nine to ten days and convoy size four to five ships. Task Group 56 furnished the escorts. By February 1945, convoying in the Pacific had developed to the extent that 226 convoys sailed that month. As of July 1944 there were 18 convoy commodores on duty in the Pacific.

Merchant ship convoys were discontinued in the Atlantic on 2 June 1945 and in the Pacific on 1 October 1945. After these dates all merchant ships were sailed independently.

POSTWAR CONTROL OF SHIPPING ORGANIZATION

The heavy losses we suffered in merchant tonnage before our convoy system was operative proved the necessity of having in peacetime a nuclear organization for naval control of shipping capable of rapid expansion in time of war. Accordingly, when the COMINCH office was disestablished on 10 October 1945, C&R headquarters was retained and transferred to the operations division of the office of CNO. It was transferred in February 1946 to the Naval Transportation Service, the OpNav office having technical control of port director offices. Since that time it has remained under the cognizance of CNO and was assigned in 1948 to its present place under the Assistant Chief of Naval Operations (Undersea Warfare), who reports to CNO through the Deputy Chief of Naval Operations (Operations).

After the unification of the three military departments under the Department of Defense, the Navy's responsibilities for anti-submarine warfare, protection of shipping, control of vital sea areas, and the protection of vital sea lines of communications were reaffirmed in a directive approved by the President and promulgated by the Secretary of Defense and the Secretary of the Navy entitled "Functions of the Armed Forces and the Joint Chiefs of Staff."

The first important step taken by C&R headquarters after the war was to rewrite previous doctrine in the light of World War II experience. Command relationships were clarified, and convoy and routing administration was simplified. The resulting publication was named *Routing and Reporting Instructions* (RARI–1948).

After further review of World War II experience, C&R headquarters felt that the ideal situation, from an administrative point of view, was one wherein the commanders in chief of both the Atlantic and Pacific fleets would be the principal routing authorities. It was felt that the C&R headquarters, renamed the Shipping Control Center, should exercise only indirect control and be prepared to take over control, if for any reason this should become necessary. The Chief of Naval Operations accepted this viewpoint and on 10 July 1948 issued a directive delegating shipping control command responsibilities to the fleet commanders stating:

> Major ship routing and convoy movements shall be directed by the Commander in Chief, United States Atlantic Fleet, and the Commander in Chief, United States Pacific Fleet, using properly equipped centers with all necessary communications and intelligence facilities. Unified and Area Commanders are considered to have local responsibility for added protection needed for convoys in their areas, and the necessary authority to handle local routing and diversions demanded by the current situation.

The unification of the armed forces did have some effect upon convoy and routing. When the Secretary of Defense directed that all military sea transports be operated by the Navy, the Naval Transportation Service was disestablished and the Military Sea Transportation Service (MSTS) was established on 1 October 1949. The port director offices, as such, did not meet the needs of MSTS; consequently, the major ones were disestablished and replaced by deputy commanders, MSTS, for particular areas. This left the problem of convoy and routing field offices in the air; the few remaining port director offices were not adequate to meet the requirements of a nuclear organization.

Postwar Reporting of Merchant Ship Movements. With the occupation of the Japanese Empire, a MERCO office was established at Tokyo. Through agreements with the British Admiralty, copies of *Lloyds Index* and *Shipping Gazette,* indicating movements in European and Middle East ports, were furnished to the Navy Department in exchange for daily shipping summaries from MERCO Pearl and MERCO San Francisco. In addition, trans-Atlantic departure reports from westbound shipping were received daily by the Navy Department from Commander, Naval Forces, Europe.

When the MERCO system was discontinued on 1 June 1946, it was replaced by the Movement Report System (MEREP), which is currently being used. MEREP is basically the same as MERCO. The main differences are that the system now has a center in Washington—the Movement Report Center Washington, which is a section of the office of the Deputy Chief of Naval Operations (Operations); former MERCO offices and reporting centers are now called Movement Report Offices (MRO) and Movement Report Centers (MRC); and the system now embraces the movement of all flag officers as well as all naval and merchant vessels.

Movement Report Centers are located in five zones to provide world-wide coverage. Zones 1, 2, 3, and 5 have headquarters at Norfolk, San Francisco, Pearl Harbor, and Ottawa, respectively; zone 4 at present does not have a center. Within each zone, one or more Movement Report Offices are established as required. Command and administration of zones and their component offices are integrated under the direction of the appropriate local authority.

The framework of a reporting system has been maintained since the war. Originally, only port directors were required to submit periodic merchant ship movement summaries giving arrivals, departures, and destinations of all ships over 1000 gross tons. When the number of port director offices was reduced, the system was expanded to obtain more complete coverage by appointing reporting officers and temporary naval control of shipping officers whose duties are covered later in this chapter. Too, arrangements were made with the State Department whereby consular officials would collect and forward this information.

Under this peacetime arrangement merchant ship movement information is drafted into the form of daily Restricted, summary messages identified by the word MEREP and addressed to various U. S. naval movement report offices. Through these offices the MEREP messages are distributed to CNO, CINCLANTFLT, CINCPACFLT, CINCNELM, British Admiralty, CANNAVHED, Ottawa, certain subordinate commanders, and the United States Coast Guard. Thus in the event of hostilities or a national emergency requiring such action, the Chief of Naval Operations and the fleet commanders in chief have continually and immediately available to them the information required for their control of the movements of merchant shipping.

Through agreements reached with various shipping and commercial radio companies, arrangements were made which are still in use whereby certain United States flag merchant ships and commercial radio companies make daily weather and position reports to appropriate United States Coast Guard headquarters or United States naval movement report centers or offices. These reports are relayed through the movement report system to the naval and Coast Guard commanders listed above.

The World War II Broadcast to Allied Merchant Ships (BAMS) System was officially replaced after the war by the Merchant Ship Broadcast (MERCAST) System. Under the MERCAST system, the Navy maintains communications with merchant ships through the broadcast method via six primary and one secondary United States Navy shore radio stations. The MERCAST system is explained in chapter 8, and more fully described in *Merchant Ship Communications Facilities and Emergency Procedures* (JANAP 145).

CURRENT SHIPPING CONTROL ORGANIZATION

The Korean War which broke out in June 1950 intensified the need for a shipping control organization having field offices enough to cover United States' areas of operations. It was decided to set up a new system along lines corresponding to the British and Canadian organizations. The result was the United States Naval Control of Shipping Organization (NCSORG), which was established 19 July 1950. The mission of NCSORG is to provide for the safety of movements of merchant vessels in time of war and national emergency.

Under NCSORG, responsibility for the world-wide control and protection of our merchant shipping in wartime originates in the office of the Chief of Naval Operations. The headquarters remains much as it was before. Too, the operational control and protection of shipping remain as delegated by the July 1948 directive —a responsibility of the Commander in Chief, Atlantic Fleet (CINCLANTFLT) and the Commander in Chief, Pacific Fleet (CINCPACFLT), who delegate some of their operational control functions to overseas area commanders and sea frontier commanders. These commanders are known as *operational control authorities.*

Within the naval establishment the chain of military command is as follows:

1. CNO

2. CINCLANTFLT (an operational control authority).
3. The following area and sea frontier commanders who are also operational control authorities:
   - Commander in Chief, Atlantic Fleet (OCA ex officio).
   - Commander in Chief, Eastern Atlantic and Mediterranean.
   - Canadian Flag Officer, Atlantic Coast.
   - Commander, Eastern Sea Frontier.
   - Commander, Caribbean Sea Frontier.
   - Commander, South Atlantic Area.
   - (if and when designated).

2. CINCPACFLT (an operational control authority).
3. The following area and sea frontier commanders who are also operational control authorities:
   - Commander in Chief Pacific Fleet (OCA ex officio).
   - Commander, Alaskan Sea Frontier.
   - Canadian Flag Officer, Pacific Coast.
   - Commander, Western Sea Frontier.
   - Commander, Hawaiian Sea Frontier.
   - Commander, Panama Sector, Carribean Sea Frontier.
   - Commander, Naval Forces, Far East.
   - Commander, Naval Forces, Marianas.
   - Commander, Naval Forces, Philippines.

4. In-port Shipping Control Officers.

The in-port phases of shipping control are administered by naval control of shipping officers (NCSO's), temporary naval control of shipping officers (also NCSO's), reporting officers (REPTOF's), consular shipping advisers (CONSA's), and naval control of shipping liaison officers (NCSLO's). Their official titles in the NCSORG are determined by their geographical locations, *e. g.,* NCSO, San Francisco, or REPTOF, Corinto. These officers are assigned ports and bases and are responsible to the OCA through the normal chains of command.

In the following paragraphs the duties of each of the components of the NCSORG are discussed, beginning with the Chief of Naval Operations and working down the chain of command.

Shipping control duties of CNO. The Shipping Control Branch of the Office of CNO has been assigned to—

1. Correlate and direct the functions of control and protection of shipping with those of civil and military shipping agencies on a national and international level.

2. Establish and maintain policies affecting coordination of fleet efforts with those of other organizations within the national military establishment and with other interested national and international organizations.

3. Provide to interested national and international agencies information regarding merchant ship movements; and to advise them how their merchant tonnage can be most effectively employed.

4. Direct the establishment and maintenance of systems for the following:

(1) Sailing and routing of merchant ships singly and in convoy.
(2) Reporting and diverting convoys and ships sailed independently.

5. Direct the establishment and maintenance of an international liaison system, on an operational level; correlate and coordinate combined effort in sailing, routing, and reporting of merchant shipping.

6. Establish and maintain a system of prescribed routes throughout the oceans of the world.

7. Maintain a world-wide system of plotting of convoy and independent merchant ship movements; and physical, military, hydrographic, and meteorological impedimenta that might imperil merchant ships.

8. Provide for the scientific analysis of operational information and data pertaining to naval control of shipping.

9. Maintain a system for the preservation of reports and documents as may be required in the compilation of historical reviews on shipping control matters.

10. Direct the preparation and distribution of publications relating to naval control of shipping.

CINCPACFLT and CINCLANTFLT shipping control responsibilities. By authority of the Chief of Naval Operations, CINCLANTFLT and CINCPACFLT are required to perform the following functions in the Atlantic and Pacific respectively:

1. Direct the exercise of the control of merchant shipping throughout their respective areas in the United States zones of responsibility.

2. Formulate policy and issue instructions regarding the general control of convoys and independent ships, including routing instructions.

3. Designate naval commanders responsible for the control and routing of shipping in their respective commands (operational control authorities).

4. Establish between their commands and allied commanders coordinated convoy schedules for convoys proceeding outside their areas.

5. Form task organizations for certain specific convoys.

6. Divert shipping in time of emergency.

7. Establish policies as to the nature of the surface and air escort to be provided, and implement those policies.

Responsibilities of OCA's. Fleet commanders in chief are operational control authorities as well as the overseas area commanders and sea frontier commanders to whom they have delegated some of their *operational control functions.* All operational control authorities are required within their areas to—

1. Maintain adequate systems of communication, intelligence, and plotting to insure swift and secure dissemination of antisubmarine information to ASW forces and NCSO's in their areas.

2. Integrate local convoy schedules with transoceanic convoys.

3. Assign ships to convoys and designate ships to sail independently.

4. Divert shipping which they control.

5. Provide surface and air escort for shipping which they control; provide additional surface and air escorts as required for ocean and coastal convoys sailing to or from ports in their respective areas.

6. Designate routes for local convoys and independents sailing between ports within their respective areas or to and from a port in a contiguous area as designated.

7. Coordinate the control of shipping with authorities in contiguous areas of control.

8. Exercise operational control over the NCSORG activities at ports and bases within their areas.

Responsibilities of the NCSO. NCSO's are the principal administrators of the in-port phase of shipping control. They control and coordinate the routing and movements of convoys and independents, subject to the directives of the operational control authorities. In some parts of the world, NCSO staffs may consist of officers of mixed nationalities, in which case the NCSO at a port will usually be a native of the country in which the port lies. At ports

where United States naval port control offices are established, NCSO personnel are under command of the officer in charge of the naval port control office. An NCSO is required to:

1. Organize and route ocean and coastal convoys.
2. Route independents.
3. Route warships and task forces when so directed.
4. Report arrivals and sailings of convoys and independents; report all overdue shipping under his cognizance.
5. Instruct and brief convoy commodores, their staffs, and masters of independents; assist and advise the masters of merchant ships.
6. Maintain, as required, shipping plots and records showing the locations of merchant ships and escorts at his port; maintain complete records of ships due and overdue.
7. Issue Secret logs and instruct masters in their use; review Secret logs turned in by masters and retain logs for final disposition as directed by CNO.
8. Obtain radio and visual logs from masters at final port of destination and dispose of them in accordance with instructions issued by CNO.
9. Arrange for the issue of charts, hydrographic bulletins, forms, and publications; stock and issue other publications as required by current instructions.
10. Prepare and furnish information on current and prospective movements of merchant ships under naval control to all authorized commands, offices, and agencies.
11. Prepare and transmit MEREPS in accordance with current directives.
12. Act on communications relating to naval control of shipping.
13. Arrange for the preparation of convoy communication plans; hold convoy communication conferences; instruct NCLO's, masters, and radio operators in the latest communication procedures and use of cryptographic systems held; insure that the convoy and communication equipment of ships are adequate and in good order.
14. Receive, transmit, and deliver messages between civilian merchant ship operators, their agents, masters, the National Shipping Authority, and other government agencies and their local representatives.
15. Maintain official message files related to naval control of shipping.
16. Maintain the "Q" message file ("Q" messages contain hydrographic information) and distribute the information in such messages in accordance with existing instructions.
17. Issue call signs and recognition signal extracts to convoys and independents.
18. Maintain liaison with local transportation agencies, governmental and commercial, on matters affecting naval control of shipping.
19. Insure, in consultation with masters, that ships due to sail have sufficient bunkers, provisions, and water for the voyage and for possible diversions en route.
20. Maintain close contact with NCSO's and REPTOF's in his vicinity.
21. Report and interview, in the absence of representatives of the Office of Naval Intelligence, survivors of lost merchant ships.

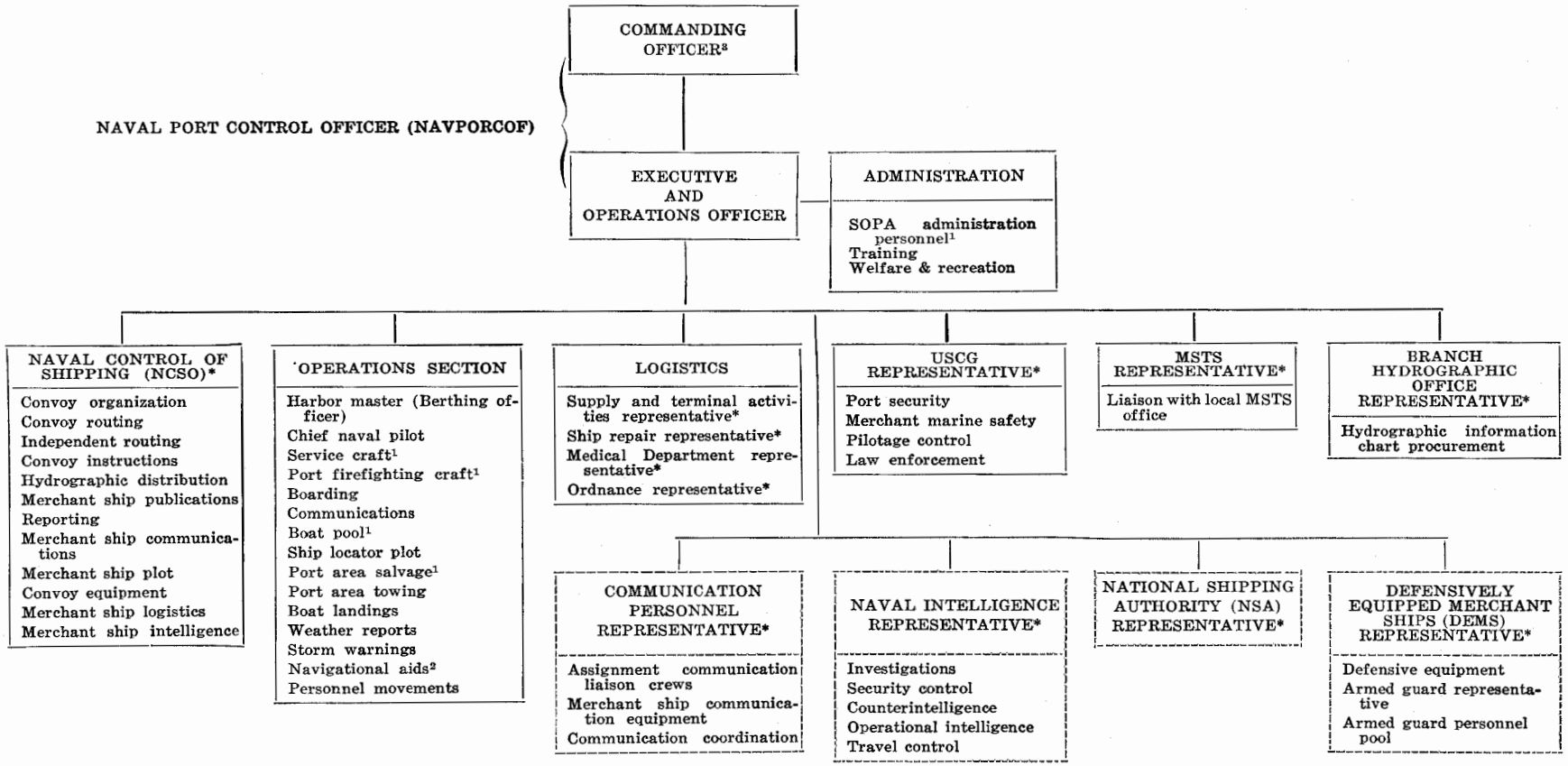
Responsibilities of the temporary NCSO. The temporary naval control of shipping officer is the answer to the problem of forming an effective nuclear peacetime port organization on which to build in time of emergency.

The temporary NCSO is designated by an OCA, and is charged with planning such a nuclear establishment at a designated port. His plans must include a complete set of current orders, directives, and technical publications, and an up to date analysis of the additional personnel, material, and facilities required to implement them. The purpose of these plans is to provide, as necessary, for the efficient expansion of facilities to a wartime basis.

The temporary NCSO also prepares and transmits MEREPS.

Responsibilities of the reporting officer. Another link in the Naval Control of Shipping Organization is the reporting officer (REPTOF), who is assigned to a minor port visited by so few ships that masters are usually

STANDARD ORGANIZATION
U. S. NAVAL PORT CONTROL OFFICE



.... Assigned in wartime only.
* Under parent organization for administrative and technical control.
[1] When directed by higher authority.
[2] USCG wartime responsibility.
[3] May also be CO NAVSTA or COMFLTACT.

Figure 2–3.—Standard organization of a United States naval port control office.

RESTRICTED
Security Information

furnished with return routes in advance. The reporting officer may be an officer of the armed services, a consular official in a foreign country, or a United States citizen abroad. In addition to his non-shipping control duties, he reports the movements of merchant vessels to the operational control authority in whose area he may be located. Except in the case of a consular authority, whose appointment is made through arrangements with the State Department, the Chief of Naval Operations makes peacetime and wartime assignments of reporting officers as recommended by the fleet commanders in chief.

On occasion it may be necessary for the reporting officer to route merchant ships and

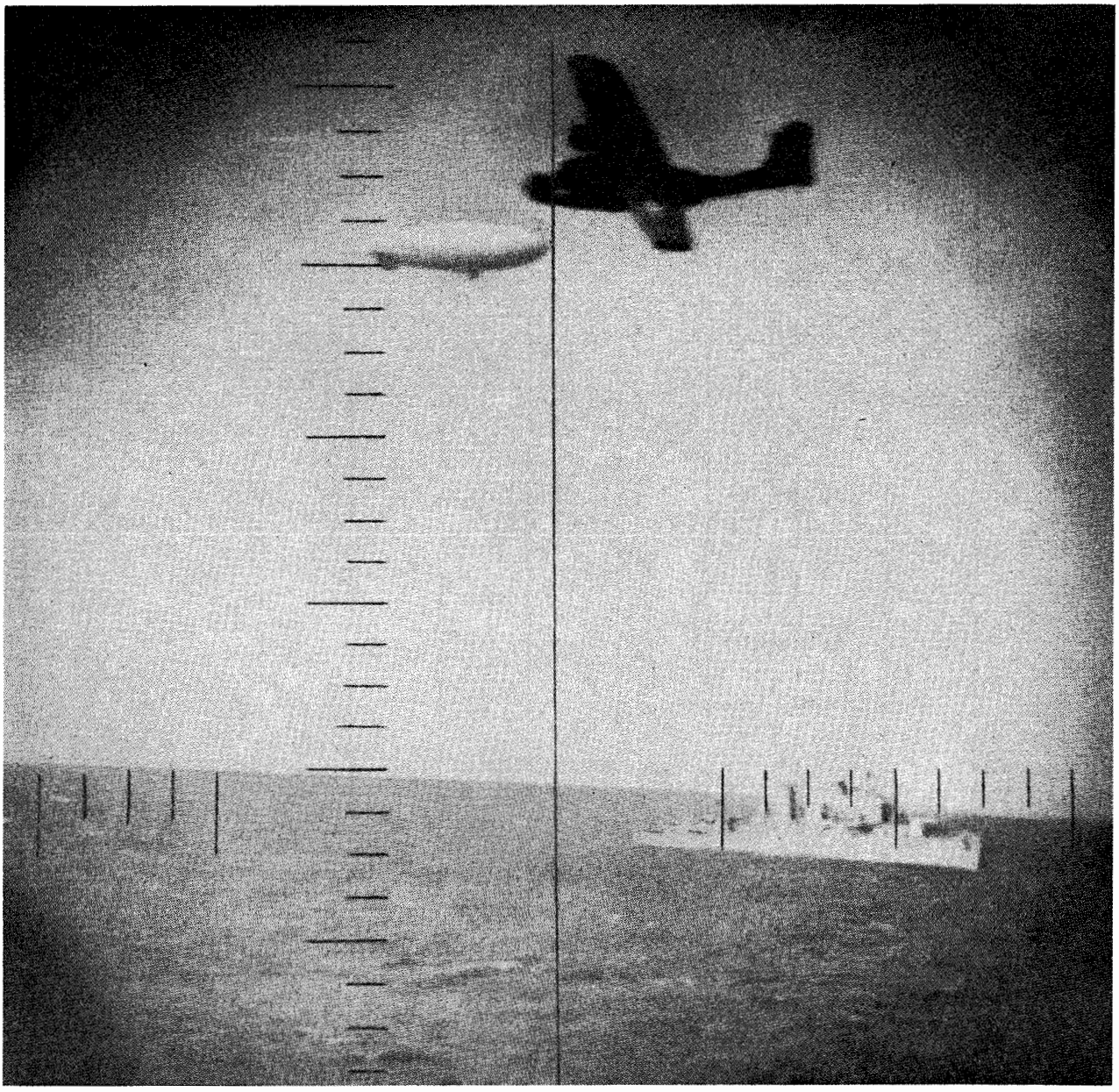


Figure 2–4.—Air and surface escort.

to perform other duties of the NCSO.

Consular shipping advisor. A CONSA is a naval officer appointed to the staff of a consular authority in a neutral country for naval control of shipping duties. He wears civilian clothes and does not use his naval rank. The duties of a CONSA are, in general, the same as those of a NCSO.

Naval control of shipping liaison officer. The NCSLO is a naval officer assigned to the staff of a foreign NCSO at a port of allied responsibility. His duty is to represent United States naval interests in matters concerning the operational control of United States flag or United States controlled merchant shipping.

U. S. NAVAL PORT CONTROL OFFICES

United States naval port control offices are important cogs in shipping control, although such an office as a whole is not under NCSORG.

A United States naval port control office, or NAVPORCO, is the entire in-port organization. It is similar in many ways to the port director office of World War II. Part of its mission is to provide for the coordinated control of shipping for which the Navy is responsible, but it also arranges for logistic support and harbor services for both merchant and combatant ships.

The senior officer directing the operations of the U. S. naval port control office is the naval port control officer (NAVPORCOF). He is senior to all officers heading elements grouped in the NAVPORCO, and all are under his military command, though not necessarily his administrative and technical control; the NCSO, for example, is responsible to NCSORG in these matters, and the MSTS representative answers to the Military Sea Transportation Service.

Figure 2–3 shows the organization and activities of a naval port control office.

SHIPPING CONTROL OPERATIONAL INSTRUCTIONS

Because the basic United States publication, *Routing and Reporting Instructions* (RARI–1948), was written as a unilateral directive, recent diplomatic commitments have made it obsolete. This is likewise true of the British publication on the control of shipping, *Naval Control of Shipping in War* (NCSW). Consequently these two publications have been superseded by a single publication for combined (allied) use. The new publication bears the title *Allied Naval Control of Shipping Manual* (ATP–2), and coordinates United States, United Kingdom, and Canadian shipping control organizations and operational procedures.

Two other operational instructions of value are OPNAV INSTRUCTION 3123.2, which contains detailed instructions for the preparation of merchant ship movement reports, and JANAP 145, which contains doctrine on merchant ship communication facilities and emergency procedures.

EMERGENCY SHIPPING CONTROL MEASURES

Should it become necessary to guard the information concerning United States merchant shipping during a period of strained relations with a foreign power, MEREP messages will be sent in classified systems. The Chief of Naval Operations determines when such procedure is necessary.

With respect to controlling and protecting United States flag merchant ships and ships owned or chartered by the United States or United States citizens at the outbreak of hostilities, CNO has established the following policies: (1) to protect such shipping by removing it from the high seas into United States or friendly ports with the least delay, and (2) to provide necessary shipping to appropriate naval commanders for implementation of their evacuation and other emergency plans.

Should M-day and D-day occur simultaneously, CNO will broadcast in the clear, by all available communication systems, an emergency message addressed to all United States merchant ships. The message will direct the masters of these ships to: (1) proceed in accordance with specific, included instructions, if in certain declared danger areas; or continue voyages to the nearest United States or friendly ports along the projected route and there to

await instructions, if not in the danger areas or if outbound from the United States for destinations outside the dangerous sea areas; and (2) place in effect certain indicated wartime procedures affecting the safety of their ships.

Subsequent to this message, supplementary instructions will be issued by the appropriate naval commanders to the United States merchant ships in their areas either by radio or directly through local naval or consular agencies.

With respect to the issuing of emergency and other instructions to United States merchant ships, due consideration has been taken into account that such ships do not have on board the merchant ship cryptographic systems, which are issued by appropriate RPIO's only after mobilization for war has commenced or at the commencement of hostilities.

CHAPTER 3

OPERATIONS SECTION OF THE NAVPORCO

As a communication liaison officer, you will find the operations section of the NAVPORCO among the most important of the shore activities serving the forces afloat. Your communication colleagues ashore are a part of the operations section, and operations handles a considerable amount of business relating to merchant ships. Much of the following information will not concern communications *per se.* It is included so that, should you have occasion to do business ashore, you will know where to go.

The operations section is responsible for coordinating the work of the NAVPORCO. In the military service, coordination is a function of command. This means, in simple terms, that some responsible person must give the orders that insure teamwork among the component parts of an organization. The operations officer is that responsible person. His duties are particularly important to the naval port control office, which must serve such varied groups as the merchant marine, the operating forces, and MSTS.

To illustrate the importance of coordination, let us see what can happen in a hypothetical NAVPORCO when coordination is lacking.

The SS *Shannon Victory* requests assignment to berth for fueling. This is a 6-hour operation. The operations watch officer makes the necessary arrangements by telephone but forgets to notify the other NAVPORCO activities. The fueling completed, *Shannon Victory* is moved downstream to anchorage. A few minutes after the pilot reports her anchored, the operations watch officer receives a call from the ordnance representative. He wants a boat so that spare parts for a 3-inch gun can be sent out. Later, come other calls: the NCSO wants the master to report in for additional instructions; and the medical department representative wants to visit a fracture case who cannot be brought ashore. Eventually, three boats make special trips to the vessel.

The operations watch officer is largely responsible for the confusion. Had he notified everyone of *Shannon Victory's* pier number, and the number of hours and the time of day she would be alongside, he could have saved a number of people, including himself, a lot of bother. Each activity having business with *Shannon Victory* would then have been responsible for getting it transacted within the specified hours and for notifying the operations watch officer that it was completed. Before ordering the vessel moved, the operations watch officer could check with anyone not reporting.

Acting in charge of the operations section is the operations watch officer. He holds a position comparable to that of the officer of the deck aboard ship. For the duration of his watch, most of the other officers are subordinate to him, regardless of rank. Exceptions include the NAVPORCOF, the operations officer, and other officers appointed by the NAVPORCOF under the provisions of article 1009, *Navy Regulations, 1948.* Division officers keep the operations watch officer informed as to the progress of work in their divisions insofar as it affects the servicing and movement of ships. They advise the operations watch officer in specific detail of any occurrence which they feel should be entered in the NAVPORCOF's log.

Watches Maintained

The operations office maintains a continuous watch of 24 hours, usually divided into three 8-hour watches. In very large naval port control offices, and in others where the traffic is

exceedingly heavy (such as in a small port assembling a convoy of considerable size), the operations watch officer is assisted by one or more junior officers-of-the-watch. However, the average port will require only one operations watch officer and a few enlisted men—one or more Yeomen, telephone or teletype operators, and a messenger or two.

The duties of the operations watch officer require that he be familiar with all the outstanding directives and orders of the NAVPORCOF, know the functions of the operations section in detail, know and understand the functions of the other elements in the NAVPORCO, and generally exhibit the qualities of a leader.

Logs Maintained

The operations section is required to maintain a number of records to indicate the nature and progress of its business. Among the most important of these is the NAVPORCOF's log.

The NAVPORCOF's log is a complete daily record of the activities of the naval port control office, by watches, and it describes every event of importance that occurs in the operation of the office. The same regulations apply to this log as to any other in the Navy. It is kept by the operations watch officer, in ink, without erasures. Each morning the operations officer reads the log, signs it, and submits it to the NAVPORCOF for approval.

Only important entries are made in the log. In general, these include such things as the logging in and out of personnel officially attached or detached; the arrival and departure of ships and convoys; air raids and other enemy action, with statements of the approximate damage; deaths or injuries resulting to personnel attached to the office; punishments inflicted by special and summary courts martial, and captain's masts; official reprimands of officers, with dates suspended from duty and dates restored; changes in the weather which affect the movement, loading, or unloading of ships; and other facts as directed.

The following are typical entries in a NAVPORCOF's log:

0730. Convoy OKU-41 consisting of the following ships SS Flying Cloud, SS N.B. Palmer, USS Faribault, and SS Inchcliff Castle, departed for Ulithi. Escorts Henderson, Brownson, Thayer, Richley, and Patterson. CTU 99.1.7 Captain H. E. Stevenson USN escort commander in USS Brownson (DD 868); CDR. J. Paul Phillips USNR convoy commodore in SS Flying Cloud; CDR. W. P. Murphy USCGR vice commodore in USS Faribault (AK 179). Standard speed 10 knots. Last ship cleared gate vessel at 0802.

0910. Task group 52.2 RADM G. C. Holladay USN, TG commander in USS Albany (CA 123) with USS Philippine Sea (CV 47) USS Macon (CA 132) and USS Cony (DDE 508) arrived.

1002. Air raid. Total of 16 enemy planes bombed harbor, 8 fighter-bombers and 8 dive bombers. SS Empress Augusta hit aft by 250-lb. bomb, which started fire in #4 hold. No casualties to personnel. All clear sounded at 1023. Fire in SS Empress Augusta reported under control at 1055 and extinguished at 1115. Report on damage to ship and cargo will be rendered by master before 2200 today.

1200. Advisory hurricane warning received from Fleet Weather Central Guam. NAVPORCOF ordered all ships present placed on two (2) hours sailing notice. Message acknowledged by all ships present.

1410. By order of the NAVPORCOF, ENS. Wilbur T. Hangfire was this day suspended from duty for a period of ten (10) days for exposing classified material to possible compromise.

1430. Smith, K. (YNSN), USNR having conducted himself in a disorderly manner, was placed in confinement for safekeeping by order of the NAVPORCOF.

19 Jan. 1949

SHEET NO. ___

NO.	NAME	TYPE	BERTH	ALLOC	ARR	EMPLOYMENT	CARGO, MAIL, PASSENGERS	% DISCH TIME	EST. COM.	EST. RFS	REMARKS	DEPARTED TIME	DEPARTED DEST
Dec 307	Empire Victory	XAK	~~Pier 1~~ Baker 15 ~~Berth 2~~	Army	29 Dec	Discharging	7200 M/T Army-General	87% 1600 18 Jan	1600 20 Jan	21 Jan	~~Repairs to above-water hull plating being made.~~ Completed moved to B-15 ~~Est Compl 1200 Today. Move to Baker 15 when~~ repairs ~~complete.~~ @ 1500. RFS when unloaded.		
~~59~~	~~Manderson Victory~~	~~AK330~~	~~Baker 16~~	~~Navy~~	~~12 Jan~~	~~Awaiting Convoy~~	~~None~~	~~100%~~	—	~~RFS~~	~~Sails at 0800 Today in ORS 41.~~ Sailed	0825	ORS41 SAIPAN
61	John Wood	XAK	How 23	Air Force	12 Jan	Under Repair Resumes Disch 24 Jan	6050 M/T Construction Materials	40% 1600 18 Jan	28 Jan	Indefinite	Major engine repairs - Ship immobilized.		
64	Trego	AKA78	~~How 54~~ Baker 10	Army	15 Jan	Discharging ~~Awaiting Disch Starts Today~~	5400 M/T Army General 20 Tanks - 163 Vehicles	0%	25 Jan	26 Jan	Commenced discharge at 0900. Moved to Baker 10 at 0830 to commence discharging		
~~65~~	~~Canada Victory~~	~~XAK~~	~~How 7~~	~~Army~~	~~15 Jan~~	~~Awaiting Convoy No Outbound Cargo~~	~~None~~	~~100%~~	—	RFS	Sunk @ 0931 by bomb during air raid. Sinking reported by dispatch to CNO. Berth unusable. Obstruction buoy placed by Harbormaster. Shackle AR59 anchored in berth. Divers ~~Sails at 1000 Today in OKU 39~~ at work examining ship.		
73	Elizabeth Stanton	AP69	~~Baker 2~~ S. Side Pier 4 Baker 2	Army	15 Jan	Idle. ~~Loads Troops Today~~	None	100%	—	RFS ~~20 Jan~~	All completed at 1540 ~~To load 85 Off and 751 troop Casual Army Passengers also 256 POW's 20 tons of stores~~		
~~70~~	~~Santa Monica~~	~~XAP~~	~~Baker 81~~	~~Navy~~	~~15 Jan~~	~~No Outbound Pass. Booked. Available for West Coast Pass.~~	~~None~~ 4 NAVY CAS. PASS. LOADED.	~~100%~~	—	~~RFS~~	~~Sails at 0700 Today in OKU 39~~	0719	OKU39 ULITHI
80	Oneida	AP221	Pier 1 Berth 3 ~~On Arrival~~	Navy	~~Due~~ 19 Jan	Arrived in UOK 40 at ~~0700~~ 0707	1710 M/T Navy-Gen ~~847 Sacks Navy Mail 20 Off 1263 Navy Enl~~	0%	27 Jan. —	29 Jan. —	~~To commence~~ unloading cargo ~~immediately~~. Notify FPO ~~when alongside.~~ Passengers ~~to debark immediately.~~ notified by phone @ 0751 disembarked.		
81	Cape Romain	XAK	How 20 ~~On Arrival~~	Air Force	~~Due~~ 19 Jan	Arrived in UOK 40 at ~~0700~~ 0651	~~9430 (7184 MT~~ crated aircraft, wings not shown on cargo manifest) ~~4146~~ M/T Av Eng and Spare Parts ~~3 Crash Boats on Deck~~	—	24 Jan.	—	Starts discharge at 1000 ~~disch immediately #1 priority.~~ Crash boats unloaded. ~~boat crews aboard.~~		
82	Meteor	XAP	Baker 15 On Arrival	Navy	~~19~~ 20 Due ~~19~~ Jan	Arriving ~~in UOK 40 at 0700~~ 0900 20 JAN	2798 M/T CB Const Mat and Mach Incl 345 Ton Lifts	—	—	—	Starts discharge 21 Jan will require floating crane for heavy lifts. Straggler due to breakdown. Due 0900 20 JAN escorted by		JAMONS DE743

RESTRICTED

Figure 3-1.—The operations work sheet.

Operations Work Sheet

Another very important record, and perhaps one which requires more attention than the log, is the operations work sheet. This record covers 24 hours commencing at 0000 daily. The date is indicated in the upper right-hand corner. The work sheet is made up by the midwatch from the work sheet of the previous day, with the addition of ships scheduled to arrive during the following 24 hours. Changes are made in ink by the operations watch officer as the status of vessels changes.

Message File

Inasmuch as there is considerable message traffic in the naval port control office, it is essential that an up-to-the-minute message file be maintained. Communications delivers a copy of each incoming or outgoing message to the operations watch officer as soon as it is received. After signing for each copy received, the operations watch officer reads the message, initials it, and takes whatever action is necessary. He then places it on the incoming or outgoing board.

Ship Card Files

There are several ship files maintained by the operations office which are extremely important, since they contain the information necessary to service ships entering, leaving, or anchored in the port. In addition, these files contain records of pertinent actions relating to a vessel in port, such as loading and unloading, embarking or debarking of passengers, fueling, and any major repairs which are made. The information is used by all divisions, but is absolutely essential to the operations watch officer, who is responsible for the action taken with each ship. There are five kinds of ship card files: individual ship, combatant ship, convoy, chronological, and locally assigned vessels.

Individual ship.—Advance information on ships proceeding independently to the port is received by MEREP message through the movement report system. When the operations watch officer receives a message reporting the anticipated arrival of a ship, he immediately consults his file to see if he has a card on that ship. If he has none, he makes one. All information regarding the date of arrival, cargo, passengers, and ultimate destination is entered. Subsequent information received, such as changes in arrival time, more detailed data on her cargo, the receipt of papers (such as manifest, etc.), is recorded as received, with a reference to the source of each item of information.

The bottom line of the card contains these data: name of ship, tonnage, speed, and operator. New information is entered starting immediately above the ship's name. The latest information always appears on the top line.

When a ship departs, the date is entered on the card and a line is drawn across it, closing out the card for the time being. It is returned to the inactive file. Figure 3–2 is a reproduction of a typical merchant ship card. Similar cards are made for naval passenger and cargo auxiliaries, including tankers.

Combatant ship.—A card similar to the individual ship card is made for each combatant ship destined for the port. The bottom line carries the name of the ship, type, fleet assignment, and the name and rank of her commanding officer. Entries are made as information is received.

Convoy.—Making up convoys of merchant ships is one of the duties of the naval port control office, and it is necessary that there be a system of accounting for ships and for keeping a permanent record of the pertinent facts regarding a convoy. The convoy card file fulfills this need. Included in this file are data on the convoy designation, the ETA, the name of each ship, the name of the ship in which the convoy commodore is embarked, and a list of vessels comprising the escort. The ship in which the escort force commander is embarked and his task unit designation are also shown.

Convoy cards are filed numerically by the convoy designation or chronologically by the date of the ETA. In either case, they are generally cross-referenced. Even when the cards

INDIVIDUAL SHIP CARD

- -

DEPARTED - in Convoy OKS-5 0900I 27 May

COMPLETED DISCHARGE - 26 May

COMMENCED UNLOADING - 18 May

ARRIVED - 1430I 10 May - diverted Okinawa

ETA - SOK-1 1200I 10 May (PD SAIPAN 081210)

PAPERS RECEIVED - 9 May Passenger List - To Passenger Section 9 May

CARGO - 8742 M/T vehicles, amo, avia equip & genl petro (AUTH: Manifest)

PAPERS RECEIVED - 5 May Manifest, Hatch Plans - Delivered to Cargo Section 5 May

PASSENGERS - 38 (PD ENIWETOK 272256/April) Navy for N.O.B. (AUTH: Passenger List)

CARGO - 8742 M/T, includes 92 vehicles, stevedore gear aboard (PD ENIWETOK 272256/April)

ETA - Ulithi 1 May (PD ENIWETOK 250256/April)

S4K10

CORNELIUS VANDERBILT XAK TYPE EC2 TONN 7212 SPD 11.0 OPER

Figure 3-2.—The individual ship card.

are filed chronologically, the names of the merchant ships and the auxiliaries in the convoy are entered on the chronological card for the date of their scheduled arrival. Changes and corrections are made on convoy cards as information is received.

Chronological.—This file enables the operations watch officer to see at a glance which ships or convoys are scheduled to arrive each day. It is made up a month in advance, with a separate card for each day. The date is placed at the bottom center of the card, and entries are made from the bottom up. As information on each ship or convoy is received, the name of the incoming vessel is entered on the card dated for the same day as the intended arrival. Changes are made as additional information comes in. A card is removed from the file at the end of the day, nonarrivals and unscheduled arrivals are noted, and it is placed in the inactive file.

Locally assigned vessels.—A card is made for each vessel assigned locally. As long as a ship is so assigned, it is kept in the active file even though it may leave the area on duty or for temporary assignment to another command.

In addition to the same information as is recorded on individual ship cards, cards for locally assigned vessels record a considerable amount of other information, such as speed, fuel and fresh water capacity, radar, sonar and other electronic equipment, degaussing, and type of minesweeping gear.

19 JANUARY 1949

NO.	HOIST	NAME	TYPE	BERTH	ALLOC.	ARR.	FROM	CARGO, MAIL, PASSENGERS	COM. DISCH.	EST. COM. DISCH.	% DISCH. TIME	REMARKS	EX SAIL	SAILED	DESTINATION
Dec 307	XCF	Empire Victory	XAK	Baker 15	Army	29 Dec	Pearl	7200 M/T Army Gen. None None	13 Jan	1600 20 Jan	87% 1600 18 Jan	RFS when unloaded	21 Jan	-----	Manila
Jan 59	---	Manderson Victory	AK 330	Baker 16	Navy	12 Jan	Eniwetok	None None None	14 Jan	Compl 17 Jan	1500 17 Jan 100%	Sails @ 0800 Today in OKS-41	19 Jan	0825 19 Jan	OKS-41 Saipan
61	XPC	John Wood	XAK	How 23	Air Force	12 Jan	Ulithi	6050 M/T Construction Materials None None	12 Jan	28 Jan	1000 18 Jan 40%	Under Repair - Resumes Disch. 24 Jan. Major Eng. Rep. Ship Immobilized	29 Jan		Unknown
64	---	Trego	AKA 78	Baker 10	Army	15 Jan	Saipan	5400 M/T Army Gen 20 Tanks 163 Vehicles None None	19 Jan	25 Jan	---	Ready for Trials 28 Jan. Commenced Discharge @ 0900.	29 Jan		Pearl Via Saipan
65	XTA	Canada Victory	XAK	How 7	Army	15 Jan	Ulithi	None None None	15 Jan	---	100%	Sunk @ 0931. Divers From ARS 59 at Work. Berth H-7 Unusable	-----	-----	-----
73	XBN	Elizabeth Stanton	AP 69	Pier 4 S. Side	Army	15 Jan	Ulithi	Loaded - RFS	---	---	100%	Passengers and Stores Loaded	21 Jan		Manila
79	XHP	Santa Monica	XAP	Baker 81	Navy	15 Jan	Saipan	None None None	12 Jan	Compl 18 Jan	100%		19 Jan 0825	0719 19 Jan	Ulithi OKU-39
80	XJR	Oneida	AP 221	Pier 1 Berth 3	Navy	0707 19 Jan	Ulithi	1710 M/T Navy Gen Unloaded Disembarked	1300 19 Jan	27 Jan	---	Unloading. Working # 2 & 4 hatches.	29 Jan		
81	XKS	Cape Romain	XAK	How 20	Air Force	0651 19 Jan	Ulithi	4430 M/T Av. Eng. & Sp. Parts None None	1000 19 Jan	24 Jan	---	Crash boats unloaded and delivered. Working # 1 & 4 hatches.	25 Jan		
82	XLT	Meteor	XAP	Baker 15 on Arrival	Navy	Due 20 Jan	Ulithi	2798 M/T CB Const. Mat. & Machinery incl. 3-45 ton lifts.	---	---		Starts Discharge 21 Jan. Will require Floating Crane for heavy lifts. Straggler from UOK40. Proceeding independently escorted by Lamons (DE 743).	---		

NOTE: THE OPERATIONS BOARD FOR 20 JANUARY WOULD LIST THE EMPIRE VICTORY, JOHN WOOD, TREGO, ELIZABETH STANTON, ONEIDA, CAPE ROMAIN, METEOR, ETC. PLUS SHIPS SCHEDULED TO ARRIVE ON 20 JANUARY.

Figure 3-4.—The operations board.

207778 O - 52 (Face p. 26)

CONVOY CARD

ETA - Point Curate 0700I 19 May, Okinawa 1000I 19 May (CTF 51 disp 131140/May)

Confirmed by (PD ULITHI disp 150712/May)

UOK 13

WHARTON	Convoy Commodore aboard (Hagushi)			
BELLE OF THE WEST	(Hagushi))			
OCEAN TELEGRAPH	(Nakagusuku Wan))			
CAPE ALEXANDER	(Nakagusuku Wan))		ESCORTS:	
SEA QUAIL	(Ie Shima))		REGISTER	APD 92 - CTU 94.18.17 aboard
KOTA INTEN	(Ie Shima))	OP. OFF.	TATUM	APD 81
CEDAR RAPIDS VICTORY	(Hagushi))	MEMO of	PGM 23	
APPLETON VICTORY	(Hagushi))	19 MAY	PGM 24	
JEFFERSON CITY VICTORY	(Hagushi))			
DARTMOUTH VICTORY	(Ie Shima))			
BROWN VICTORY	(Ie Shima))			

19 May

Figure 3-3.—The convoy card.

"What Do" File

Experienced operations watch officers have long known that certain questions are asked frequently. Some resourceful individual realized that if he kept a record of the answers, he saved himself the trouble of having to search out the information more than one time, and he gave the officers of the other watches an opportunity to benefit as well. The practice became standardized, and other watch officers adopted it. For want of a better name, this became the "What Do" file.

Normally, the operations watch officer is called upon to answer many questions put to him by masters, NCLO's, and armed guard officers and their crews. The questions are usually greatest in volume at newly established advanced bases where activity has not settled down into steady routine. As the information is gathered, it is entered on a card under the subject matter and filed alphabetically. As a corollary to this file, a separate section is frequently maintained which tells the watch officer what to do under unusual circumstances not otherwise covered in his instructions. This section is similar to instructions contained in the *Watch Officer's Guide* for shipboard OOD's.

Questions often asked of operations watch officers are concerned with the locations and functions of various naval activities ashore.

The following questions listed here are typical:

Where are various shore activities listed? Do they have phones? Is there a list of casualties buried here? Can I bring a body ashore for burial? Is there a movie exchange? Is there a post office here? Does it accept money orders? Where can I draw money to pay my men? Can merchant marine men receive emergency medical and dental treatment here? How can I communicate with my owners? Is there a registered publications issuing officer here? Is swimming permitted in the harbor? Can I grant full liberty to my men?

Operations Data Boards

The operations data board is a subdivided blackboard (or a collection of blackboards) which shows the status and employment of all the ships in the port, ships which have departed within 24 hours, and ships which will arrive during the day. The number of boards varies with the port. For instance, in a port where a large number of tankers load or unload, tankers may be carried on a separate board. Combatant ships may be carried on another board. At bases where several naval vessels are assigned, particularly tugs, minesweepers, patrol vessels, and local escorts, it is frequently desirable to record their activities on a locally assigned vessels board.

The operations data board is made up for each day by the midwatch. It is maintained by enlisted personnel under the supervision of the operations watch officer. He is responsible for its completeness and accuracy during his tour of duty.

The several columns of an operations data board show the following information for each ship: ship's number; three-flag hoist; berth; allocation; date of her arrival at the port; a summary of her cargo, mail, and passengers; date and time of her commenced discharging; the percentage of the discharge; date and time she is expected to sail, her destination, and remarks.

NAME	TYPE	NO.	ASSIGNMENT	BERTH	REMARKS
MISSOURI	BB	63	3rd Fleet BatDiv 1	C-11	Flag-ComBatPac
NEWPORT NEWS	CA	148	CruDiv 7	F-28	Sails @ 1000 for Fleet Exercises
DULUTH	CL	87	CruDiv 5 TF 33	C-54	Fuels from Tolovana @ 0900 Today
PHILIPPINE SEA	CV	47	CarDiv 4	A-107	ComCarDiv 4 Scheduled to Depart for Pearl 28 Jan
LOWRY	DD	770	DesDiv 35	F-89	To Sail @ 0600 to Screen Departure of OKS-41
ROWAN	DD	782	DesDiv 28	F-96	Sails Today-Escort Comdr (CTU 99.3.6) OKU-39
BORIE	DD	704	DesDiv 28	F-102	Sails Today. Escort OKU-39
TOLOVANA	AO	64	ServDiv 36	F-64	Goes Alongside Duluth in C-54 @ 0830

Figure 3–5.—The combatant ship board.

NAME	TYPE	NO.	STATUS	LOCATION	EMPLOYMENT	MAIN ENGINES	FUEL	WATER	PROVISIONS	TO BE RELIEVED	REMARKS
INDUSTRY	AMc	86	Sweeping	NW Channel	Acoustic—Magnetic	SINGLE SCREW DIESEL	Refuels NOB 1300 24 Jan.	Takes on Water as Needed	As Needed	Permanently Assigned	Depart 0400 Daily for NW Channel. Normally Returns About 1200.
RELIABLE	AMc	100	Overhaul	NOB Ways #1	-----	SINGLE SCREW DIESEL	-----	-----	-----	-----	Routine Overhaul. Available About 28 Jan.
YMS 186	YMS	186	Sweeping	Main Ship Channel	Acoustic only. See Remarks	TWIN SCREW DIESEL	Refuels NOB 1330 25 Jan.	As Needed	As Needed	Permanently Assigned	Departs 0430 Daily for Main Ship Channel. Normally Returns About 1130. Lost Magnetic Cable. To be Replaced 20 Jan. After Sweeping.
MINOOKA	YTB	257	Towing	Truk	Towing Damaged DD 105 to Guam	TWIN SCREW DIESEL	-----	-----	-----	No relief. Will Return	ETA Guam 1200 25 Jan. ETD Guam 0600 27 Jan. Towing Aux. Floating Dock, AFD 13 - ETA 18 Feb.
AWATOBI	YTB	264	Standby	Berth 15	-----	TWIN SCREW DIESEL	Refueled 0800 19 Jan.	Full, 300 Gals. in Cans Being Loaded	OK	-----	Departs 1100 to Deliver 300 Gals. Water to YP 251 at Buoy #2, Minefield.
EX—FOREMOST	YP	251	Patrol	Buoy 2, Minefield	Keep Friendly Ships Out of Minefield	TWIN SCREW DIESEL	Last Until Noon 23 Jan.	Out. Sending 300 Gals. to Last Until 24 Jan.	Last Until 25 Jan.	0600 23 Jan.	Sighted Floating Mine, Destroyed by Gunfire 18 Jan. Naval Intelligence Wants to See OinC 23 Jan. Must Provide for Relief. YP 130 May Be Available.
EX—STEVENA	YP	255	Patrol	Funiburo Is.	Routine Patrol	TWIN SCREW DIESEL	Last Until Midnight 20 Jan.	Last Until 23 Jan.	Last Until 22 Jan.	By 1400 20 Jan.	YP 360 To Relieve. Ens. Jones Has Orders In Personnel Office.

(AS OF 0900 19 JAN)

Figure 3-6.—The locally assigned vessels board.

When a separate board is maintained for tankers, the columns are usually the same. The entries differ slightly. The exact time the hoses are connected and the time the vessel starts pumping are entered in the "Commenced Discharge" column, and the exact time of completion of discharge or loading is entered in the "Remarks" column.

Combatant ship.—This board shows the following information concerning all combatant ships in port and those due during the next 48 hours: ship's name, type, number, assignment, berth, and remarks. Like the operations board, the combatant ship board is made up for each day by the midwatch. It includes current data from the previous day's board plus scheduled arrivals from the chronological file. Figure 3–5 shows a combatant ship board.

Locally assigned vessels.—Where the number of locally assigned vessels warrants, a record of them is kept on a separate board. Changes are made on this board only as they occur. The main purpose of the locally assigned vessels board is to provide the operations watch officer with immediate information concerning all tugs, minesweepers, and fire fighting, salvage, and patrol vessels. Thus, he can see the situation to which he must give attention on his watch, and he can tell at a glance what vessels are available for emergency use. As a general rule, vessels assigned to local patrol duty have rather limited fuel and storage capacities. This information is carried on the board in terms of when fuel, water, and food will be exhausted. Thus, the operations watch officer is able to determine when each vessel will require replenishment or relief. Daily reports are received on such matters from vessels on patrol duty and are recorded on the board.

Plots Maintained

The operations division of each NAVPORCO maintains two plots. One is the harbor plot; the other, the area plot.

Harbor plot.—The harbor plot is a colored replica of the chart of the harbor drawn to scale. It shows the locations of piers, wharves, and anchorages in the harbor and the capabilities and limitations of each. Small replicas of ships are attached to the plot to show which berths at piers and anchorages are occupied. The number of each merchant ship and the designations of naval vessels are entered on the ship replicas. Thus, by referring to the operations board or the operations work sheet, the operations watch officer can instantly ascertain the name of the ship in any berth.

Facilities available at each berth, such as fresh water, Navy special and commercial fuel, house falls, covered storage, etc., are indicated by colored symbols.

The harbor plot is kept up-to-the-minute by the watch. Reports of ship movements in the harbor are received from the signal tower and the harbor master's office, usually by telephone. The plot is corrected at once.

Area plot.—Both the NAVPORCOF and the operations watch officer must be constantly aware of the movements of naval vessels in the vicinity of the port, and, in wartime, of all other shipping as well. For this purpose, an area plot is maintained in the operations office. The area plot is a blown-up chart of the ocean area within a radius of at least 500 nautical miles of the port. The plot shows channels, depths of water, and aids to navigation. On the area plot are shown the locations of all mine fields, nets and booms, restricted areas, operating areas, and the location of the station ship and harbor entrance control post.

Also, on this plot are noted the position, course, and speed of all naval and Navy-controlled merchant vessels. In time of war, the known positions of enemy aircraft are shown. The convoy and routing division is responsible for keeping the area plot up to date.

Information Bulletin

Frequently NAVPORCOF's find it advisable to publish an information bulletin for the convenience of vessels using the port. This bulletin greatly aids commanding officers and masters who are calling at the port either for the first time or after a long absence. Essentially,

the bulletin contains information not generally found elsewhere but which usually is much in demand.

In general, the following data are included in the information bulletin:

1. *Command.*—The name, rank, title, and address of the senior naval officer, together with the same information on flag officers (if any) of lower echelons of command.

The name, rank, title, and location of the senior officer present afloat (SOPA) and, should there be one, of the administrative SOPA.

Similar information concerning Army and Air Force commands in the area.

2. *Port services.*—Information on the availability of tugs, pilots, small boats, water, fuel, and services such as garbage, trash, and sludge removal. This should include the location, telephone number, and visual and voice calls of the organization responsible for the performance of each service. In the case of services rendered by the NAVPORCOF, the telephone number of the operations watch officer should be listed.

3. *Port facilities.*—Docks, temporary piers, anchorages, and boat landings. It is desirable to mimeograph on one page of the bulletin a rough replica of the chart of the harbor showing the relative locations of port and shore-based facilities.

4. *Communication facilities.*—Complete information on the radio and visual calls of the NAVPORCOF; locations of signal towers; the harbor circuit frequency and any circuits which must be guarded by naval vessels and merchant ships while in port.

5. *Medical facilities.*—Information on the availability of medical and dental facilities afloat and ashore, and instructions for both routine and emergency cases.

6. *Recreational facilities.*—A list of recreational facilities available in the area, their location, regulations governing their use, and the officer in charge of each.

7. *Training facilities.*—Full information on training facilities available and instructions for their use.

8. *Transportation facilities.*—A summary of local and out-of-area transportation facilities, including air transportation, and the organization to contact in regard to each.

9. *Mail.*—Complete information on the location, hours of business, and services currently offered by the fleet post office; information on incoming and outgoing merchant marine mail; censorship regulations.

10. *Harbor regulations.*—A résumé of current harbor regulations governing display of lights, use of small boats during hours of darkness, use of radio transmitters, pumping bilges, etc.

11. *SOPA instructions applicable to merchant ships.*—A list of the portions of SOPA instructions with which merchant ships must comply.

Publications Distributed

SOPA instructions.—The senior officer present afloat is the senior line officer of the Navy who is present and in command of a unit of the operating forces. As the common superior of commanders of all Navy units of the operating forces present, the SOPA is responsible for the administration of matters which collectively affect these naval commands. For this purpose, administrative orders, called SOPA instructions, are published by SOPA. These apply to all naval vessels present. SOPA instructions also apply to merchant vessels in forward areas, and copies are issued to them.

The contents of SOPA instructions vary with the locality and (to some extent) with the command issuing them. In general, they cover all administrative matters, such as medical guard, liberty, shore patrol, reports required, and mail. Copies are distributed to commanding officers and masters of incoming ships by the boarding officer from the naval port control office.

In ports where large numbers of naval vessels are always present, the SOPA may appoint an administrative SOPA (SOPA ADMIN). He is charged with the responsibility of promulgating

SOPA instructions and for seeing that all naval vessels present comply. SOPA ADMIN may be afloat or ashore. The NAVPORCOF may be appointed SOPA ADMIN.

Naval district manuals.—Each naval district publishes a district manual for the information and guidance of all ships and naval activities in the district. U. S. naval port control offices located in naval districts are responsible for the distribution of copies of district manuals to incoming naval vessels.

Identification in Port

Identifying merchant ships in port in time of war can be something of a problem. Unlike naval vessels, merchantmen are not readily identifiable by such numbers as AK 29, APA 74, or DD 868. They have names, but in time of war many ports prohibit the display of nameboards for security reasons. To add to the difficulty, most Liberty ships are identical. So are most Victory types and the more modern C–4's.

To resolve the problem, a system of three-flag hoist identification has been devised. The three-flag hoist is a combination of three different letter flags of the International Code. The International Code flags are carried by all merchant ships. The first letter of the hoist is always the same within each port. The signal remains the same as long as the vessel is present.

In addition to the flag hoist, which is used chiefly for visual identification, merchant ships are numbered serially in the order of their arrival by the operations officer, starting from the first day of the month. This number is used on the operations board and in the daily shipping report. Like the flag hoist, it does not change while the vessel is in port.

The flag hoist and identification number are assigned at the same time. The operations offi-

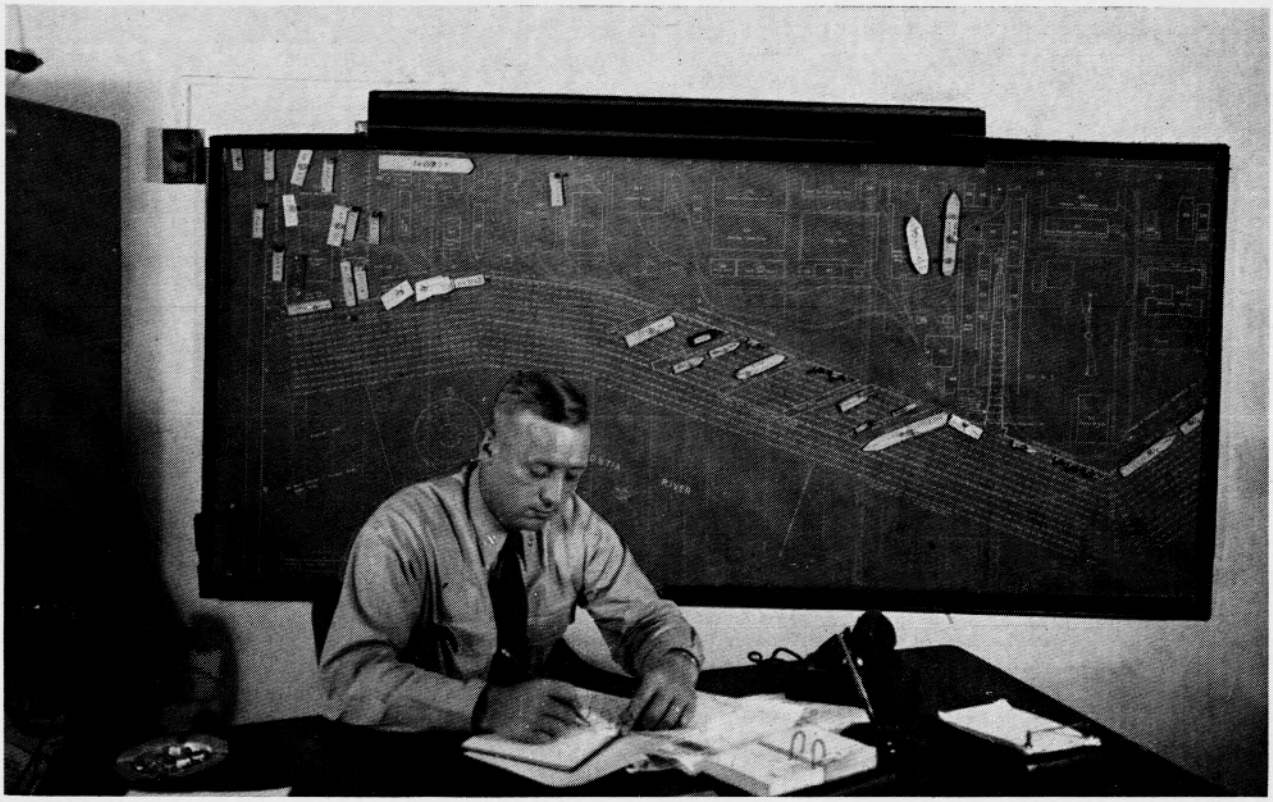


Figure 3–7.—The harbor plot.

BOARDING REPORT - NAVAL VESSEL

Name: USS _____ Class: _____

Arrived: Date _____ Time _____

Flag Officer or T.F. Commander: _____ USN ___

Commanding Officer: _____ USN ___

Executive Officer: _____ USN ___

Medical Officer: _____ USN ___

1. Fuel Required: _____
2. Ammunition Required: _____
3. Stores Required: _____ Requisitions Picked Up? Yes ___ No ___
4. Repairs Required: _____
5. Charts & H.O. Pubs. Required: _____
6. Passengers to Disembark:

   Officers: _____ Enlisted: _____ Civilian: _____
7. Cargo for Discharge: _____
8. Mail for Discharge: _____
9. Any Contagious Diseases Aboard: _____
10. Any Patients to be Transferred to Naval Hospital: _____

    _____
11. Ships Personnel for Transfer: _____
12. Empty Brass for Discharge: _____
13. Miscellaneous: (Use Reverse Side of This Form if Necessary) _____

    _____
14. Copy No. _____ of SOPA Instructions delivered. _____
15. Orders delivered _____

_____
Boarding Officer.

Figure 3–8.—The naval vessel boarding report.

cer makes up a numerical list starting at 0000 on the first day of each month. Beside each number, he places a three-letter combination for the flag hoist, usually starting with X, Y, or Z to avoid confusion with signals of the International Code. Twenty-four hours prior to the arrival of the individual ship or convoy, the operations watch officer enters the name of the vessel alongside the hoist recorded on the numerical list.

When a ship enters port, the boarding officer gives the master his flag hoist identification (but not his identification number). The hoist is displayed on a halyard or triatic stay and is flown day and night as long as the vessel is in port. The signal is reasonably secure. In forward areas, the three-letter hoist is used in telephone conversations in lieu of the ship's name.

Boarding

The first detailed information on the status of the ship newly arrived in port is obtained by a boarding officer. In large ports, a number of officers are assigned this duty as a regular function. Boarding in smaller ports is done by operations watch officers or junior officers attached to the operations section.

Boarding has a two-fold purpose: (1) to secure all information required by the NAVPORCOF, and (2) to deliver information, orders, and directions to commanding officers and masters of ships entering the port.

Information delivered to boarded vessels usually is in the form of the information bulletin, SOPA instructions, the naval district manual, and oral replies to questions. Copies of SOPA instructions are generally numbered serially and a signed receipt is always obtained for each copy delivered. SOPA instructions are to be returned to the NAVPORCOF before the vessel departs.

Orders to a commanding officer from a higher authority are invariably in writing; a receipt for these is required. When the operations watch officer receives the boarding report, he reports the receipt for special orders to the officer issuing them.

Boarding officers are assigned specific ships by the operations officer or the operations watch officer. Boarding officers are briefed by the operations watch officer before they leave the office. This is an exercise of the function of coordination by the operations watch officer, and it assures that requests from the other divisions are handled efficiently. All divisions submit in writing to the operations watch officer those instructions they wish delivered to the vessel. The operations watch officer gives these to the boarding officer.

When a flagship arrives in port, the NAVPORCOF usually boards her. He is accompanied by a regular boarding officer who transacts the routine business.

Large combatant ships are boarded by a party consisting of some or all of the following officers: NAVPORCOF, boarding officer, supply officer, medical officer, repair officer, intelligence officer, and the communication officer. When necessary, others (such as customs, immigration, and Department of Agriculture inspectors, and a public health service officer) may be included in the party. Members of the boarding party report afterward to the operations watch officer.

The NAVPORCOF's boarding officer is in charge of the boarding party regardless of the rank of the officers assigned by other activities. As the officer-in-charge, he is responsible for the work and actions of the party, and he must see that the work is completed without undue delay. Boarding parties assemble in the wardroom of the ship they board. The boarding officer should request that the executive officer send for the ship's officers whom the party wishes to contact. As soon as an officer of the party completes his work, he reports that fact to the boarding officer and stands by to leave the ship as soon as the others have completed their duties.

Two forms of boarding reports are used, one for combatant ships and the other for merchant

(Print in ink)

BOARDING REPORT - MERCHANT VESSELS

(Including Naval Auxiliaries and Vessels of the Army Transport Service)

Vessel _____ Berth _____ Date: _____ Time: _____

Draft Fwd. _____ Aft. _____ Type _____ Class _____

Sustained Speed _____ Knots. Alloc. _____ Operated by _____

Master _____ No. in Crew _____ Port Origin _____

A.G.O. _____ No. Armed Guard _____ Last Port _____

C.O. Troops _____ Troop Personnel _____ Med. Off. Aboard Yes ___ No ___

Fuel _____ bbls. Days Steaming _____ Water Aboard _____ tons

Evap. Cap. _____ tons. Make up Feed _____ tons. Used Daily _____ tons

Dry Stores (Status) _____ Ration Days _____

CARGO - M/T for Discharge	ARMY	NAVY	MARINE	FLEET	TOTAL
	____	____	____	____	____
	____	____	____	____	____
	____	____	____	____	____
Total	____	____	____	____	____
Deck Cargo	____	____	____	____	____
Unusual Cargo	____	____	____	____	____

Can Your Heaviest Lift be Handled by Ship's Gear? _____

	ARMY	NAVY	MARINE	FLEET	TOTAL
Mail for Discharge (Sacks)	____	____	____	____	____
Where is Mail Stowed?	____	____	____	____	____

Explosives (Brief Details) _____

PASSENGERS FOR THIS PORT	ARMY		NAVY & C.G.		MARINES		CIVILIANS			
	Off	Men	Off	Men	Off	Men	Male	Female	Children (under 16 Yrs.)	
Units (Indicate Large Units)	____		____				____			

Prisoners of War _____ Other Passengers _____

Passenger List and/or Manifests Picked up _____

Passenger Capacity: Officer _____ Troop _____ Mental _____

Mental Violent _____ Stretcher _____ Ambulatory _____ Prisoners _____

Figure 3–9.—The merchant ship boarding report.

COMMUNICATIONS

FREQUENCY	TRANS.	RECEIVER
High	_____	_____
Medium	_____	_____
Low	_____	_____

No. Radio Operators _____ TBY/TBS _____

No. Navy Quartermasters __ Convoy Lights _____

Radio Sealed _____ Blinker Tube _____

International Radio Call _____ Voice Call _____

Radar Yes ___ No ___ Type _____

Gyro Compass Yes ___ No ___

Do Liquid Compasses Require Adjustment? _____

Instrument Repairs Required _____

Fuel Required _____

Ship Repairs Required _____

Gun Repairs Required _____

Publications Required _____

Charts or H.O. Pubs. Required _____

Master Instructed to Report to NAVPORCOF _____

Armed Guard Officer Instructed to Report to Office _____

Flag Hoist _____ up _____

Orders or Instructions Delivered _____

_____

REMARKS - (Any unusual condition of vessel such as damage to hull, machinery or superstructure -- anything of a suspicious nature such as the appearance of crew or passengers etc.)

_____

_____

I have received Copy No. ____ of SOPA Instructions - Copy of Information Bulletin - Quarantine Instructions - Storm Bill.

_____
Master - Commanding Officer
Boarded by
_____

Figure 3-9.—The merchant ship boarding report.—Continued.

ships, naval auxiliaries, and Army transports. See figures 3–8 and 3–9 for examples.

When a merchant vessel is boarded, the boarding officer immediately reports to the master on the bridge. He states his business and requests to see the master's orders. He notes facts of importance to the NAVPORCOF. He instructs the master regarding the three-flag hoist identification signal and makes sure that it is flying before he leaves the ship. He reminds the master to bring all of his publications when he and the NCLO or armed guard officer call at the U. S. naval port control office.

The boarding officer then transacts his business with the armed guard officer and picks up the ship's manifest, hatch list, stowage plan, and any papers addressed to naval activities ashore. The master (or executive officer of naval auxiliaries) signs the boarding report, and the boarding officer departs.

The boarding report is delivered as soon as possible to the operations watch officer. Should the boarding officer be required to board another vessel before returning to the office, he sends his report ashore by boat.

In busy ports, transmission of the boarding report often is a problem, and some ingenious means of communication have been devised. During the Okinawa campaign, land communications were very poor and voice circuits highly overloaded. Ships of incoming convoys were boarded at sea and in Buckner Bay. This involved a boat trip of 8 to 10 miles each way. An innovation in boarding procedure was adopted with surprisingly good results. Boarding reports were printed on very thin paper, and carrier pigeons, borrowed from the Army, flew the reports in. Each boarding officer carried a cardboard container with four or five pigeons. Before leaving the boarded ship, he released one pigeon with his boarding report. The pigeon returned to the port director office in a matter of minutes, and the boarding report was on the desk of the operations watch officer a few minutes later. This aided considerably in speeding up operations in the port.

Operations Watch

Immediately after taking over the watch, the operations watch officer checks his personnel to insure that they are present and aware of their duties.

Starting with the midwatch, the operations watch officer has the operations board checked with the operations work sheet, and has any discrepancies checked and corrected. The operations board is then erased and made up for the following day, and a new operations work sheet is prepared. The old operations work sheet is then filed as the permanent record of the hour-to-hour changes in the port. During this watch, work is started at the earliest possible moment on the new edition of the daily shipping report. Distribution should start at 0600, so no time must be lost in preparing it.

During his watch, the operations watch officer frequently reviews the message file and the operations work sheet. He checks on the progress of all work (such as fueling, loading or unloading, embarkation of passengers, etc.) and calls any delay to the attention of the officer responsible.

Handling messages.—The operations watch officer receives rough copies of messages having as action or information addressee the NAVPORCOF. Under the delegated authority of the NAVPORCOF and operations officer, the operations watch officer takes action on all routine operational messages. He drafts a reply when a reply is required. The authority of the operations watch officer to originate and release messages is contained in a standing order issued by the NAVPORCOF. The operations watch officer is responsible for checking the interoffice distribution of messages and for advising the communication watch officer, should additional distribution be required.

Supplying information.—In addition to questions of a general nature concerning the port, the NAVPORCOF receives repeated requests for specific information concerning ships and activities at the base. Requests for information usually are handled by the operations watch officer or one of his assistants. The op-

erations board, operations work sheet, harbor and area plots, ship files, "what-do" file, current messages, routine daily orders governing future ship movements, and his own personal knowledge are the sources of answers for queries. He should be able to answer instantly 95 percent of these requests for information; he should be able within a few minutes to get whatever information he does not have at his fingertips.

In large U. S. naval port control offices, a special desk is established in the operations section to handle requests for information.

Pilots.—The operations watch officer notifies the harbor master whenever pilots are required. He must be specific regarding the name and location of the ship or ships requiring pilots.

Communication Section

Communications is under the operations section. Since communications are of such vital concern to the NCLO, the NAVPORCOF's communication system will be dealt with separately in chapter 4.

CHAPTER 4

NAVPORCO COMMUNICATIONS

The purpose of this chapter is to show how a NAVPORCO communication section is established ashore, how it functions, and how it relates to you. As a NCLO you will deal with communication sections in many ports, and rely on them for much of the information necessary to your ship.

Even in time of war not all naval port control offices will be established in new ports or on land that must be wrested from an enemy. Here, however, we show how a NAVPORCOF would probably set up his organization under the most difficult conditions. After establishment, the duties and routines of a NAVPORCO are similar the world over.

SETTING UP IN A FORWARD AREA[1]

There are four phases to setting up a NAVPORCO in territory which must be conquered:

1. Planning
2. Assault
3. Early shore set-up
4. Full establishment ashore

Planning phase.—The size of the entire NAVPORCO establishment would be determined by the magnitude of the assault operation and the plans for future use of the captured objective. The communication section is in proportionate size to the rest of the organization, and the same factors determine its publication allowance list, its equipment list, and the number of its personnel. It is the duty of the officer who plans for the new communication section to understand fully the scope of the operation and to make his calculations accordingly. His equipment allowance should be liberal.

Assault phase.—During the assault phase, NAVPORCOF communications would probably be handled by a command ship (AGC) or by a designated representative. (The designated representative may be a DD, DE, APD, or some other naval vessel temporarily present. The guard may be divided between two or more.) The general message center may also be set up aboard ship. If the load is heavy, communication personnel of the NAVPORCO may be temporarily assigned to assist those of the command ship or its representative. If they are not needed, they may be assigned other duties, as the NAVPORCOF may require. The communication watch officer routine should be established as soon as possible and begin functioning in connection with operations.

Early shore set-up.—The early shore set-up phase opens when the NAVPORCOF begins to organize on land what will eventually grow into his operating establishment. During this period, the command ship or its representative would likely continue to handle a large part of NAVPORCO communications, particularly the out-of-area traffic.

The first step is to send NAVPORCOF representatives ashore with one or two messengers. A two-way voice circuit is set up as soon as possible between shore and ship headquarters. This would be a local area operational circuit, and much used as a telephone or squawk box circuit.

As the operation progresses, the NAVPORCO shore location is chosen. Consideration is given to its accessibility to all who need its facilities. A signal tower is located at a site providing the most effective operation and coverage.

Communications and operations should be

[1]This section is based on World War II experience in setting up port director offices under combat conditons. In view of the similarity of the old port director office to the NAVPORCO, it is reasonable to assume that this hypothetical account is a fairly close approximation of how a NAVPORCO would be established under like circumstances.

located near each other for, although communications are essential to all divisions, they are absolutely vital to operations. It likewise is important that the communication center be located near the radio shack and cryptocenter to facilitate the rapid processing and handling of messages, many of which will require immediate attention. It should be as close as possible to the NCSORG office because of the responsibilities of the communication section for furnishing publications and information necessary to merchant ships and to convoy organization. It is desirable for communications to be near the signal tower, although not absolutely necessary if there are good telephone and teletype connections.

The actual building steps include construction of the signal tower, establishment of the radio, telephone, and teletype facilities, and erection of structures necessary for housing equipment and providing working quarters. Every effort should be given to the establishment of these communication facilities and getting them into operation. The sooner it is done, the sooner the naval port control office can assume its full duties.

If the operation plan calls for it, a joint communication center may be established. Its ultimate aim is to handle all out-of-area traffic for the naval port control office and for all other units at the objective whether Navy, Army, Air Force, or Marine Corps. To achieve this, it is essential to have telephone and teletype lines from the naval port control office to the joint communication center.

If World War II experience can be trusted, personnel of the naval port control officer's communication section will need to know not only their own jobs, but also "something about everything." Throughout the entire action they may find themselves operating a general information center for all types of communication units, of both the Navy and other services. Information should be supplied to anyone who needs and is entitled to it. Cooperative liaison with all units makes operation smoother and more efficient for everyone.

Full establishment ashore.—Full establishment ashore gives the communication section independent responsibility in executing its share of the designated task. The organization must be thorough, complete, and flexible enough to meet new developments and emergencies.

RESPONSIBILITIES OF THE COMMUNICATION SECTION

Stated broadly, the responsibility of the communication section, under the communication officer, is the maintenance of prompt, accurate, and secure communications for the naval port control office. It receives and transmits all message traffic and classified correspondence and performs the necessary encrypting, decrypting, routing, and distribution. The duties may be summarized as follows:

1. Operation, custody, and maintenance of visual and electronic communication equipment assigned to the office.
2. Procurement, custody, distribution, physical security, correction, and reporting of classified registered publications issued to the office, and other classified matter assigned. This includes merchant ship publications and call sign and recognition signal extracts.
3. Maintenance of the proper message files.
4. Supervision of the official correspondence and postal matters, including censorship, of the naval port control office.
5. Preparation of convoy communication plans and, where necessary, holding separate convoy communication conferences; instruction in communication procedure of naval communication liaison officers, masters of merchant ships, and radio operators.
6. Maintenance of a communication equipment pool and a communication personnel pool.
7. Receipt, transmission, and delivery of message traffic between civilian merchant ship operators, their agents, masters of ships, and the National Shipping Authority and its local representatives.

8. Conduct of communication "brush-up" schools for deck officers and radio operators of merchant ships.

Communication Equipment

It is the responsibility of the communication section as a whole to operate, maintain, and keep custody of all visual and electronic equipment which has been assigned to it. It is the responsibility of the communication officer to determine the type and amount of equipment, including spare parts, needed to do the full job. He must draw such equipment for his use and for reissue and arrange for its shipment to various activities as it is needed.

Classified Materials

Classified publications, devices, and other classified materials are procured and either distributed or held in custody, as circumstances may require. Classified matter issued or assigned to the communication section is reported and corrections are made in classified publications as necessary.

The initial stock of classified materials is arranged for during the planning phase of an operation. These are then drawn. The communication officer may be directed to receive them from a mobile registered publications issuing office or a joint communications center. Provisions for their custody and shipment are always in accordance with security and shipping regulations.

Merchant ship publications.—The communication section stocks, corrects, and issues merchant ship publications. The allowance depends on the type of port and the kind and amount of activity it has or expects. The communication officer keeps ample reserve publications on board to meet all requirements until contact can be made with a mobile registered publications issuing office.

In general, the communication section of the naval port control office will be prepared to furnish merchant ship publications from the first day of arrival at the objective. Since, in most cases, ships are issued current and up to date publications at the time they sail for the forward area, they will not need to draw publications from the stock of the naval port control office. Mention of the latest publications held is made in a ship's movement report. This information is disseminated to all who need it.

Call sign and recognition signal extracts.—Call sign and recognition signal extracts are issued to merchant ships in convoy, naval auxiliaries, tankers, and small fleet units. They may be issued either entirely by communications, or operations may issue them to auxiliaries, tankers, and small units and the NCSO may issue them to merchant ships. In any event, communications draws the key lists, makes the extracts, and furnishes them to the other divisions. Call sign and recognition signal extracts, like all other classified matter, are handled in accordance with existing security regulations.

Message Files

There are at least three major message files kept by the communication section. They are as follows:

Incoming and outgoing message file.—At all times an official and permanent file is maintained of incoming and outgoing messages. The file copies are in addition to those furnished the action and information addressees. The permanent file is for reference, and no message is permanently removed from it. A properly maintained file is of the greatest importance to the NAVPORCOF and his organization. It is a record of his activities in message form.

General message file.—A separate file of general messages is maintained. These messages must be kept and prepared for general distribution to units that normally expect to draw them from a naval port control office communication section. It is essential that a complete set of general messages be obtained at the latest possible date before the carrying ship sails for the point where the NAVPORCO is to be established. The files are kept up to date en route by securing copies of late messages from vessels also en route; later, messages missed may be

obtained from newly arrived ships. The communication officer must use judgment and ingenuity to keep his files complete.

It has been seen that, during the assault phase, communications for the naval port control office usually are handled by a command ship. A temporary general message center may be set up aboard the AGC. Wherever it is to be, it should be set up as soon as possible in order that small units will not be deprived of general messages.

"Q" message file.—A third file maintained by the communication section is the "Q" (or QUEEN) message file. "Q" messages contain hydrographic information regarding such matters as harbor entrances, minefields, lights, and approaches everywhere in the world. Such messages containing data which might be of value to an enemy are classified. The communication section must see that the NCSORG office has the latest "Q" information available at all times in its duplicate file.

The communication officer must be alert in obtaining "Q" messages. As in the case of general messages, he may have to visit incoming naval ships to complete his files. Likewise, incoming ships may come to him for the latest available "Q's."

"Q" messages are furnished to commanding officers of naval vessels as received. For masters of merchant ships, the information is paraphrased and included in their sailing instructions. The latest "Q" information is included in the movement plan of a ship or convoy regarding the areas on the planned route.

Official Correspondence, Postal Matters, and Censorship

The communication section is in charge of official correspondence and postal matters at all times. It handles all censorship.

Censorship is carried out in accordance with regulations in force at the time. It is often a particularly heavy duty, and the NAVPORCOF usually establishes under the communication officer a censorship board among whose members the functions of censorship are divided.

Convoy Communication Plans—The Convoy Conference

The convoy conference is established to make certain that masters and commanding officers receive the information necessary for the coming voyage. It is akin to the briefing which pilots receive before an air strike.

The role of the NAVPORCOF's communication officer is to prepare the convoy communication plan and to make certain that masters, NCLO's, and radio officers understand its provisions. The plan is usually given out at the convoy conference, but sometimes a separate communication conference is held.

As an NCLO, your chief interest in the convoy conference is the convoy communication plan but, because communications is so inextricably associated with operations, you should have a knowledge of the other proceedings as well.

Come to the conference prepared. Before it begins, the master and NCLO are instructed to bring their latest publications with them. These are brought up to date. New ones are issued, if necessary. (Frequently, the publications of a ship are picked up by the boarding officer and brought in to the communication section and there corrected prior to the convoy conference.) Bring your suggestions, too. You may be called upon for them.

In a typical convoy conference, the NCSO presides. He organizes the conference, sees that it goes off smoothly, and makes sure that the discussion of the material presented is lucid and comprehensive.

As soon as the conference begins, sailing orders and route instructions are considered. A folder containing the following materials is delivered to each master and commanding officer:

1. *Departure signals and schedules.*—A radio signal usually controls the time of the sortie, and a prearranged code allows for delay or cancelation. The departure sched-

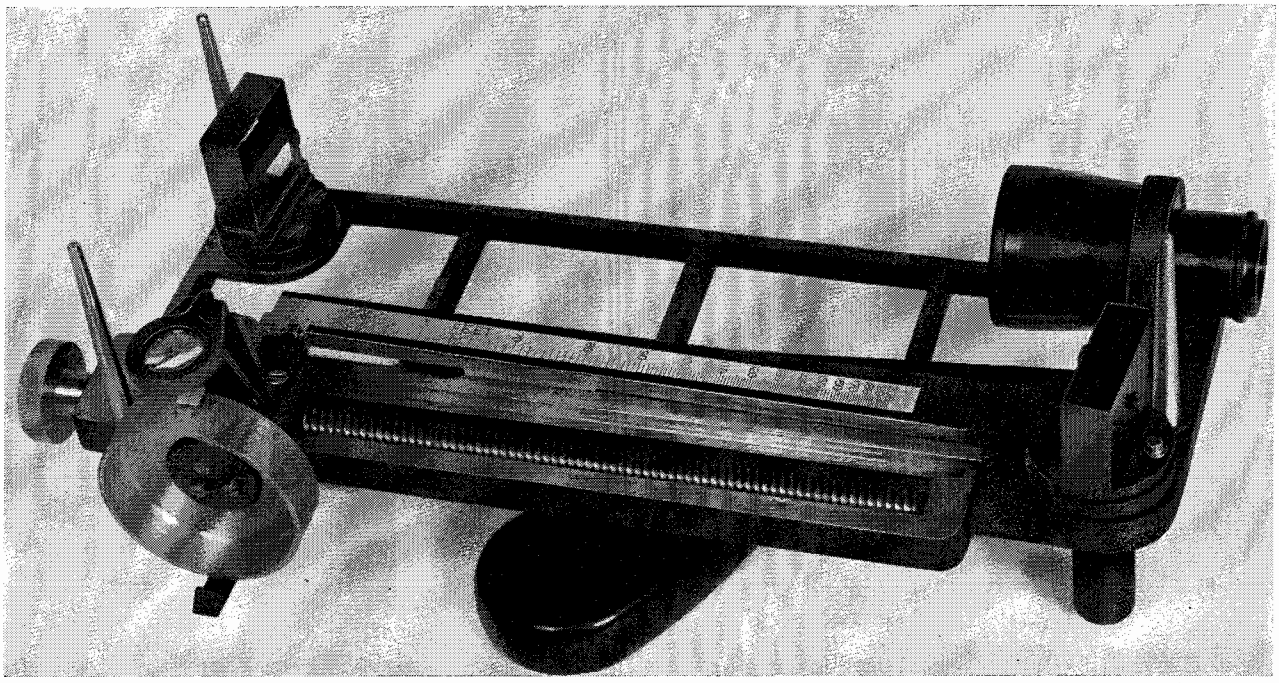


Figure 4–1.—Stadimeter.

ule specifies underway times for various parts of the anchorage, and schedules ships past various landmarks on the way to the rendezvous points.

2. *Sailing orders.*—These provide essential data concerning the movement and the ships participating in it.
3. *Channel information.*—Special attention is given to buoys, ranges, distances, and bearings.
4. *Convoy communication plan.*—This includes comprehensive communication instructions for masters, NCLO's, and radio officers.
5. *Convoy diagram.*—This is a chart showing the location and station of each ship in the convoy.
6. *Table of masthead heights.*—This table is for use with a stadimeter and enables the master to keep proper station on any ship in the convoy.

Straggler route instructions are given to each master in a sealed envelope. The seals are broken by the master only in the event his ship becomes separated from the convoy. The contents provide noon positions for the first 2 days, the stragglers' route, radio instructions, and up-to-date approach information to all ports in the general area of the convoy route.

On the following pages are excerpts from an actual convoy plan issued during World War II. Obsolete passages have been altered to bring the plan up to date.

CONVOY PLAN CONVOY WHK #8

1. Radio operators will listen on 2700 kcs, beginning at 0700 ITEM 19 June 19___. This watch will be a continuous voice watch until the convoy has reached the rendezvous point, at which time the watch will automatically be secured.

2. It may be necessary to send a special message to the convoy. This message is to be decoded immediately. It will be addressed to the convoy's collective call sign, which is ABLE ITEM SUGAR.

3. The two-letter signals following will be employed in the event it is necessary to change the original schedule. No signal will be sent unless the convoy is delayed or canceled. Original sailing time is given in annex (A)1.

OV -- Departure delayed. Add 1 hour to original sailing time.
OX -- Departure delayed. Add 2 hours to original sailing time.
OZ -- Departure delayed. Add 3 hours to original sailing time.
OB -- Departure delayed. Add 4 hours to original sailing time.
OD -- Departure delayed. Add 5 hours to original sailing time.
OF -- Departure delayed. Add 6 hours to original sailing time.
OH -- Departure delayed. Add 20 hours to original sailing time.
OJ -- Departure delayed. Add 24 hours to original sailing time.
OA -- Departure delayed. Await further instructions.

4. The signal (if sent) will be in the following form by voice:

ABLE ITEM SUGAR (convoy collective call sign) THIS IS TROJAN (code word for sender) MESSAGE FOLLOWS BREAK OBOE VICTOR OUT.

5. The message will be repeated three times and then retransmitted three times, 15 minutes later, to insure delivery. No receipt will be required.

6. These special signals are for your departure only and are not to be followed after the convoy has sailed. They are not to be confused with the matter in any classified publication.

COMMANDER TASK FORCE 31

SAILING ORDERS

CONVOY WHK #8

COMMODORE: CDR J. F. MAUK, USNR, aboard USS MEDEA
VICE COMMODORE: JOSEPH B. LOWE, MASTER, aboard SS FAIRLAND
ESCORT FORCE COMMANDER: CDR A. B. JONES, USN, aboard USS BROWNSON
ESCORT DESIGNATED AS: TU 31.29.14
ESCORT VESSELS: USS BROWNSON (DD 868), USS GILLIGAN (DE 508), USS GAINARD (DD 706) and USS INCREDIBLE (AM 249)

1. The speed of advance of this convoy will be 8.5 knots.

2. Being in all respects ready for sea, vessels will proceed from their anchorages as indicated in annex (A). The convoy will then proceed to its destination, exercising all appropriate safety measures.

3. A list of ships making up this convoy is attached herewith.

4. All vessels in this convoy will follow the example of the commodore who will, 1 hour before getting underway, hoist the convoy flag O (OBOE) and his position pennants on one halyard. All vessels will continue to fly them until the commodore hauls his down. The commodore will, in addition, fly the broad command pennant at the fore. Escort force commander will fly the convoy flag and first repeater.

5. Convoy will form on signal from the commodore. Vessels will take designated positions at best speed.

6. Communications will be carried out in accordance with annex (D).

7. If, for any reason, a vessel is unable to sail, her commanding officer or master must report immediately to CTF 31 aboard USS AUBURN by visual signal. The visual call is Ø11.

8. ITEM time (zone minus 9) is used throughout these orders. After convoy has departed, convoy time will be in accordance with orders received from the commodore.

9. Convoy will zigzag at the discretion of the convoy commodore or escort force commander.

10. All information contained herein will be made available to masters, deck officers, NCLO's, and armed guard officers and to them only. Radio officers will have access to the communication plan and all effective publications required for the proper performance of their duties.

11. Upon arrival at destination, these plans will be surrendered to the U. S. naval port control officer.

WILLIAM H. KEARNS, Jr.
By direction

ANNEXES:

(A) SORTIE PLAN
(B) CONVOY CRUISING FORMATION
(C) ROUTE INSTRUCTIONS
(D) CONVOY COMMUNICATION PLAN
(E) ENEMY-HELD ISLANDS
(F) IDENTIFICATION SIGNALS (For minor war vessels and merchant ships only)
(G) TABLE MASTHEAD HEIGHTS
(H) APPROACHES

LIST OF VESSELS

USS MEDEA	AKA 31	J. F. MAUK, CDR, USNR
SS APPLETON VICTORY	XAK	W. P. PASTERNAK, MASTER
SS CAPE VICTORY	XAK	J. E. CRICKEY, MASTER
SS DAY STAR	XAP	J. P. KRISTENSEN, MASTER
SS FAIRLAND	XAP	J. B. LOWE, MASTER
SS FLYING CLOUD	XAP	J. A. HEINZEL, MASTER
SS AILEEN S	XAK	G. GEMMILL, MASTER
SS JAMES BUCHANAN	XAK	J. F. FITZSIMMONS, MASTER
SS MELLO FRANCO	XAK	D. W. KROLL, MASTER
SS MICHAEL PUPIN	XAK	F. S. DEAN, MASTER

SS DAY STAR AND SS MICHAEL PUPIN joining at Point CURATE at 1245 ITEM, 19 June 19___

ANNEX (A)

SORTIE PLAN

Vessels will proceed from their anchorages to rendezvous in Lat 26° 20' 00" N., Lon 127° 31' 00" E, at 1000 ITEM, 19 June 19___ and form two columns. The left section will comprise pennants 21, 22, 11, 33, in the order named; the right section will include pennants 31, 32, 41, 42, in the order named.

Vessels will then proceed through the following positions:

LATITUDE	LONGITUDE	
26° 14' 07" N	127° 29' 05" E	SEXTON
26° 05' 20" N	127° 26' 22" E	ELDER
25° 55' 30" N	127° 31' 15" E	CURATE

thence through the attached ocean route positions in annex (C).

ANNEX (B)

CONVOY CRUISING FORMATION

Pos. No.	11	21	31	41
INT CALL	ANJF	KGFP		KOAE
Speed	16.5	15	16	14
HMT	82	108	105	105
	Gyro Portable VHF	Gyro, VHF	Radar, gyro, VHF	Gyro, VHF
Name	SS APPLETON	SS FAIRLAND	USS MEDEA	SS CAPE VICTORY
***	VICTORY			

Pos. No.	12	22	32	42
INT CALL	WHXE	KKHC	WMZY	KYCG
Speed	14.5	10	10	10
HMT	100	80	90	84
	Gyro, VHF	Gyro, VHF	Gyro, VHF	Gyro, VHF
Name	SS DAY STAR	SS JAMES BUCHANAN	SS MELLO FRANCO	SS FLYING CLOUD

Pos. No.	13	23	33	43
INT CALL		KOXJ	KEWW	
Speed		10	10	
HMT		90	90	
		Gyro, VHF	Gyro, VHF	
Name		SS MICHAEL PUPIN	SS AILEEN S	

LIGHT REPEATERS: Ships in positions 21, 22
SOUND REPEATERS: Ships in positions 11, 21, 41
INTERVAL BETWEEN COLUMNS: 800 yards
DISTANCE BETWEEN SHIPS: 600 yards
PROCEDURE AT DESTINATION: Vessels will enter port in this order: 31, 32, 33, 21, 22, 23, 41, 42, 11, 12.

ANNEX (C)

OCEAN ROUTE POSITIONS

1. Vessels will take departure from OKINAWA In June 19 ____, thence proceeding through the following ocean route positions:

LATITUDE	LONGITUDE	CODE NAME
25° 29″ N	128° 00″ E	REUNION
24° 00″ N	129° 05″ E	PAPRIKA
20° 00″ N	132° 08″ E	PELICAN
11° 10″ N	138° 40″ E	HIRELING
10° 26″ N	139° 42″ E	SG

thence to ULITHI, noting attached approach instructions.

2. Commanding officers and masters are responsible at all times for the safe navigation of their ships and are to notify the commodore at once should weather endanger their safety.

3. Adjust speed of advance if necessary to arrive during hours of daylight.

4. No stragglers' route has been issued. Stragglers from this convoy will proceed to their destination via the ocean positions given above. Should it be deemed necessary to depart from this route because of weather, currents, or other navigational hazards, vessels will return to the prescribed route as soon as safety permits.

5. Stragglers or unescorted ships of speeds of 10 knots or more will zigzag day and night except in heavy weather or low visibility while in open waters north and west of the line connecting the following points:

a. North Pole at Lon 170° 00″ West
b. Lat 28° 00″ N, Lon 170° 00″ West
c. Lat 28° 00″ N, Lon 152° 00″ West
d. Equator at Lon 152° 00″ West
e. Equator at Lon 170° 00″ West

These instructions are subject to change by MERCAST message.

6. Reference positions for diversion only are:

Pearl Harbor	(K)	Guam	(CB)
Eniwetok	(A)	Saipan	(DC)
Kwajalein	(L)	Ulithi	(ED)
Majuro	(C)	Kossol Roads	(PO)
Tarawa	(M)	Leyte	(QP)
Manus	(O)		

ANNEX (D)

COMMUNICATION PLAN

1. Duplicate copies of this plan are issued, one for the commanding officer or master, the other to be given to the communication officer for use in the radio room at sea and returned to the commanding officer or master on arrival in port.

2. Basic publications for this convoy are: the effective JANAP's, ACP's, and INTERNATIONAL CODE OF SIGNALS, VISUAL.

3. The two-letter convoy distinguishing group for this convoy is PS. Convoy individual and collective radio call signs are permanently allocated for use with the two-letter group and will be found in JANAP-149(A).

4. Radio watches in convoy will be in accordance with Article 1045 of JANAP-149(A). Importance of each ship in copying its own MERCAST as directed in that article is to be stressed. There will be provision made on each ship for the master or officer of the watch to notify the radio officer, regardless of the time, whenever there is poor visibility or an emergency, so that the radio organization can be changed.

NOTE: Naval vessels in this convoy will copy NPM HOW FOX broadcast in lieu of MERCAST messages. ALL SHIPS will be prepared to guard 500 kcs during radio organization "B" described in Article 1049 of JANAP-149(A), when poor visibility or an emergency exists.

5. Use of auto alarm as such in convoy is prohibited. If it is fitted as a second channel receiver, it may be so used.

6. Radio transmitter silence will be maintained at all times, except for messages which are authorized by chapter 10 of JANAP-149(A).

7. Distress procedure while in convoy is set forth in Article 1080 of JANAP-149(A). It must be followed exactly.

8. Radio logs will be kept in accordance with Article 570 of JANAP-149(A).

9. Testing of transmitters prior to departure is to be done only by permission of the NAVPORCOF. Permission should not be requested unless it is considered absolutely essential.

10. Communications with vessels and activities outside the convoy will be handled by the commodore or escort force commander.

11. Instructions for stragglers are essentially the same as for ships routed independently. Watches will be maintained in accordance with Article 1045 of JANAP-149(A). Stragglers must be on the alert for messages addressed to them by either convoy visual call sign or their wartime call sign as directed by Article 920 of JANAP-149(A). Distress procedure is explained in chapters 9 and 10 of JANAP-149(A).

VHF COMMUNICATIONS

1. Set watch exactly 3 hours before scheduled rendezvous time. The set will be calibrated at this time or as soon thereafter as practicable. If the commodore has a VHF transmitter-receiver, he will calibrate with the escort force commander and then the other vessels in the convoy or, if the commodore has only a portable VHF transceiver, he may ask the escort force

commander to help all vessels calibrate. Maintain this VHF watch until the convoy is formed up, unless otherwise instructed by the convoy commodore. Thereafter, all ships will observe the normal watch given below.

2. Escort force commander will stand a continuous watch on xxx.x mcs; if equipped with portable transceiver only, watch will be stood as listed for the commodore, and he will so notify the other escort vessels and the commodore, who will pass this information to ships in the convoy.

3. Convoy commodore will maintain watch continuously from 1 hour before sunset until 1 hour after sunrise, and continuously in emergency and poor visibility.

4. Ships of the convoy, other than the commodore, will maintain the following watches:

(a) Radio organization "A" (during normal conditions):
  (1) One hour before sunset continuously until 1 hour after sunset and 1 hour before sunrise until 1 hour after sunrise.
  (2) Between the two watches above, watch will be the first 10 minutes of EACH hour, every hour during the night.
  (3) For 5 minutes before and 10 minutes after each scheduled change of course at night. Example: If the commodore has scheduled change of course for 2130, this VHF circuit will be manned from 2125 until 2140.

(b) Radio organization "B" (during emergencies and poor visibility): Set watch without special orders, automatically reverting to normal organization when conditions requiring B no longer exist.
  (1) During alarm or enemy attack—continuously.
  (2) When visibility prevents efficient visual signaling—continuously for the first 2 hours; thereafter, for the first 10 minutes of each hour.

5. The VHF circuit shall be manned at any time during the day or night as ordered by the commodore by visual and/or whistle signal "RQ1."

6. Call signs to be used on the VHF circuit will be in accordance with JANAP-149(A).

7. Testing of VHF equipment will be controlled by the commodore (or, when escorted by a vessel having permanently installed equipment, that vessel will control calibration). Individual ships will transmit only when called during testing periods, and strict discipline of VHF circuits will be maintained at all times. Calibration of sets on xxx.x mcs during the hour before sunset and the hour after sunset will be routine and supervised by the commodore (or escort vessel).

8. Procedures set forth in JANAP-149(A) will be followed.

9. Visual signal groups in ACP-148 will be pronounced phonetically when used on voice circuits.

10. Proper care will be taken to insure that the antenna of the portable transceiver is elevated to avoid interference from ship's stack, etc.

NOTE: Convoys equipped with permanently installed VHF sets will maintain continuous watch at all times.

VISUAL COMMUNICATIONS

1. Basic publications for visual signaling during this voyage are ACP-148 and INTERNATIONAL CODE OF SIGNALS, VISUAL.

2. Ships with two Quartermasters or less will be expected to keep an alert watch during as many daylight hours as possible. If there are any other armed guard personnel with a reasonable knowledge of flashing light or flags aboard, their watches should be arranged to supplement the regular signal watch. Arrangements will be made to have a qualified man nearby, subject to call, at all times.

3. Each ship will repeat all flag hoists regardless of position in the formation whenever it is an addressee or whenever it will help the addressee read the flag hoist.

4. Basic visual communications will be by flag hoist. Flashing light will be used only when flag hoist would be impractical. Shooting the breeze by flashing light is forbidden. Only authorized traffic will be passed while the convoy is en route. Visual messages will be as concise as possible and kept to a minimum number of groups. In general, it should never be necessary to send a message longer than 50 or 60 groups while in convoy.

5. Do not use flashing light at night, except in cases of emergency, but have a small directional light ready for use during all dark hours.

6. Sound signaling will be in accordance with chapter 13 of ACP-148.

ANY SHIP WHICH IS UNABLE TO COMPLY WITH ANY SECTION OF THIS WILL NOTIFY THE COMMODORE IMMEDIATELY. THE COMMODORE WILL MAKE THE NECESSARY ARRANGEMENTS AND NOTIFY THE PROPER AUTHORITIES.

ANNEX (E)

ENEMY-HELD ISLANDS

Commanding officers and masters of vessels operating in this area are advised that the following enemy-held islands are in the vicinity of standard routes:

1. Okinawa Gunto:
   Kume Shima, Irisuna Shima, Tonachi Shima, the islands of Iheya Retto except for Iheya Shima, Yoron Shima and the southern tip of Okinawa Shima below a line connecting Naha and Yonabaru.
2. Nampo Shoto:
   All except Iwo Jima.
3. Forward area (central Pacific):
   All of western Carolines except Ulithi, Kossol Roads, Peleliu, Fais, Negesebus, Anguar; all of the Mariannas except Guam, Tinian, Saipan and Marcus.
4. Marshalls - Gilberts area:
   Jaluit, Mille, Maleolap, Wotje, Taongi, Wake and all of the Eastern Carolines.
5. Philippines:
   In general, the northern half of Luzon, some of Mindanao (the central and southeastern sections) and the lesser islands of the Sulu Archipelago. The Visayas and other land masses are either U. S. or guerilla controlled.

(NOTE: Annex (F) Identification Signals, and Annex (G) Table of Masthead Heights, are omitted here.)

ANNEX (H)

APPROACHES

1. Tarawa Atoll.

(a) General—The eastern or weather side of the Gilberts is steep to and can be cleared by passing from one-half to a mile off shore. Most of the western or lee sides, however, have sunken reefs and spits, extending in some cases for many miles off shore. It is advisable to keep to the eastward of these islands when passing them at night, but care must be taken that the ship is not set too close inshore by prevailing easterly winds and equatorial current.

It is reported by the natives that a sand cay as yet undiscovered by Europeans lies about 60 miles to the eastward of a point bisecting a line drawn from Tarawa to Marakei. The native name for this place is BIKENI-KARAKARA.

Masthead navigation is necessary when navigating around the atolls. It has been observed that, when approaching land at night, a lookout at deck level normally sights land before those stationed at higher levels.

Betio Island is much more narrow and elongated than shown on HO chart 123. The long island which lies about center of the eastern side of the atoll as shown on HO 123 is really three islands rather than a continuous chain of land. As of 15 June 19___ a signal station is established in approximate position Lat 01° 21′ 18″ N, Lon 172° 56′ 09″ E.

There are no outlying dangers reported near the atoll. Ships should give the extremities of the atoll a good berth but may stand close to the reef around the rest of the island.

It is reported that the orientation of HO chart 123 of Tarawa is in error. The compass rose should be rotated 11° clockwise.

(b) Outer anchorages.—Vessels may anchor almost anywhere along the lee soundings, as in places (especially to the southward of the passage and toward the northern end of the atoll) the bottom shoals quickly and becomes foul.

(c) Channels.—The following information was furnished by USS SUMNER to accompany HO Field Chart No. 34:

The entrance to the lagoon lies a little over 3 miles north of Betio Island. Ships should make the approach from at least 1 mile to seaward from the entrance buoys and then head for beacon X on course 112° true. This beacon is frequently difficult to see from outside the harbor because of its background. The beacon on Bikeman Island is high and usually visible. Beacons V, Y, and Z are conveniently located to permit ships to fix positions when making an approach to the entrance. After rounding buoy #6, head for beacon W on course 151° true. Buoy #6 has a cage on top to make it more easily recognizable. The channel has a controlling depth of 30 feet at mean low water springs.

(d) Navigational aids.—The entrance channel is marked by standard 3d class channel buoys. The barge channel to BENRIKI is marked by red buoys on the north and green buoys on the south.

2. Ulithi:

NOTE: Ships should contact the harbor entrance control which is maintained by a station ship in approximate position 09° 58′ 00″ N 139° 42′ 00″ E. The ship which issues harbor charts and instructions operates generally in the vicinity of a point which is 3900 yards 120° T from above position.

There is also a shore signal station (Call How–1) located on Asor Island in position 10° 02′ 10″ N, 139° 36′ 13″ E (height 80 feet).

According to captured enemy reports, when weather is clear over Asor Island, it can be seen from about 23 nautical miles from the crow's nest of a ship having a 108 foot mast and from 10 nautical miles from a ship having a mast 33 feet high. Ulithi is down on the horizon but it can be located on the horizon by the cloud hanging over it.

(a) MUGAI CHANNEL is the only entrance that may be used. All other entrances are closed to navigation. However, TOUACHI CHANNEL may be used if specifically so directed by local authorities.

(b) The center of Magai Channel is 1 mile northeast of MANGEJANG ISLAND. Entrance is on course 298.5° true, keeping the left tangent of SONG ISLAND in line with the white pyramidal float beacon on RORIPARAKKU SHOAL. The channel is 700 yards wide. Charted depths in the main channel and fairway range from 8 to 25 fathoms.

(c) All ships will be issued field charts 45 and 46 by above-mentioned ships before entering the harbor.

(d) A Japanese report of the Saipan Maru of April 1937 gives the method

of entering the harbor (URUSHI) as follows: The vessel passed 1.5 nautical miles east of Falalop Island and turneed toward MANGEJANG ISLAND when it was sighted at 253°. When the center part of the unobstructed channel (MUGAI) was at 297°, that is, when Song Island was visible at 297°, the ship turned into the channel.

(e) From this channel one enters the lagoon. Turn right when LORLANG ISLAND and SORLEN ISLAND are on a line NNE. If you face SORLEN ISLAND, the shallow reefs on the eastern side are respectively .07 to 1 nautical mile away. The tops of the reefs of MAS ISLAND and BEGEF ISLAND are both level and low. These small sandy spots cannot be seen if they are not approached but they are easy to distinguish by the surf and the different color of the water surrounding them. When parallel with BEGEF ISLAND, when the northwest tip of ASOR ISLAND and ELEMAT ISLAND form a line, turn right toward the anchorage area.

(f) Navigational aids.—MUGAI CHANNEL, the fairway and obstructions buoyed. See HO field charts 45, 46, and 47 for details.

(g) Hazards.—A black buoy marks ROROPARAKKU SHOAL in the fairway opposite MUGAI CHANNEL.

(h) Currents.—Tidal currents are strong at ULITHI and caution is advised when navigating in this area. Currents are reported as follows:

Mugai Channel.—flood sets in at 1.75 knots; ebb sets out at 2 knots.
Fairway.—the flood sets across the fairway north of Mugai entrance at half a knot.
Urushi Anchorage.—the flood sets northwest at half a knot; the ebb, north at half a knot.

This convoy plan is brief. Besides the instructions given here for Ulithi (the port of destination) and Tarawa (a diversion port), instructions would cover *all* diversion ports mentioned in Annex E of the convoy plan.

Special material is prepared for the convoy commodore and the escort force commander. This includes an analysis sheet giving complete details about the ships, their cargoes, and destinations; the route of the convoy; a list of ships which are to join the convoy; and position reports on mines, submarines, derelicts, and other hazards in the vicinity of the convoy route.

The NCSO will usually go, page by page, through the material given to the masters. He stresses such typical topics as these: destination of the convoy and its speed; readiness for sea of all vessels; plans for pilots; departure signal hoists; swept channel information; the sortie plan; the convoy diagram, including a check of light and sound repeater ships; stragglers' route instructions; and publications and charts essential for the voyage.

He will introduce the convoy commodore, who might discuss the internal organization and navigation of the convoy; the necessity for good station keeping; anticipated maneuvers, including procedure on turns; gunnery practice by armed guard crews; necessity for keeping sharp lookout; control of smoke; blackout; garbage disposal; and procedure in the event of fog, breakdown, or straggling.

The NAVPORCO communication officer then goes over the communication plan.

The formal meeting is concluded by the escort force commander's talk. This officer might well comment on the proposed disposition and deployment of the escort; make a brief review of procedures specified in the effective JANAP 145 with respect to action planned in case of air, surface, or undersea attack; and remind the masters of the importance of convoy discipline.

Before you, the NCLO, leave a convoy or communication conference, be sure you fully understand everything which concerns you and your vessel. Upon returning to your ship, you must be able to explain the full details of the communication plan to your personnel and issue

the orders necessary to comply with its requirements. The communication officer of the naval port control office is responsible for clarifying anything which may trouble you.

The master must also observe the provisions of the communication plan. The NCLO or armed guard officer assigned to the ship advises and assists the master on communications, but his presence in no way relieves the master of his own responsibility.

Know What It Directs

The communication plan includes specific instructions regarding—

1. Publications required.
2. When radio silence will be maintained.
3. Call signs.
4. Communication watches to be stood.
5. Radio and visual equipment to be used at particular times and for particular purposes.
6. Log keeping.
7. Communication procedure for stragglers.
8. Voice radio.
9. The showing of lights.
10. Visual communications.
11. MERCAST schedules.
12. Area routines.
13. Weather codes.
14. Distress messages.

A copy of the convoy communication plan is issued to the NCLO. Two others go to the master. The master is to give one plan to the chief radio operator just before sailing. This copy is to be kept in the radio room during the voyage. The master keeps his other copy. All are turned in at the end of the voyage.

Pools

The communication section of the naval port control office maintains two pools for the benefit of merchant ships and convoy commodores. One furnishes communication equipment; the other, communication personnel.

Electronic and visual signal equipment pool. During the planning phase of setting up a naval port control office, provision is made for a liberal allowance of batteries, tubes, lights, and other necessary gear that will be reissued to meet the requirements of merchant ships. Stowage and shipment must also be arranged. During assault, the equipment must be available as needed, along with personnel who can handle its installation. The importance of this pool, after the port is consolidated, should not be minimized. Commodores' communication staffs will continually require outfitting with gear preparatory to sailing.

The communication section of necessity must maintain a repair section. Gear turned in is put into top condition, ready for reissue at a moment's notice.

Many times the communication officer can secure needed Navy equipment from ships slated to return after they have discharged in the forward area. Provision will be made to equip a ship bound for a rear area only as far back as the next port of call. Equipment is too scarce and vital in the forward area to do otherwise.

Communication personnel pool.—The communication personnel pool holds NCLO's, radio and radar men, Quartermasters, and possibly a few technicians.

Administration of the pool is by the personnel office, but it is under the operational control of the communication officer. Its size will depend on anticipated needs, the size of the port, and whether the port has a large amount of shipping and staging in progress.

Merchant Ship Message Traffic

Dispatch traffic between civilian merchant ship operators, their agents, masters of ships, and the National Shipping Authority and its local representatives, is filed with the NAVPORCOF for transmission. Messages are filed in plain English, paraphrased, encrypted, dispatched to the NAVPORCOF at the destination, and there decrypted, paraphrased, and delivered to the addressees.

During World War II, the traffic volume was always heaviest after a convoy's sailing. It is wise to stagger this traffic over a period

of several days following the departure. Primarily, this keeps the traffic volume from reaching peaks that might betray a sailing to the enemy. It also makes its handling somewhat easier for communication personnel.

Communication "Brush-up" Schools

In major United States ports during wartime, the communication section may conduct "brush-up" schools for deck officers and radio operators of merchant ships. Certificates of proficiency in wartime merchant ship communications are issued to those who successfully complete the course. In forward areas, such schools are forgone.

CHAPTER 5

THE CONVOY

In the current sense, convoying is a relatively new employment of naval and merchant vessels in time of war. But convoying has long been known in some form—the Spanish Armada of Philip II which set out to invade Elizabethan England was a convoy; the first voyage of Columbus was another; the voyages of American sealing vessels to the Antarctic during the early 1800's—all were types of convoys.

A convoy may be defined as "a group of vessels having the same course and speed, under the same command, with the same primary destination, that have banded together for mutual safety for the duration of the voyage." The escort is a group of naval ships or aircraft, or both, that travels with the convoy for the purpose of protecting it from an enemy. For purposes of clarity, in naval language the term "convoy" does not include the escort.

Convoys may vary in size from those of only one or two vessels with a single escorting warship to fleets consisting of scores of ships. A typical 45- to 60-ship convoy presents a frontage of about 4 nautical miles and a depth of 1½ miles. The largest mercantile convoy to sail in any war left New York in July 1944 with 167 ships. This convoy presented a frontage of nearly 9 miles and consisted of 19 columns with a total of only seven escorts.

The number of escorts assigned a convoy depends on its importance, the warships available, and enemy action anticipated. A large escort does not always insure a safe convoy, as was shown by the experience of convoy PQ–17, which sailed from Iceland late in June 1942 bound for Murmansk. This famous convoy included 33 merchantmen, three rescue vessels, and a fleet oiler. The escort comprised six destroyers, four corvettes, seven trawlers, two submarines, and two antiaircraft ships. Scouting ahead of the convoy were 13 submarines. Nearby cruised a covering force of two battleships, two American cruisers, two British cruisers, nine destroyers, and a British aircraft carrier. The German aerial attacks were so bitter that one desperate armed guard officer ordered manned the 37-mm guns of the two Army tanks carried on his ship as deck cargo. Only 11 merchant ships of the convoy reached their destination. The trip has been called "the grimmest convoy battle of the war."

ORGANIZATION

Stationing the ships in a convoy is done with care and consideration. Column leaders are masters who are good station keepers and who are experienced in convoy work. The center positions of the convoy are reserved for the slower ships and ships with the most valuable cargoes. Vessels whose critical speeds are close to scheduled convoy speed are relegated to the rear of the group, where erratic station keeping causes the least inconvenience. If avoidable, heavy ships are not placed behind light ones. Ships having similar characteristics and turning radii are grouped together. Deeply laden, slow-turning tankers, for example, are separated from small, quick-turning dry cargo vessels. This minimizes danger of collision in zigzagging, in wheeling turns, and in emergency maneuvering.

The distance between columns is about 800 yards; between ships, about 600 yards. These figures vary according to the size and speed of the convoy and the number of escorts. The commodore's vessel leads the center column of the formation and serves as the guide of the

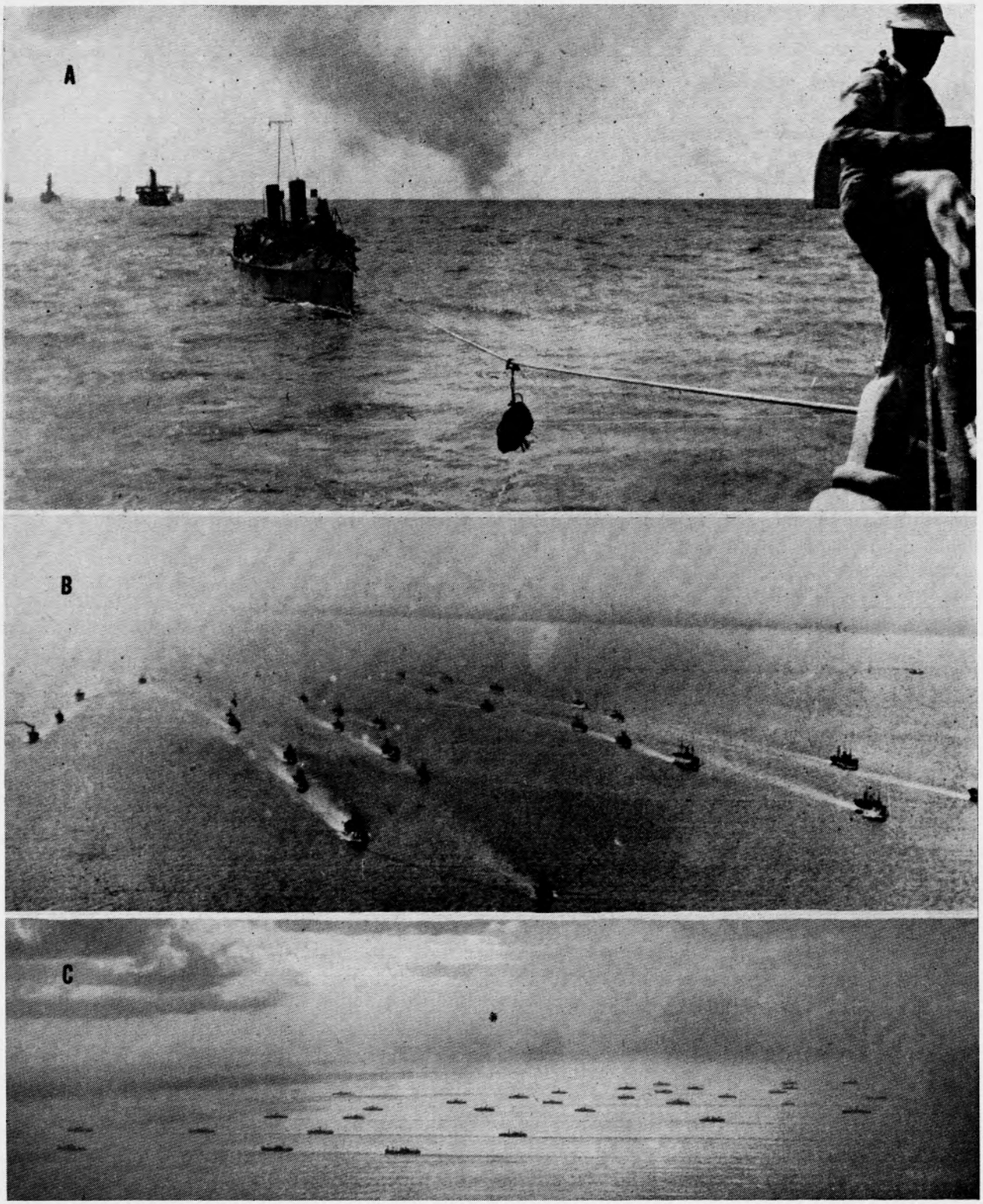


Figure 5–1.—Convoys in three wars.

convoy. If an escort oiler is assigned, it is stationed immediately astern of the commodore. Several positions astern of the oiler are left vacant, so that ships refueling have ample room to maneuver.

When a convoy is scheduled to be divided, the sections to leave the convoy are so grouped that they can break away without confusion.

CONVOY COMMAND

There are two paralleling convoy commands: that of the escort force commander and that of the convoy commodore.

Escort force commander.—The escort force commander is the senior naval officer of the escort. He is in command of the escort and is charged with defense of the convoy. His flagship is one of the combatant escort vessels. When the convoy is threatened by the enemy, he advises the commodore on a course of action. His orders are generally executed upon signal from the commodore's flagship; but, if this is impracticable due to the exigency of the situation, the signals may come from his own vessel.

Convoy commodore.—The convoy commodore is a naval, Coast Guard, or merchant marine officer. He commands the convoy, subject to the orders of the escort force commander. In the absence of an escort, the commodore is in complete command.

The commodore primarily is charged with the internal operation of the convoy. He is responsible for station keeping and for the safe navigation of the entire convoy. He may find it expedient to have the navigating done in the escort force commander's flagship, since warships are usually better equipped for navigation than merchant vessels.

The commodore controls the tactical operations of the convoy in accordance with the instructions he receives from higher authority. He is responsible for the military preparedness of the ships under him and for their conduct in action.

Should the commodore deem it no longer wise to exercise control over the convoy, he may give the order for all ships to proceed independently. Masters of individual ships are then on their own. Actually, masters are on their own at all times in the sense that they are responsible for the safety and operation of their vessels, even in convoy. The commodore is responsible for the formation and safe passage of the convoy as a whole, not for individual ships.

The commodore embarks in one of the merchant ships of the convoy. The master of that ship is responsible for the navigation and handling of his own ship, regardless of the fact that the commodore is aboard. Occasionally, the master of one of the vessels is designated as the convoy commodore and retains his responsibility as master in addition to his duties as commodore.

If the commodore is killed or otherwise unable to execute his duties, the command is passed to the vice commodore. From the vice commodore, the command goes to the rear commodore, and then to the senior special commodore, if any special commodores are appointed.

The vice commodore and rear commodore, like the commodore, are naval, Coast Guard, or merchant marine officers. In convoys of more than one section, the vice commodore and rear commodore usually are designated to command sections. Special commodores are those appointed to command portions of the convoy which are scheduled to part company from the main convoy. Whenever possible, these officers are masters who have local knowledge of the ports to which they are bound.

LEGAL POSITION OF THE MASTER

The *International Rules of Naval Warfare* lays down a code of conduct to be followed by vessels in combat. Violations of the code have been frequent in the past two world wars, since retaliation is the only way to enforce its provisions. The code is still important, since it furnishes a moral standard; transgression frequently costs a nation more from the censure of world public opinion than it gains in military advantage. Germany's policy of unrestricted

submarine warfare in World War I, for example, was instrumental in drawing the United States into that conflict.

The code distinguishes between warships and merchant vessels. A warship is a combatant craft, constructed for battle, and dedicated to destroying the enemy. A merchantman is considered a noncombatant vessel and as such is entitled to certain privileges.

A merchant ship cannot legally attack, but she can defend herself. By using force to resist capture, the merchant ship does not lose her status as a noncombatant vessel. There is a distinct difference between the exercise of the right of self-protection and cruising the seas in a predatory capacity. A defensively armed merchant vessel is not permitted to interfere with, nor obstruct the free passage of other merchant vessels or fishing craft under any circumstances, even though they may belong to a hostile power.

The decision to resist an attacker rests with the master. If he defends himself, he must accept the consequences of his action. The attacker may use any force necessary to overcome resistance and prevent escape, but no more. An attempt at escape or resistance does not entitle the captain to sink the merchantman out of hand; nor does it entitle him, once the escape has been prevented or the resistance overcome, to ignore the safety of the passengers or crew.

Duping the enemy is legitimate under the rules of warfare. The use of disguises and false colors by ships to avoid capture or destruction is a well-established custom. It is in no way dishonorable, and does not infringe on international law. On the other hand, the use of a neutral's colors may not always be politically expedient, and is not, as a rule, resorted to by American ships unless direct orders are received from naval authorities. A defensively armed merchant ship shows her true colors when opening fire, and always keeps an ensign ready to break in case of an emergency. If a ship has flown false colors at sea, her national colors must be flown when entering a neutral port.

Other legal deceptions include changing the name and port of registry of the vessel, concealing defensive armament, and altering the general appearance of the ship by erecting false superstructure.

A merchant ship may show her intention to surrender by signaling, by stopping when ordered, or by hauling down her colors. Once she has declared her intention to surrender, she is not privileged to open fire; to do so is an act of perfidy.

The procedure enjoined by international law on a master who finds himself forced to surrender is that he has to stop his ship and thereafter consider her as a prize. That is all that is legally required of him. It is for the enemy to take physical possession of the ship and to assume responsibility for her navigation and her safe custody. The master is under no obligation to navigate his ship in accordance with the orders of his captor nor to refrain from scuttling, escaping, or attempting a recapture if an opportunity presents itself.

An alert master who is compelled by superior forces to submit to capture will seize at once the opportunity to escape if the enemy fails to keep him under continuous and effective control. Under such circumstances, the enemy, should he reappear, is not entitled to use force against him by way of retaliation. If, however, the master of the prize fails to observe fresh orders to submit or steer a specified course, the captor is justified in using force to compel obedience.

A master who is forced to submit, but who does not do so in good faith, must exercise a considerable amount of judgment and discretion in attempting to make an escape. He should exploit fully any opportunity that offers a reasonable chance of success, but avoid any foolhardy stratagem which could only jeopardize his own life and the lives of his men.

SECURITY SENSE

There are certain rules of security which must be adhered to strictly by the personnel of merchant ships in time of war.

The position and course of the ship are con-

sidered classified, and are not disclosed to any persons other than the master, chief officer, officer of the watch, NCLO, armed guard officer, and the radio operator on watch. Officers off duty are not to discuss movements or the position of the ship. Charts or maps showing the daily position or track of the ship are not displayed in any public place (such as the officers' mess). Courses drawn on the chart are ruled faintly, and erased when they no longer are required. Navigational calculations must be destroyed after they have served their purpose.

Ships are completely darkened at night. The blackout equipment must always be in good condition and the blackout regulations observed. Special attention is paid to the chart room and wheelhouse. Flashlights should never be used on the upper deck. There is to be no smoking nor lighting of matches except in closed compartments. The momentary flare of a lighted match may be visible from a distance of 5 miles; the light of a match burning steadily may be seen easily at a distance of 2 miles. Even the glow from a puffed cigarette is visible up to 500 yards. The use of colored lights for dim illumination is deceptive. A blue light of the same intensity as a weak white or yellowish light has three times the intensity of the white light at half a mile. The use of unauthorized colored lights of any kind during darkened ship is prohibited.

Smoke is kept to an absolute minimum both day and night.

Nothing that floats may be thrown over the side. Inflammable waste material must be burned. If ships throw boxes, barrels, and other floatable refuse into the water, it is an easy matter for a submarine to determine the route a convoy is following. Tin cans may be given the "deep six" only after they are well punctured. About an hour before sunset is the best time to throw away refuse.

WORK OF THE NCLO

"On United States managed ships, other than United States convoy 'flagships,' when assigned on board, the United States naval communication liaison officer shall have cognizance of, and be responsible . . . for the efficient conduct of all communications, and for the supervision of the duties, watches and instruction of all communication personnel."

The above quotation from JANAP 149 is a very brief summary of the duties of the NCLO. It is a short statement that covers a great number of tasks. It means, among other things, that you are responsible for—

1. Setting communication and radar watches.
2. Efficient performance of the personnel on watch.
3. Proper log keeping.
4. Preserving radio silence.
5. Aiding the master in drafting messages which must go by Navy channels.
6. Supervising the delivery of incoming messages, and making sure they go to all the addressees.
7. Attending pre-sailing convoy and communication conferences. (See chapter 4.)
8. Preventing unauthorized persons from entering the radio room.
9. Making nonapproved private broadcast receivers inoperative at sea.
10. Supervising the upkeep of visual signaling gear (but not the radio equipment, which the radio operator maintains).
11. Arranging for the emergency disposal of classified matter.
12. Assuring that identification signals are available on the bridge (if the ship is sailing independently).
13. Seeing that the radio room receives the information and publications necessary for its efficient operation.
14. Making certain that communication and radar personnel are familiar with the publications and are cognizant of changes; that they know the communication plan, distress procedure, the often-used call signs, the effective MERCAST numbered and lettered messages, and that they follow security measures.

15. Making certain that radar personnel make necessary reports as due.

In the execution of his duties, the NCLO should maintain a courteous respect for the customs of the merchant marine, and do everything he can to promote harmony between the Navy and maritime personnel. In supervising radio watches, the NCLO makes sure that there is no discrimination against either merchant radio officers or Navy Radiomen.

Certain merchant vessels have special radar equipment for use in navigation. The master of the vessel, in consultation with the NCLO, decides when the equipment should be used. The supervision and security of the radar equipment is the direct responsibility of the NCLO. Radarmen are a part of the naval communication liaison unit. Security arrangements must be made for the gear, and unauthorized persons are not permitted access to radar equipment either at sea or in port. Detailed instructions and information will be promulgated to NCLO's and masters by the Chief of Naval Operations.

The NCLO and the master.—The NCLO is directly responsible to the master for the performance of his communication duties. The NCLO may be obliged to discharge certain other duties assigned by the Navy, but none of the collateral duties may be construed as giving the NCLO the right to disregard the ultimate authority of the master.

In accordance with the law, the master of a merchant ship commands the vessel, is charged with its safe navigation, and is responsible for everything connected with the operation of his ship, except for certain functions of the armed guard commander (as set forth in the OpNav publication, *General Instructions for Commanding Officers of Naval Armed Guard on Merchant Ships).*

The Navy holds the master accountable for violations of merchant ship communication instructions.

The NCLO is required by the Navy to call the master's attention to any breach of wartime instructions for merchant ships or other official instructions concerning the security of the ship. If the master decides to disregard what is told him, the NCLO's responsibility in the matter is ended, unless the problem is of sufficient importance to warrant mention of it in the NCLO's communication report. In this event, suitable corrective action will be taken by the naval port control officer.

The master is required to make all communication instructions available to the NCLO. It is apparent that maximum efficiency can be achieved only by close cooperation between the two.

The NCLO and the armed guard commander. The armed guard commander is in charge of the administrative organization and discipline of the naval personnel permanently assigned to the vessel. The armed guard commander is responsible to the escort force commander. The NCLO is subject to the military administration of the armed guard commander, but responsible to the master for the performance of his communication duties. The armed guard commander leaves the operational organization of communications to the NCLO.

The NCLO reports to the armed guard commander for endorsement of orders upon assignment to the ship.

Following are some regulations which clarify the relationship of the NCLO and the armed guard commander:

1. In all disciplinary matters affecting communication personnel, the NCLO is responsible to the armed guard commander, or naval commanding officer of armed guards and troops.

2. In port, the armed guard commander sets the security watches and the NCLO sets signal and radio watches that may be required. The security watches must not interfere with the signal and radio watches. Communication and radar personnel are not assigned gunnery duties while in port.

3. Unless a state of emergency exists at sea, communication personnel are assigned only to communication duties. In planning personnel requirements for gun stations, the armed guard

commander will consult the NCLO. The NCLO makes provision for emergency communication stations on the bridge and in the radio room, and designates the remainder of the communication personnel as available for gun stations. It is well for all communication personnel to be trained for gunnery duty in case of emergency.

4. After consultation with the NCLO, the armed guard commander arranges the leave, shore leave, and liberty for communication and radar personnel. Cooperation and consideration of duties are essential to an equitable arrangement.

5. The NCLO is in charge of the advancement in rating of Quartermasters, Radiomen, and Radarmen. The armed guard officer handles the promotions of the gun crew.

6. The NCLO is expected to perform only the duties specified by official publications. He may also handle censorship if the duty is delegated to him by the armed guard commander.

7. The NCLO provides the armed guard commander with copies of incoming messages that concern the safety and defense of the ship.

8. The NCLO is responsible for procuring VHF radio equipment and for providing the armed guard commander with a list of other needed items before the ship reaches port. The armed guard commander is responsible for the requisition of BuShips signaling gear.

The NCLO and the commodore's NCLO.—The NCLO of a ship in convoy is also responsible to the commodore's NCLO. Should there be no NCLO attached to the commodore's staff, the NCLO of the flagship acts in that capacity. For further information on the commodore's NCLO, see chapter 13.

XAK and XAP teams.—For certain invasion and support-invasion movements, specially trained communication teams, known as XAK and XAP teams, are assigned to some merchant ships. In communication matters, the NCLO is then subject to the authority of the officer in charge of the team.

Miscellaneous information.—The NCLO who serves also as armed guard commander will find himself busy enough. He will have to divide his labor in such a way that neither duty is neglected.

The NCLO often will find himself judge and jury, confessor, doctor, censor, advisor, keeper of the finances, and a hundred other things to his men. He should, of course, do all he can for them.

Naval personnel are quartered in their own spaces aboard ship. They are provided with their own mess and are fed from merchant ship stores provided by the merchant ship steward's department. The Navy is billed for their food. In short, all the Navy men have to do in the matter of chow is to eat it. The NCLO will be a member of the wardroom mess and will be provided with a cabin in the officers' country. Just as aboard Navy ships, he will be required to pay a monthly mess bill.

It is vital that the NCLO develop a cordial working relationship with the officers of the ship. Mutual understanding and cooperation will make everyone's job easier. The ship's officers will give the NCLO a helping hand when he needs it. They will be glad to have him aboard, and will look to him for advice on naval matters.

CHAPTER 6

SHIPS OF THE CONVOY

FORMATION

As was seen in the previous chapter, the convoy commodore is in command of the convoy along with the escort force commander, who is responsible for the military defense of the convoy. Let's now turn our attention to the ships of the convoy and discover the functions of the many special ships, such as rescue vessels, guides, and column leaders.

The usual arrangement, or convoy formation, consists of several columns of ships, each column having a leader steaming on a line parallel to the other column leaders. (In this formation, the ships in column are said to be "in line ahead.") These columns always are numbered consecutively from port to starboard; thus, the port wing is always column one. Each ship is also numbered, starting with the column leaders and running astern through the column. With this system, any ship in the formation is readily identified, and this number then becomes that ship's visual call sign. For example: ship one in column one is No. 11; ship two in column one is No. 12; the first ship in the fourth column is No. 41.

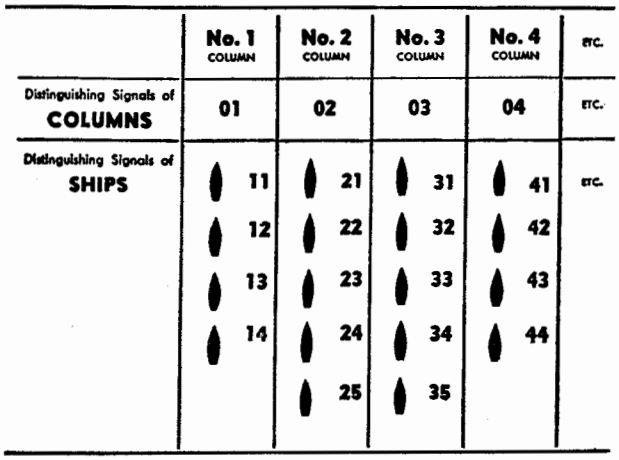


Figure 6–1.—Column and ship numbers.

When the convoy is forming up, the ship designated as convoy guide steams on a given course and speed. The column leaders then take their positions relative to the guide, and the other vessels fall into their assigned spaces, bearing on the column guide. While forming, ships hoist their visual calls and keep them flying until the convoy is formed up.

As each ship falls into place in the formation, it follows in the wake of the leading ship in its column and maintains proper distance from the column leader regardless of the position of other vessels in the column. This does not mean that the ship will not take any action necessary to prevent collision, but that it normally maintains its position with reference to the column leader. In general, ships of the convoy are influenced by the steering of only column leaders and not ships directly ahead. This requires a careful eye and steady hand, especially in narrow waters, where each ship has to make full allowance for wind and tide in order to make the same passage as the column leader.

The distances between columns, as well as the distances between ships, will vary according to the state of the sea and the inherent danger of the waters traversed by the convoy. The relative positions are established in the convoy formation plan given to the masters prior to sailing. The commodore may vary these distances at his discretion.

Should other ships request permission to join after the convoy has formed, they are assigned the vacant positions in the most suitable column. Each ship assumes the visual call sign corresponding to its position.

Because the column leaders keep station on the convoy guide and therefore are usually best able to observe her, they are responsible for all signals from the guide addressed to ships in their columns. On the other hand, any ship in the column making a signal to the guide relays it through the column leader. Reports of ships dropping out of the column or rejoining are made by the column leaders to the commodore.

The convoy commodore's flagship is usually designated as the convoy guide and nearly always is the column leader of the middle column. If there is an even number of columns, the flagship is usually the leader of the starboard of the two central columns. Should another vessel be designated as convoy guide, that ship hoists its guide flag and keeps it flying as long as the ship remains convoy guide. If the commodore decides to change guide for any reason, he signals which ship is to become the new guide. When the signal is executed, the former guide hauls down its flag and ceases to act as guide, and the newly designated leader hoists its guide flag and assumes guide for the formation. Should the new guide be the commodore's flagship, the execution of the signal means that the commodore has resumed duties as guide.

Whenever two or more ships steam in company, one acts as the guide. This ship maintains the course and speed in accordance with agreement or orders. The convoy guide does exactly this. It is responsible for the accuracy of navigation and the keeping of the convoy speed. If there is only one column, the leading ship in the column is guide; if, for any reason, she drops out of formation, the next ship immediately assumes position as guide.

Should the convoy guide be torpedoed, or for some other reason be unable to continue as guide, the leading ship of the next column to starboard immediately assumes convoy guide without further orders. If there is no column to starboard of the crippled guide, the leading ship of the next column to port takes over. A ship automatically assuming convoy guide immediately hoists its merchant ensign as the guide flag.

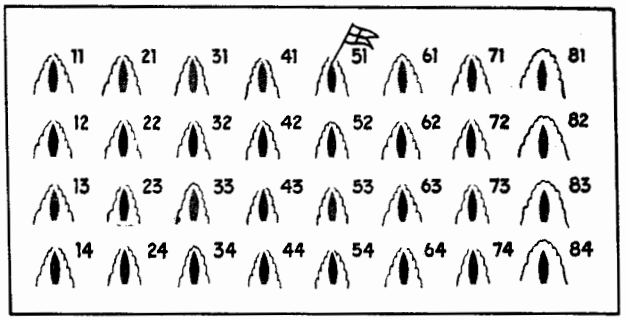


Figure 6–2.—Commodore's position in the convoy.

Station Keeping

Keeping station is the maintaining of the correct bearing and distance from the guide by a ship or ships. This can be a problem if a convoy is negotiating many turns. In order to assist in station keeping, the guide changes automatically when all ships turn at the same time through 90° or more. For a simultaneous turn of less than 90°, the convoy guide and column guides remain the same.

If the convoy alters course, with all ships making a simultaneous turn of exactly 90° to port, forming lines abreast, the port wing ship of the leading line abreast immediately becomes the convoy guide and hoists its guide flag without further orders. (A British vessel would hoist its merchant ensign.) The previous guides in column become guides in line abreast.

If ships in a 4-column convoy turn together 90° to starboard, No. 41 becomes the convoy guide, and Nos. 11, 21, 31, and 41 become guides in their respective lines abreast.

If the convoy alters course with all ships turning more than 90° at the same time, the last ship in the convoy guide's column becomes the new guide, and the trailing vessels of the other columns become the new column leaders. Thus, in figure 6–3 with the convoy making a simultaneous turn of 125°, No. 35 becomes the guide and Nos. 15, 25, 35, 45, and 55 become the new column leaders.

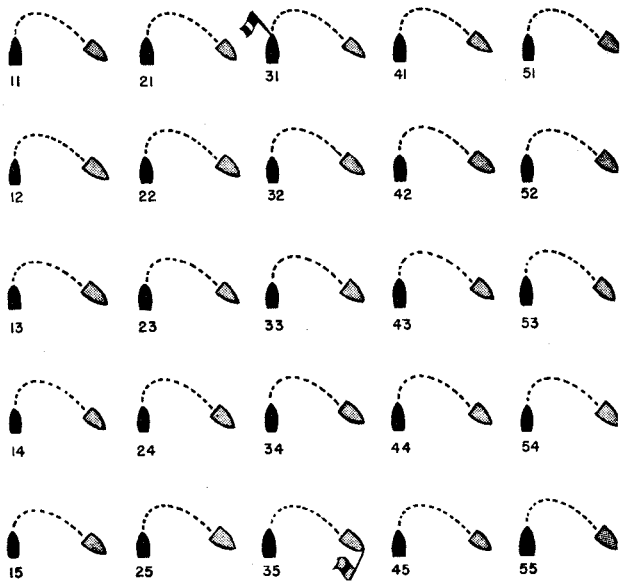


Figure 6–3.—Ships in convoy turn 125°.

Normally, the convoy commodore makes every attempt to keep the same frontage and disposition of the convoy. Rather than execute a turn which will change this disposition, he will order a series of turns retaining the same frontage. These turns are usually columnar movements. The frontage and disposition of the convoy will change in cases of emergency but revert to the original plan after the emergency has passed.

Aboard most merchant ships in convoy, the engine room telegraph is kept at "half speed," and is put to "full speed" only in an emergency, when the utmost speed of the ship is needed. The difficulties of the next ship astern must be considered when speed is adjusted for station keeping. If the ship is unable to maintain convoy speed, the master informs the commodore by signal.

Ships falling astern of station while zigzagging cease to zigzag, or modify their zigzag, until they have regained station. While regaining their proper station, they must keep out of the way of other ships of the convoy which are in station and conforming to the zigzag pattern.

At night, when ships are blacked-out properly, only the stern of the next ship ahead is visible, and it may or may not be showing a shaded stern light.

There has sometimes been a tendency for ships in convoy to drop astern of station during the night. Losing station is a dangerous practice. It results in straggling at dawn—a favorite time of attack by the enemy. The greater the distance over which the convoy is dispersed, the weaker becomes the protection given by the escort. Ships straggling far astern have frequently found themselves completely unprotected at daybreak.

Accurate station keeping is of great importance for the safety of the convoy. Large alterations of course are avoided when in convoy formation. No ship should ever need to steer more than a few degrees from the actual course of the convoy in order to regain station.

Gross changes in speed are avoided; if possible, constant small alterations are made instead. A table showing the revolutions per minute to each half knot of speed is usually found on the bridge. Provisions are made for passing orders from the bridge to the engine room for the purpose of informing the engineer of the revolutions at which the engines are to be run. The engine room telegraph is not used for passing revolution orders.

Even in wartime, merchant ships are not as completely manned as are naval vessels. The engine room watch consists of only a few men who are kept busy performing several tasks. It is often a difficult thing in actual practice for a merchant ship to add or take off a few turns to stay exactly on station. Masters and mates frequently do not change power settings when station keeping, as the conditions of the sea will average out their speed.

Exchanging Stations

If two ships are ordered to exchange stations, this is the procedure they follow:

If the two ships are in the same column, the ship ahead hauls out of line to *port* and the ship in the rear hauls out of line to *starboard*. If they are in different columns, the ship leav-

ing the port column always passes *astern* of the ship leaving the starboard column. Ships exchanging stations must keep out of the way of other ships in the convoy. As a ship's position determines its convoy call sign, ships ordered to exchange stations also exchange convoy call signs. Each ship exchanging station during the day hoists its new convoy visual call sign as it commences to move to its new station, and keeps it flying until it is in station.

When a column is ordered to change its position in a convoy, the leading ship of that column takes charge of the column. If it will expedite the maneuver, the lead ship of the column may order changes in speed.

RESCUE SHIPS

Unless special ships are available for the purpose, the rear ships of columns act as rescue ships. If the convoy is passing through dangerous waters, and there are no special rescue ships present, rescue work for the convoy is carried out by the escorts. Rescue ships proceed to the assistance of any ship in their respective columns damaged by normal marine risk, such as fire, collision, or man overboard. They do not stop to save life from ships damaged by enemy action, unless antisubmarine or escort vessels are in company and the rescue can be accomplished without undue risk. Should a rescue ship be damaged, one of the other rescue ships near it goes to its assistance.

Whenever available, special rescue ships are attached to convoys which are in particularly dangerous waters. These vessels carry qualified medical officers. They also have hospital facilities, which are available to routine sickness or accident cases, as well as to casualties, from any ship in the convoy. Rescue ships fly special distinguishing flags.

By day, a ship in convoy which loses a man overboard immediately hoists the appropriate alarm signal, and at the same time sounds a prolonged blast on the whistle or siren to draw attention to the signal. On sighting this signal, the nearest escort or rescue ship at once proceeds to render assistance. If this situation arises at night, the ship losing the man overboard makes the appropriate alarm signal by sound.

LIGHT AND SOUND REPEATING SHIPS

If the convoy is large, special light and sound repeating ships are usually designated to insure that light and sound signals are relayed quickly to all ships in the convoy. The stationing of these ships depends upon the size and formation of the convoy. This is discussed in chapter 12.

EMERGENCY MANEUVERS

Masters of ships in convoy are familiar with the emergency maneuvers for various circumstances. The NCLO should become familiar with the procedures in order to be prepared to tell the master what action to take, should his advice be asked.

If enemy vessels are encountered, the word may come from the commodore to *scatter the convoy.* On receipt of this signal which usually is ordered *at your utmost speed,* the center column (or, if there is an even number of columns, the column to the right of center) continues on its course. Ships of the columns adjacent to the center column will turn 10° away from the center column. Ships of the next outer columns turn 20° away from the center column. In other words, ships of the outer columns from the center will turn outward from the center 10° more than the next inner column. This procedure is known as *scattering fanwise* and is shown in figure 6–4. When the ships have sea room, they will continue to diverge from each other as well as from the center.

As soon as sea room is gained the center column scatters by odd-numbered ships hauling away to starboard and even-numbered ships to port.

If the commodore orders the convoy to scatter when exactly 90° off the mean course (when the ships in each column are in a line abreast and the columns disposed exactly astern of each other) ships of the leading column continue

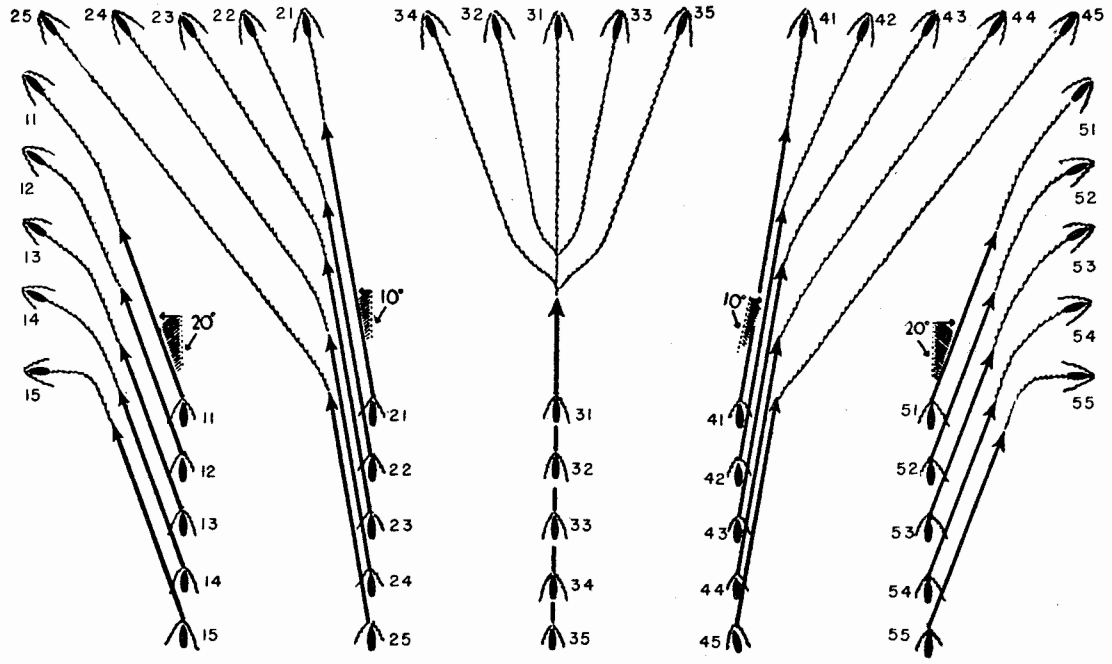


Figure 6–4.—Scattering fanwise.

their course temporarily, while ships of each remaining column alter course together *away* from the danger, each column altering 10° more than the column ahead of it. Thus, all columns scatter fanwise away from the bearing of the enemy.

If a convoy is attacked by enemy aircraft, the signal to *star* may be made. To carry out the purport of this signal properly, all ships, as soon as they see the signal, proceed immediately at their utmost speed in the following manner:

The ships in the van of each column diverge outward from the course the convoy is steering at the time, the ships in the center of each column diverging outward approximately 90° from the convoy course and the ships in the rear of each column turning and diverging from the reverse of the course.

When there is an odd number of columns in the convoy, odd-numbered ships of the center column star to starboard and even-numbered ships star to port. When there is an even number of columns in the convoy, all ships of all columns star outward, away from the center.

Masters must remember that their objective is to get the ships as far apart as possible. When the attack is over, ships re-form on the commodore's flagship as soon as they can.

DROPPING OUT OF CONVOY

Heavy weather.—Occasionally, during heavy weather, a ship—owing to the nature of its trim, or low power—may have difficulty in keeping up with the convoy without incurring damage. This applies particularly when vessels are carrying deck cargo. When this happens, the master usually notifies the commodore so that, if practicable, he may reduce speed or even heave to. The commodore who receives such a message is confronted with a dilemma. He will not want to leave a ship behind unprotected, but the convoy as a whole may need every one of its escorts. He will probably check with the escort force commander for an opinion as to whether an escort can be spared; if so, it is detailed; if not, the ship must either keep up as best it can or take its chances alone.

Breakdown.—When a ship is unable to keep up with the convoy, she falls out of column,

makes the appropriate signal and maneuvers to avoid interfering with other ships of the convoy. A report on the nature of the damage or defect is made to the commodore as soon as possible.

A ship out of control must make at once the appropriate *not-under-control* signal and, if during daylight, report by visual signal to the commodore indicating the cause and approximate time needed for temporary repairs. A ship out of control at night does *not* signal by flashing light or radio unless this procedure is sanctioned by the commodore or escort. Merchant ships are equipped with not-under-control lights for night use. These are kept dimmed and are not burned longer than is absolutely necessary.

Unless it is unavoidable, a ship does not drop out of convoy in order to repair a minor engine defect. Permission is requested from the commodore to proceed ahead of the convoy, but care is taken to keep inside the escort screen. The vessel can then reduce speed or stop as necessary.

AIRCRAFT OPERATIONS

When an escort carrier operating aircraft is sailing with a convoy, it hoists the appropriate signal to indicate flight operations. While this signal is flying, the carrier and her plane guards will maneuver to keep out of the way of the convoy and are not permitted to cut through the columns.

When the aircraft operating signal is hoisted, the leading ships of the columns next to the carrier column must pay particular attention to their station keeping with relation to that column. Ships astern of the carrier, also, must watch their station keeping. They must keep the proper separation in column and take care to stay in the wake of the ship next ahead.

Except when launching aircraft by catapult, a carrier wishing to launch or retrieve aircraft must head into the wind. Under certain difficult wind conditions, the commanding officer of the aircraft carrier may request that the

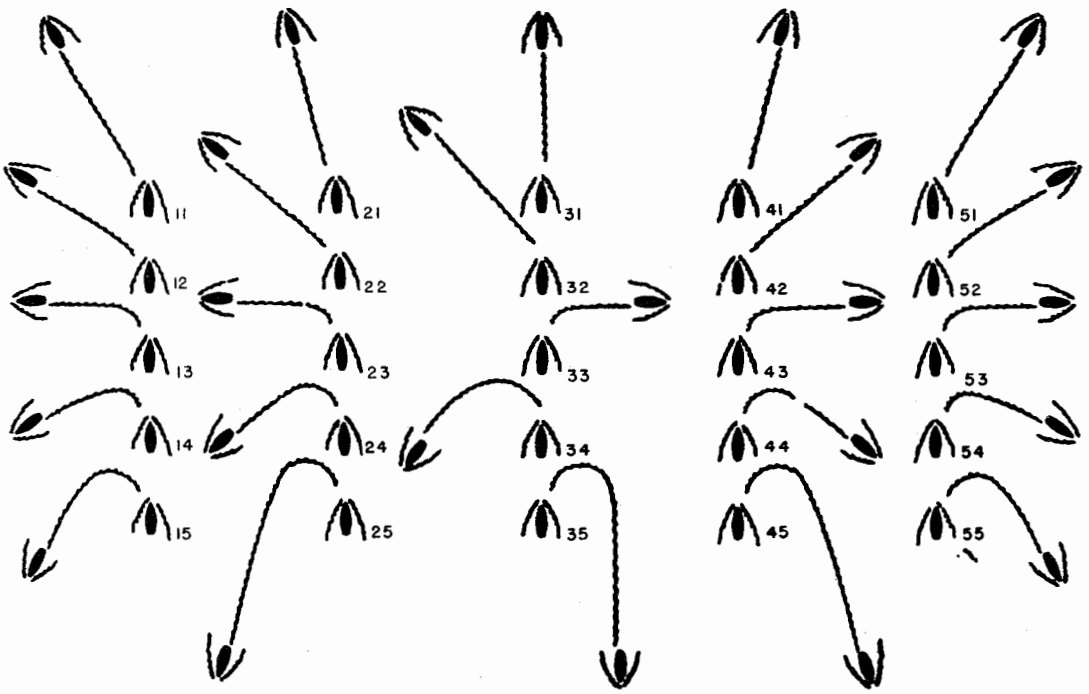


Figure 6–5.—Starring.

commodore open the distance between the columns next to the carrier column. This distance is reduced as soon as conditions permit.

MANEUVERING OF ESCORTS

It is imperative that escorts be free to maneuver as circumstances require. It is also necessary that ships maintain their stations in convoy with as little interruption as possible. Escort vessels maneuver in a manner that will keep them clear of ships in convoy, both under normal circumstances and when maneuvering in the immediate proximity of a ship or ships of a convoy. A ship in convoy maneuvers to prevent collision only when it finds itself so close that collision cannot be avoided by the the action of the escort vessel alone. At night, should circumstances arise which the master of a ship in convoy considers sufficiently serious to warrant the switching on of navigation lights to avoid an impending collision, he is permitted to do so.

ZIGZAGGING

When carrying out a zigzag, all ships turn together for each alteration of the course, and thus maintain the same compass bearings from each other throughout the zigzag. These turns are normally made without signal; but, in order to adjust zigzag clocks, a signal is available to indicate the moment when ships should turn. The commodore orders the convoy to zigzag, the nature of the pattern being left to his discretion.

Although the execution of a zigzag may be ordered at any moment, the zero time for starting the plan is always on an exact hour. Calculation of this exact hour is determined as follows:

1. *One-hour plans*: The exact hour immediately preceding the executive signal to start the zigzag.
2. *Two-hour plans*: The nearest preceding hour which is divisible by 2; for example, 1200, 1400, 1600, 1800, etc.
3. *Three-hour plans*: The nearest preceding hour which is divisible by 3; as 1200, 1500, 1800, etc.
4. *Four-hour plans*: The nearest preceding hour which is divisible by 4; as 1200, 1600, 2000, etc.

On receipt of the executive signal to start zigzagging, or at the time when a zigzag is due, or is to be resumed, ships turn together to the course shown on the plan for that particular time.

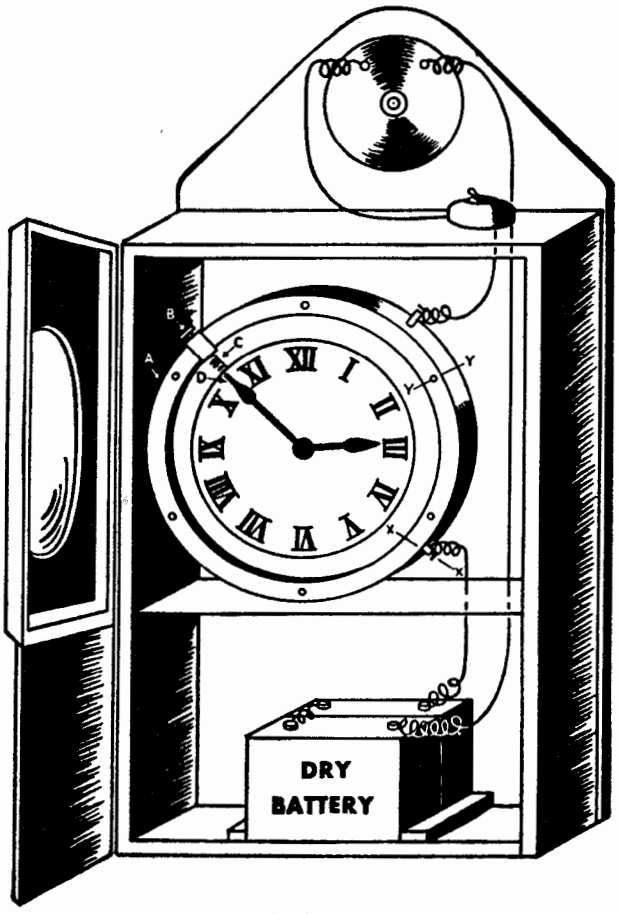


Figure 6–6.—Zigzag clock.

For example, orders have been received to zigzag on a 3-hour plan. Signal is hoisted at 1620. The zigzag plan requires changes to be made in course at 1 hour 17 minutes and 1 hour 29 minutes after commencement of the plan:

1. The hour preceding the signal which is divisible by 3 is 1500.

2. Counting from 1500 to 1620 (or shortly thereafter, depending on the time of execution) indicates that ships will be in the second hour of the plan.
3. If the signal is executed at 1625, ships would alter course as indicated for 1 hour 17 minutes.

The alteration of the ship's clocks to a new convoy time does not affect the zigzag plan in force, but on the next occasion of starting a zigzag plan by signal, the new convoy time is used in the above calculations.

RADIO GUARDSHIPS

A radio guardship is one that is specifically designated to guard a definite frequency or series of frequencies, or schedules. In a convoy, such guardships come within the following categories:

DF guardships.—Certain ships are designated to maintain a DF guard on specified frequencies. Guard is kept in accordance with the instructions contained in the convoy communication plan or as ordered by the commodore. Guardships make reports as required. When not maintaining DF guard, these ships assume guards in accordance with those prescribed for other ships in the convoy.

Special search guardships.—Certain ships are designated to maintain a special search guard on specified frequencies in accordance with schedules contained in the convoy communication plan or as ordered by the commodore. They report to the commodore special information which is required. When not maintaining special search guard, they are to assume guards in accordance with those prescribed for other ships in the convoy.

MERCAST guardship.—The commodore is MERCAST guard for DF guardships and special search guardships while these ships are actually carrying out guardship duties, and for single radio operator ships outside of single operator watchkeeping periods. The commodore is also MERCAST guard for all ships whose equipment or personnel prevents guarding MERCAST schedules. The commodore is responsible for passing to the various guardships important messages received on MERCAST schedules or on 500 kcs while such ships were maintaining guard on other frequencies in accordance with their special duties. The commodore is also responsible for passing such messages to those ships which for any reason are not able to maintain a guard on MERCAST schedules or 500 kcs.

Five hundred kcs guardship.—The vice-commodore is 500 kcs guard and is responsible for passing to the commodore signals that may be received while the commodore is guarding MERCAST schedules.

When the commodore wishes DF, or special search guardships, or single operator ships to guard a particular MERCAST schedule, he may so direct by hoisting the signal "Guard next MERCAST schedule from station indicated," or he may pass this order over the voice radio circuit. On receipt of these instructions, the ships concerned should continue to maintain their special equipment. If lack of personnel prevents this, the specified MERCAST schedule must be guarded and the special duties suspended during this period.

The commodore will determine whether visual signals, voice radio, or radiotelegraph will be used for passing information or reports between the various guardships and the commodore and escort force commander. If voice radio or radiotelegraph is used, guardships transmit their reports to both the commodore and the escort force commander. If visual signals only are used, such reports are passed to the commodore alone; he is responsible for passing them to the escort force commander if he considers it necessary.

CLASSIFIED DOCUMENTS

The master is ultimately accountable for classified documents, but this does not relieve naval personnel aboard of their own responsibility for protecting classified matter.

Certain nonclassified publications are issued

to merchant ships. These bear no security markings, such as "Restricted" or "Confidential." The provisions stated previously do not apply to these publications, but it should be appreciated that they are issued with the ultimate safety of the ship in mind. Care should be taken that they are not lost and that they are kept corrected up to date. If one of them is lost, that fact is reported to the appropriate naval authority at the next port of call so that a replacement copy can be issued.

The contents of such publications are not revealed to unauthorized persons. They must not be allowed to fall into the hands of the enemy.

STRAGGLERS

Occasionally, a ship in a convoy will develop trouble and be required to drop out. In general, if a vessel loses contact with the convoy and is out of sight of the escorts, it is considered to be a straggler. Check the sailing orders received at the convoy conference for the exact definition of a "straggler" from your convoy. A ship straggling from a convoy immediately establishes radio guard as prescribed for an independently routed ship, except that for the first 48 hours after straggling, the ship must maintain a guard on all MERCAST schedules appropriate to the area traversed. This must be done even though there is only one radio operator on board.

Should the commodore or escort force commander address a message to two or more stragglers, the convoy internal call sign is used. If the message is intended for a single straggler, the war radio call sign of the ship addressed is used. In either case, the message will be broadcast and no reply or acknowledgement is made unless specific instructions to do so are contained in the message.

In normal circumstances, it is not necessary for a straggler to break radio silence. Should communication with the commodore become essential, the message should be encrypted and broadcast twice through on 500 kcs. It should be addressed to the commodore, using his convoy internal call sign.

Should a straggler be required to transmit a contact report or distress message, it is done in accordance with the instructions laid down for independently routed ships.

INDEPENDENTLY ROUTED SHIPS

If your ship is ordered to proceed independently, the master will receive his orders from the NCSO. He will also have his route laid out by experts with the latest information regarding enemy activity in the waters to be traversed. Often the risk is great, but shipping is needed urgently in time of war and no ship will be ordered to proceed independently if the hazards make such a voyage unreasonable.

The master's orders vary with the assigned task of the ship and its destination. He is charged with carrying out these orders from naval authorities and, at the same time, he must use his discretion regarding the safe navigation and handling of his ship. Orders received from naval authorities can never override those contained in *International Regulations for Preventing Collisions at Sea.*

Frequently, vessels sailing independently in the coastwise trade hug the coast for a large part of the voyage. Orders to the master may specify, for example, that he must "keep as close to the coast as safe navigation permits." He must comply with his orders, but it is left to the master to determine when his vessel is or is not safe.

When given a course, the master is bound to adhere as closely to that course as possible. He has to take into consideration the winds, currents, and tides, and make allowances for these forces so that he will keep his ship on the track ordered. The underlying principle behind this is twofold: first, his course has been plotted to provide the safest possible route, one upon which there is less chance of meeting the enemy; and second, should the ship be torpedoed, rescue planes and vessels can track the route and pick up survivors.

Route Instructions

Contents of the independent ship route instructions which are delivered to the master

or commanding officer of each ship sailing independently normally include—

1. Sailing orders and time of departure.
2. Route points, including reference positions and ports. The latter are designated in area route instructions promulgated by higher authority and afford additional means for diversion.
3. Instructions regarding diversions. Changes in disposition of enemy vessels or minefields may necessitate a modification of the ship's route while she is at sea. The operational control authority involved will divert the ship by radio and assign new route positions expressed in terms of bearing and distance from points given in the original route instructions.
4. Areas in which the ship must zigzag and in which she must and must not show running lights. These are established by directive.
5. Necessary hydrographic and approach information, including approaches to all ports in the vicinity of the vessel's route to which she might be diverted in the event of danger or distress. ("Q" messages provide this information.)
6. The communication plan. This includes information on publications required, radio watches to be stood, secret call signs, and identification signals for use at sea when challenged by friendly ships and aircraft. An experienced communicator from the NAVPORCO will go over this plan with you and issue duplicate copies to you and the master.

Route instructions frequently are changed by patrol vessels and aircraft. Masters must comply with the new changes. These orders usually do not change the general route instructions other than to amend them.

To encounter a vessel operating on its own is the dream of every submarine commander. It is impossible to be too wary while at sea. Lookouts must be posted on a 24-hour basis and instructed to watch for periscope traces, torpedo wakes, enemy raiders, aircraft, and friendly ships. Everything sighted must be reported to the bridge.

A master should never approach a strange ship he happens to sight. Course should be altered to give the stranger a wide berth. If the other vessel changes course to close the distance, it may be assumed he is unfriendly. During World War II, some allied ships were lost because their masters mistook enemy raiders and wolf-pack supply ships for friendly vessels.

Convoys should also be given plenty of room. Escorts are suspicious of strange vessels, and there may be some risk of damage from friendly ships. There is also the danger that a submarine might be trailing a single ship, and thus be led to the convoy. Similarly, a single ship might be attacked by submarines trailing the convoy.

Warships occasionally will order merchant vessels to heave to. The signal can be made either by flashing light or flags and should be authenticated. It must not be assumed that an unidentified warship is friendly just because it makes the proper signal to stop.

Aircraft frequently will appear to check on ships' movements. In the past, masters often requested navigational assistance from aircraft. It is well to remember that navigation by air is not always as exact as surface navigation. Positions and bearings should be taken only as approximations.

Position Reports

Usually, whenever the ship's position or the name of any port has to be included in an encrypted message originated by a merchant ship, it is indicated by one of the following methods:

1. By bearing and distance from one of the lettered route or reference positions mentioned in the route instructions.
   Example: "146 K 21" indicates a position bearing 146° true 21 miles from the lettered position "K".
2. By distance in miles between the letters denoting any two of the lettered reference

positions. This will indicate a new reference position at that distance in a direct line from the first of these lettered positions to the second.

Example: "X 15 XP" indicates a position 15 miles from the lettered position "X" toward the lettered position "XP".

3. By reference letters of the position or port to which it is desired to refer.

Positions expressed in terms of latitude and longitude, or in terms of a bearing and distance in nautical miles from a well-established geographical point, are used only in—

1. Contact reports.
2. Distress messages.
3. Amplifying contact reports or distress messages.
4. Encrypted messages addressed to allied nations warships.

If it becomes necessary to divert a merchant ship, the diversion message is encrypted. It gives the point or points through which the ship will pass on its new course. A new position may be given by using one of the methods we have mentioned already, or by giving the difference in degrees and minutes of latitude and longitude between the new position and one of the existing lettered positions. *Example*:

NEW POSITION KING WHICH IS ZERO ZERO TWO DEGREES OF LATITUDE SOUTHWARD OF ROGER AND ZERO ZERO FOUR DEGREES THREE ZERO MINUTES OF LONGITUDE WESTWARD OF ABLE.

Masters and radio operators should, of course, be conversant with the phonetic alphabet.

Figure 6–7.—Survivors.

Rescues at Sea

A vessel meeting boats carrying shipwrecked crews has to approach with caution, keeping a good watch for a surprise torpedo attack. Empty boats often have been used as decoys by submarines; therefore, a master cannot afford to take chances.

If the master considers it safe, he will bring the survivors aboard—as rapidly as possible—and keep up steam with the ship turning constantly under rudder.

There are times when the master will consider it unsafe to give assistance to survivors. This is not as inhumane as it may seem. A favorite trick of submarines is to lurk in the vicinity of survivors of a sinking. When the rescue ship comes up, it, too, is torpedoed. Whenever survivors are passed up for this reason, the naval authorities are notified by visual signal as soon as possible or by HF radio during the hours of darkness.

Reports of the picking up of survivors are transmitted to naval authorities by HF radio after dark or by visual signal as soon as possible.

Many survivors of a sinking have lost their lives when the ship which rescued them was torpedoed. A number of these losses were due to the fact that the survivors' life jackets were taken away from them for drying. Survivors must either keep their life jackets or be provided with others while their own are drying.

Tactical Instructions

Except when course has been altered to evade a submarine or raider, merchant ships sailing independently keep within 20 miles of either side of their mean line of advance.

To avoid possible interception at night by an undetected surfaced submarine, the ship should, where sea room permits, alter her mean line of advance after nautical twilight by about 45° for a distance of some 50 miles. This alteration is carried out at full speed. Zigzagging is not discontinued.

The object of this maneuver is to make it as difficult as possible for the submarine to make

an attack. Most submarines like to attack at night when there is the least possible chance of detection. Accordingly, one may sometimes track an independent vessel by steaming on the surface just below the horizon. After the track of the ship has been established, the submarine can proceed in advance of the ship to get into an advantageous position for the attack. If the vessel suddenly alters course and maintains a good speed, the submarine has little chance again to get into good position for the attack, especially if the vessel does not slacken speed.

Merchant masters consider the following points when deciding which direction to make the alteration of course after dark, and also before the daylight alteration:

1. *State of the wind and sea.*—As a submarine is unable to proceed at high speed into heavy seas, it will be an advantage for the alteration of course to be made into the sea.

2. *State of the horizon.*—When the horizon is likely to be clear, alteration of course toward or away from the best light will present the smallest silhouette.

Sabotage

Convoy reports from the last war indicate that sabotage constitutes a serious threat to the merchant marine. In time of war, masters often are forced to sign on hands about whom they know little or nothing. In neutral ports, enemy agents often pose as seamen to gain access to allied merchant vessels and come aboard a few days before sailing. When the ship is ready to depart, the new hand cannot be found. This immediately warns the master of possible sabotage and forces him to waste time and effort searching the vessel for the insidious work.

In general, the object of a saboteur is to destroy the ship. If time and circumstances will not permit, the saboteur will take any means he can to disrupt the operation of the vessel and, in particular, the communication apparatus. One of the objects of sabotage is to wreck the engineering and communication gear so that breakdown of both will take place at sea. The vessel is then a helpless target for the waiting submarines which have been notified of the sabotage. With the radio gear gone, the merchant vessel has no opportunity to call for help. The end may be that eventually the ship is listed on the books as "missing at sea."

Radio shacks are especially vulnerable to saboteurs. If entry can be gained, it is entirely feasible for the equipment to be completely sabotaged without the tampering being readily apparent. For example, phosphorous bombs can be made into innocent-looking pencils and surreptitiously placed beneath a transmitter. When the water in the chemical dries and allows the phosphorous to become exposed to the air, it bursts into an intensely hot flame which cannot be readily extinguished. A fire in the radio room can completely destroy radio communication.

Another favorite trick of the saboteur is to cause a short circuit by driving a nail through a wire. This is a crude method, but, if it is well-executed, the nail is often hard to locate. A quick tug with a wrench can jam the shutter mechanism on a signal searchlight. Delicate radar gear is easily put out of commission and is difficult to repair. Grounding or breaking the antennae can effectively disrupt communication. Although it is obvious what has been done, the nuisance value is worthwhile to the saboteur.

Most sabotage must of necessity take place in port, inasmuch as few saboteurs are zealous enough to blow up a ship at sea with themselves aboard.

It is obvious there will not be sabotage if a hostile person is not allowed to get near the ship. A day and night watch must be kept on all approaches to the vessel, both by land and sea. Pontoons should be placed between the quayside and the ship, and the deck and stern kept illuminated.

If the ship is berthed alongside an enemy ship in a neutral port, the consul should immediately be asked to arrange for the ship to

be shifted. Workmen who come aboard must be kept under a close and constant watch. All parts of the ship should be searched at frequent intervals.

The best general precaution against sabotage is perpetual alertness on the part of every man. The NCLO should not only make certain of the security of the communication spaces and the vigilance of his own men, but make every effort to keep everyone aboard the vessel sabotage conscious. Effective sabotage pays large dividends at comparatively small cost. It is too good a weapon not to find wide employment by any enemy.

CHAPTER 7

PUBLICATIONS, REPORTS, AND LOGS

PUBLICATIONS

Merchant ship publication allowance tables contain instructions for allowances and issue of communication publications to allied merchant ships, NAVPORCOF's, convoy commodores, and NCLO's.

Classified naval publications issued to a merchant ship are charged to the master of the ship. In the event of loss or compromise of such a publication for other than unavoidable reasons, the master will be subject to arraignment before a United States Coast Guard Merchant Marine hearing unit for possible disciplinary action.

The fact that the master has the ultimate responsibility for the classified naval publications issued to the ship does not relieve the naval officers and enlisted men of their immediate responsibility for such publications as may be temporarily entrusted to them in connection with the performance of necessary duties. *U. S. Navy Regulations* states that "Each person who may receive custody of any classified matter shall be responsible for its safeguarding in accordance with its assigned classification."

The master is also responsible for seeing that the ship's publications are kept up to date, but it is incumbent upon the NCLO to assist in this function and to assume the immediate responsibility if the master so desires.

LOGS

The NCLO has cognizance of three official logs: radio, visual, and radar. Regulations concerning the contents, inspection, and disposition of the first two logs are found in the current ACP 148 and JANAP 149. Special instructions concerning the radar log are promulgated separately by the Chief of Naval Operations.

The NCLO is not required to keep a general communication log, but he will find it very helpful to keep an unofficial record of incidents and conditions suitable for inclusion in his communication reports. It is impossible to make a conscientious communication report from memory alone. It is emphasized that the reports must include specific detail if they are to be of use to the authorities ashore.

When an unofficial record of this type is kept, it must be handled, stowed, and destroyed in a manner consistent with the security classification of the material contained in it.

The radio log.—Refer to chapter 8.

The visual log.—The visual log must include all messages sent from or received by your ship by flag hoist, flashing light, semaphore, colored lights, sound, pyrotechnics, voice hail, or VHF voice radio. This means a log of all messages, whether you are an individual addressee, one of a group addressee, or a relay station.

Each page of the log book should be headed as follows:

TOR or TOD	TOE	FROM	TO	SIGNAL	MESSAGE	QM METHOD

Column 1, TOR or TOD, indicates the time of receipt or time of delivery, depending on whether the message or signal is received or sent.

Column 2 indicates the time of execution of the signal. If the time of execution does not coincide with the time of receipt (as in the case of a flag hoist signal ordering a change of course at some later hour), the execution of the order is indicated by a separate entry in the log. Such an entry makes a reference to

the TOR of the original signal, and includes any further executive signal that may be sent.

Columns 3 and 4 indicate the transmitting and receiving ships.

Column 5 indicates the visual medium by which the signal was sent or received.

Column 6 contains the complete signal or message, including the message heading, originator's date-time group, and any other instructions that may accompany the text. A message should always be recorded in the log exactly as received, especially with regard to abbreviations, calls, prosigns, and passing instructions.

Column 7 is to be initialed by the Quartermaster or any other person who sends or receives the message or signal.

When a message is passed or relayed to another ship, a separate entry is made in the log, but the TOR of the message may be used in column 6 instead of repeating the entire text; for example, "Relayed TOR 1317."

No erasures are to be made in the visual log. Entries found to be in error are corrected by drawing a single line through them. The original entry in every case must remain legible. The correct entry is inserted, if practicable, immediately following the entry struck out; otherwise, it should be entered elsewhere in the log for that watch so that the complete entry will be neat and legible.

Each Quartermaster is held strictly accountable for the correct logging of the signals sent or received on his watch. It is often difficult to log a signal or message the minute that it comes in, but the Quartermaster must find time before he goes off watch to copy all messages into the log from the clipboard or loose sheets of paper that he may have been using. It is the responsibility of the NCLO to see that the visual log is kept in accordance with the prescribed procedure.

When a message is received, it must be passed immediately to the mate on watch. The mate will pass it on to the master. It is the absolute responsibility of the naval communication liaison unit to make sure that all messages are delivered to the master. If he fails to receive one, the NCLO is held responsible. It is advisable for the NCLO to prepare a typed or mimeographed message form and have it understood that all incoming messages will be filed at a certain place—preferably in the chartroom—where the master can check them from time to time. Such a procedure does away with the undesirable practice of having the Quartermaster leave the bridge to search for the master every time he receives a message. It also eliminates the possibility of misunderstanding that is always present when messages are not confirmed in writing. If a message is urgent, it may be sent orally to the master at once, but a written copy should be delivered as soon as it can be made.

COMMUNICATION REPORT

Upon completion of a voyage, the NCLO must make a brief report on communication matters pertaining to that voyage. This report is classified Confidential and is referred to as the *communication report.* Whenever an armed guard commander is acting in the capacity of an NCLO, it is his responsibility to submit the report.

An original and two copies of the communication report are submitted to the CNO via the NAVPORCOF. Reports are not submitted outside the continental limits of the United States. In other words, a single report is submitted, covering all legs of a protracted voyage from the time a merchant ship leaves the shores of the United States until she returns. If a vessel is operating coastwise along the continental United States and completes more than one voyage a month, a monthly report may be submitted at the end of the voyage nearest the first of the month. If the report contains information of special interest, don't wait, but submit it as soon as possible to the NAVPORCOF at the first port of call.

Should war break out again in the future, a form similar to the following will probably be used for the communication report.

When preparing this report, don't make it too easy for yourself. Printed or mimeo-

graphed forms are not permitted; each report has to be typed, and don't forget the lower right side of the last page. This is where the reporting officer has to sign the report and type or print his name, rank, classification, file number, and title below his signature. The title indicates whether the officer signing is an NCLO or an armed guard commander.

The format indicates the entries for paragraph 1, and for the ending. To learn what goes between, let's see what paragraphs 2 through 11 of the communication report cover.

Paragraph 2 includes the name of the vessel, correct gross tonnage, type of vessel, and names of master, owner, and operator. In giving the type of vessel, be specific. When possible, use the correct United States designations, as C4, T2, or Liberty. Don't use such vague descriptions as "freighter" or "cargo vessel."

Paragraph 3 indicates the ports of departure

NAVAL COMMUNICATION LIAISON UNIT

(Ship)

CONFIDENTIAL (Date)

From: Officer in Charge
To: Chief of Naval Operations
Via: (1) Commanding Officer, Naval Armed Guards and Troops
(2) United States Naval Port Control Officer, _____

Subj: Communication report

Ref: (a) General Instructions for NCLO

1. The following information is submitted in accordance with reference (a).
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.

(Signature)

(Name, rank, classification,

and file number)

(Title)

and arrival and dates thereof, as well as whether the ship was routed independently or in convoy. If the ship was part of a convoy, the designation of that convoy has to be included. For example:

Arrived	*Port*	*Departed*	*Status*
	New York	1/10/50	In convoy
1/21/50	Southampton	1/24/50	In convoy
1/24/50	LeHavre	2/8/50	Independent
2/8/50	Weymouth	2/9/50	In undesignated convoy
2/10/50	Milford Haven	2/12/50	In convoy
2/23/50	New York		

Paragraph 4 covers the adequacy of the communication complement, including the names, rates, and serial numbers of military personnel. The object of this paragraph is to secure information about the collective adequacy of communication crews rather than the individual proficiency of Quartermasters, Radiomen, and Radarmen. Indicate here whether the communication crew is, in your opinion, adequate, inadequate, or more than adequate to the service in which your ship is currently engaged. It is here that you mention breaches of wartime security regulations or other acts harmful to the safety and efficient operation of the ship by non-Navy communication personnel, and the action taken by the master of the ship or other appropriate authority in such cases. On the other end of the scale, mention of extraordinary merit on the part of communication personnel is acceptable. If this is approved by CNO, it is forwarded to the Chief of Naval Personnel for inclusion in the subject man's record.

Paragraph 5 states all difficulties experienced in visual signaling. It is here that you should include the difficulties caused by personnel. Equipment deficiencies are shown later. Some of the difficulties you may experience are: improper handling of flashing light messages by other ships in convoy; laxness on part of shore signal stations; improper use of challenge procedure; improper use of naval flashing light procedure; and deviation from standard signaling procedure in the convoy.

Paragraph 6 describes all the difficulties you encountered with radio transmission and reception. In this paragraph you tell about the operator's inability to hear transmitting stations satisfactorily, and whether it was due to poor keying, interference, jamming, or perhaps another station transmitting simultaneously on the same frequency. Make a complete report of any difficulty with MERCAST, such as delays and interruptions in transmission or routines, improper order of messages broadcast, improper order of traffic list, interferences from coastal stations broadcasting MERCAST messages while routines are in progress, instances of improper encipherment of MERCAST messages received, use of crypto devices not held by the ship, and undue use of 500 kcs for broadcasting complete MERCAST messages which could be shifted to the station working frequency. If you have any instances of radiation from oscillating receivers and other electrical apparatus, report them and the remedial action taken. Report any breach of radio silence by your ship as well as any flagrant abuse of the international silent period. You undoubtedly will have something to say about intraconvoy radio communications. It is here that you give an account of the errors committed in the use of voice codes and general radiotelephone procedure.

Paragraph 7 covers the adequacy of instruction received prior to getting under way.

Paragraph 8 gives you the opportunity to suggest improvements in wartime merchant ship communications. Of course, suggestions must be set forth with due regard to practical detail.

Paragraph 9 summarizes the difficulties you have encountered due to material furnished or not furnished. This will include the inadequacies of communication equipment allowances, such as an insufficient number of signal lights, radio receivers, batteries, flags, etc.

Do not make request on this form for such things as relocation of signal equipment or for the adjustment, repair, and replacement of radio equipment. Requests for signal equip-

ment are reported to the NAVPORCOF for the sections. Your radio requests are normally included in the requisition list submitted by the master to the ship's agent. If delivery is delayed on the items, the difficulty has to be reported in person to the communication officer at the NAVPORCO in time for action to be taken before sailing. If the ship sails without corrective measures having been taken, the matter must be reported in the next communication report submitted.

Paragraph 10 includes comments on miscellaneous communication items for which no previous provision is made in the communication report. Items which might possibly be included are the use of unorthodox methods in the operation of a convoy, improper handling, stowage and disposal of classified matter, interference with communication functions by ship's personnel, unsatisfactory quartering of communication personnel, and so forth.

Paragraph 11 applies only to ships equipped with radar. Instructions as to the information needed in such cases will be promulgated separately by CNO to NCLO's on ships so equipped.

That does it.—A considerable amount of specific detail is included in one of these communication reports, but the need is obvious. For instance, corrective action cannot be taken if you report "during the voyage one MERCAST message was unintelligible." The reporting office has to identify the message (by address and DTG), the MERCAST area, the transmitting station, the frequency, and the ship's position at time of the difficulty.

Communications made during enemy action or other emergency must be described in detail. Extracts from logs are usually desirable in such cases.

These reports are submitted to the NAVPORCOF's, who take appropriate action and then endorse and forward the reports to CNO for study and for further action as may appear necessary. The majority of the problems and complaints contained in the communication report, such as requests for equipment or information, are handled on the spot by the office of the local NAVPORCOF. In endorsing and forwarding the reports to CNO, the NAVPORCOF will indicate what action has been taken on the various reports.

These reports are again studied in the office of the Director of Naval Communications along with the NAVPORCOF's endorsement and pertinent boarding reports. In the past, vital communication intelligence has been sifted from the collected communication reports, and remedial action has been taken on the basis of the information.

The reports are then filed under the name of the ship, with a cross-reference to the name of the officer reporting, and are available as a record of both ship and officer.

CHAPTER 8

RADIOTELEGRAPH

The primary method of broadcasting messages from shore radio stations to allied merchant ships at sea in time of war is known as the MERCAST system. It is the purpose of this system to provide an efficient and reliable means of transmitting messages to ships at sea, in any part of the world, with a minimum of delay, while also making it unnecessary to guard an excessive number of schedules.

Under the MERCAST system, the world is divided into primary areas. Each area is identified by a number. Some primary areas are further subdivided into secondary areas which are identified by a suffix letter added to the area number. Each primary area is normally covered by one high-powered shore radio station which broadcasts on frequencies simultaneously. Schedules are fixed. Each secondary area is normally covered by one medium-powered shore radio station which also broadcasts on various frequencies on fixed schedules.

Medium-powered short-range shore radio stations also broadcast MERCAST messages to ships estimated to be within range. These stations call on 500 kcs and the call is followed by the "opsig" directing a shift to the working frequency. After a brief interval, the message is broadcast on the working frequency. These stations broadcast whenever they have traffic on hand and do not have fixed schedules for transmission. They do not normally broadcast during primary or secondary area schedules. Messages are usually broadcast immediately upon receipt and repeated during the first single operator period. A single operator period is, as the name implies, a broadcast especially for ships having only one radio operator.

TRANSMISSION OF MESSAGES

Messages are normally transmitted by primary and secondary area stations on two consecutive schedules. A message may be broadcast a greater number of times if unusual conditions warrant. It is of the utmost importance, however, that every effort be made by ships addressed to copy messages at the time of *first* transmission.

The primary and secondary area stations and coastal stations broadcasting MERCAST traffic, together with the frequencies employed and times of schedules, are listed in detail in JANAP 149.

General messages intended for all allied merchant ships in all areas, world-wide, are in two series—British and United States. British MERCAST lettered messages are originated by the Admiralty and are identified by the word MERCAST followed by double letters in alphabetical sequence (for example, AA to AZ, BA to BZ, etc.) contained in the text. United States MERCAST numbered messages are originated by the Navy Department and are identified by the word MERCAST followed by a number contained in the text. This series runs in numerical sequence beginning with number 1.

In addition to world-wide MERCAST general messages, there are two other series of general messages, one applicable to merchant ships in the Atlantic area only, the other to merchant ships in the Pacific area only. These are known as the MERCASTLANT series and the MERCASTPAC series, respectively. These series are identified in the same manner as the world-wide series except that the letters or numerals

are prefixed MERCASTLANT or MERCASTPAC, as appropriate.

Not all MERCAST general messages are broadcast. Those which are not of an emergency or urgent nature are disseminated to NCSO's who deliver them to masters upon arrival in port. Such general messages contain the same identifying features as if they had been broadcast. In cases when a MERCAST lettered or numbered message has been sent to NCSO's for dissemination, the next general message broadcast to ships at sea contains information to this effect and indicates the identifying letters or number of such message. Merchant ships thus are able to determine if they have received all the messages in each series.

Order of Broadcast and Traffic List

Scheduled primary and secondary area broadcasts commence with the call signs of the ships for which there is traffic. The call signs follow in the sequence in which the messages are to be broadcast. This is called the "traffic list." Should a primary or secondary area station have no traffic to transmit, the opsig meaning "I have nothing for you" is broadcast.

Messages are arranged for broadcasting in the following sequence:

1. New traffic (not previously broadcast)
   In order of precedence
   Messages with same precedence in order of DTG
2. Old traffic (previously broadcast)
   Messages addressed to area collective call signs
   Messages addressed to convoy collective call signs (in alphabetical order)
   Messages addressed to individual ships (in alphabetical order)

Messages are then broadcast, following one another in the sequence indicated in the traffic list, each message being preceded by its associated call signs and group count.

Schedules Guarded

Allied merchant ships at sea guard all MERCAST schedules appropriate to the area being traversed. They must copy the complete traffic lists and all messages addressed to them individually or collectively. While within the confines of a secondary area, ships guard the MERCAST schedules of the appropriate secondary area station *in addition* to those of the primary area station.

Until reaching port, stragglers or ships dispersed from a convoy must copy all messages addressed to the convoy or to stragglers of the convoy from which they have become separated.

Messages received must be given immediately to the master or the senior deck officer of the watch.

Messages from shore authorities to individual ships in convoy are transmitted either on MERCAST schedules, via the commodore, or—in escorted convoys—via the escort force commander. Individual ships in convoy are *not* addressed by their war radio call signs.

MERCAST messages are not receipted for, answered, nor acknowledged unless the ship is specifically directed to do so in the encrypted text of the message.

Ship to Shore

If the master of the ship decides, or is ordered, to break radio silence to transmit a message to shore authorities, the call is made on 500 kcs or on a high frequency. Except in cases of contact reports and distress messages, HF is always used when practicable. After communication is effected, the message is transmitted. A list of the shore stations, together with the frequencies they guard, is found in JANAP 149. In order that ships may select the best frequency to use for high frequency transmission to shore radio stations, reference should be made to currently effective frequency guides. Use of these is explained in *General Communications,* NAVPERS 10805.

A contact report or distress message transmitted by a merchant ship out of convoy must go by radio. In this case, no specific station is called; but, if the message has been transmitted on 500 kcs, it will be rebroadcast by an intercepting station. This rebroadcast is for the

benefit of all ships in the vicinity which may not have heard the original transmission from the ship, and at the same time assures the ship that its message has been received. The ship must listen attentively to the rebroadcast in order to verify its accuracy. Shore stations do not rebroadcast contact reports or distress messages received from ships in convoy. The interception is reported with bearing to appropriate naval authorities.

Frequencies

The radio frequency common to all ships in a convoy is 500 kcs.

The voice radio frequency common to all ships in a convoy and between the convoy and the escort is determined prior to the convoy sailing and is stipulated in the convoy communication plan.

Intraconvoy Messages

Under certain conditions, the commodore may consider it necessary to transmit an encrypted message or plain language message to the convoy or to a portion of the convoy. If the message requires a time of execution, the time for its execution should be stated in the text. Commodores transmitting encrypted messages in which a time of execution is given should take into consideration the time required for decryption by the addressees. The time of execution should allow sufficient time for addressees to decrypt the message before being required to execute.

RADIO SILENCE

Radio silence is imposed on all merchant ships at sea for their own safety. Transmission by radio is forbidden except to send a contact report, distress message, or a message in accordance with some special order given by naval or military commands, or when, in the opinion of the master, the necessity for breaking radio silence outweighs the risk of disclosing the position of the ship.

No radio message or signal may be transmitted or answered without the permission of the master or deck officer of the watch. If, however, the ship is sinking and circumstances prevent the radio operator from obtaining this permission, he is to use his discretion and be prepared to act independently.

The use of radio at sea endangers not only the transmitting ship, but other ships as well. Enemy vessels or aircraft equipped with DF equipment may take bearings from a merchant ship's transmissions, leading to her location and ultimate destruction. Even a short transmission or emission of any type is sufficient to enable a DF bearing to be taken.

The ship in which the convoy commodore rides is usually the "transmitter ship" for the convoy. It is preferable, however, that messages go via Navy channels. Therefore, when a naval escort force is along, traffic is given to the escort force commander for transmission. Should a ship in convoy have occasion to send a message ashore, the ship passes the message by voice radio or visually to the commodore's ship. If the commodore concurs that the message is of vital importance, he arranges with the escort force commander to transmit the message to the shore via naval radio channels. In the absence of an escort, authority to break radio silence is vested in the convoy commodore.

When it is absolutely necessary to send a message, HF, VHF, or higher frequency should be used whenever practicable. The risk of detection is thereby reduced, but enemy DF stations may nevertheless obtain a bearing. Consequently, lengthy transmissions on any frequency are to be avoided insofar as possible. This does not apply to the transmission of a contact report or distress message, in which case the initial transmission must always be made on 500 kcs to insure its reception by other ships in the vicinity.

DECEPTIVE CALL SIGNS AND MESSAGES

Beware of deceptive call signs and messages. An enemy ship may attempt to decoy a merchant ship by using a call sign just broadcast, by using call signs of allied nations' warships,

or by sending "SOS" or some other urgent signal. Except in emergency, a radio call sign, if authentic, always will be followed by a broadcast message, the decrypted text of which will indicate if the ship is required to report, reply, or acknowledge by radio. If no such indication is contained in the message, radio silence is not to be broken.

OFFICIAL RADIO LOG

Every ship sailing independently or in convoy must keep an accurate radio log for each voyage. Although logs in wartime carry much the same information as peacetime logs, there is certain information which must be eliminated from the former, and other information which must be added.

Each sheet of the log is dated and numbered in sequence for each voyage and shows the international call letters of the ship station, the name of the commercial radio company licensee (if applicable), and the name of the operator on watch.

The entry "on watch" is made by the operator beginning a watch, and is followed by his signature. The entry "off watch" is made by the operator being relieved or terminating a watch, and is followed by his signature. All log entries are completed currently at the end of each watch by the operator responsible for the entries. The use of initials or signs is not authorized in lieu of the operator's signature. Logs are written in ink or on a typewriter.

While on watch, the operator makes entries in the log concerning the following:

1. Complete traffic lists of all MERCAST schedules received.
2. The DTG of any message sent from the ship, the station called, and the frequencies used.
3. A positive entry each half hour as to whether the silent period is maintained.
4. Remarks as to excessive interference caused by atmospherics, deliberate jamming, etc., with statements of the source (if known).
5. The DTG and full texts of distress messages, automatic alarm signals, and incidents which are important to the safety of the ship or to shipping in general, such as suspicious signals heard.
6. Use of the auto-alarm.
7. Remarks as to the daily inspection of equipment.
8. Breakdown of equipment and the repairs made.
9. Failure of the power supply.
10. The daily comparison of the radio room clock with standard time, including an indication of errors observed and corrections made. Authentic time signals received from land stations are acceptable as standard time.

During wartime, it is imperative that *certain information be excluded from the radio log,* such as—

1. Plain versions of encrypted messages received by the ship.
2. Positions of the ship or of allied nations' ships (except in the case of distress messages sent or received).
3. Information concerning disposition of allied nations' merchant ships or naval vessels.
4. Classified information, such as convoy call signs, recognition signals, sailing signals, etc., furnished the ship by naval authorities.
5. Port of departure, way ports, or destination.

The log has to be inspected daily and signed by the naval communication liaison officer if an NCLO is on board; otherwise by the senior radio operator.

The log is submitted daily to the master for his signature, and his attention must be drawn to entries of importance or interest. A certification will be made by the master at the end of each day: "I have received all appropriate traffic."

The radio log for the voyage is retained on board in custody of the master until it is requested by the appropriate allied naval authorities.

CONDITIONS OF RADIO READINESS

This brings us to the two distinct conditions of radio readiness for convoys: condition A and condition B. Details of these conditions are given below. Special conditions of radio readiness may be promulgated by local naval authority/commands in order to meet unusual or special requirements for a particular convoy.

Condition A

This condition is the one normally in force in convoys advancing under ordinary circumstances. Guards are maintained as follows:

Commodore

A continuous guard on 500 kcs.

A guard on all MERCAST schedules appropriate to the area being traversed.

A continuous guard on convoy voice radio circuit.

Vice commodore

Continuous guard on 500 kcs.

A guard on all MERCAST schedules appropriate to the area being traversed.

A guard on the convoy voice radio circuit from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

One- and two-radio operator ships

A guard on 500 kcs during single- and 2-operator watch periods, ships shifting to guard all MERCAST schedules appropriate to the area being traversed. If equipment is available, a continuous guard on 500 kcs should be maintained while MERCAST schedules are guarded.

A guard on convoy voice radio circuit (if there is enough equipment) from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

Three-radio operator ships

A continuous guard on 500 kcs during single and 2-operator watch-keeping periods, ships shifting to guard all MERCAST schedules appropriate to the area being traversed. If equipment is available, a continuous guard on 500 kcs should be maintained while MERCAST schedules are guarded.

A guard on convoy voice radio circuit (if there is enough equipment) from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

DF guardships

DF guard is kept by designated vessels in accordance with directives contained in the convoy communication plan, or orders of the commodore. When DF guard is not maintained, guard is established on 500 kcs. Guard is shifted as necessary to cover all MERCAST schedules appropriate to the area being traversed. If equipment is available, guard on 500 kcs is kept, together with the guard on the MERCAST schedule.

A guard is kept on the convoy voice circuit while DF guard is maintained, and from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

Special search guardships

Special search guards are kept by certain ships in accordance with directives contained in the convoy communication plan, or as the commodore may order. When a ship is not maintaining special search guard, guard is established on 500 kcs and is shifted to cover all MERCAST schedules appropriate to the area being traversed. If equipment is available, guard is also maintained on 500 kcs. A guard is kept on the convoy voice circuit while special search guards are maintained, and from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

Ships with unapproved receivers

In condition A, the 500 kcs guard is predicated on the ship equipped with an approved type of receiver, but any receiver is to be used to insure reception of appropriate MERCAST schedules. Radio operators must take every precaution to prevent these receivers from oscillating unnecessarily.

Condition B

This condition is brought into force in convoys during alarm, enemy attack, exceptionally heavy weather, or reduced visibility. It is to be assumed—

During alarm or enemy attack without waiting for orders. Once assumed for this reason, it is to be maintained until further orders.

During reduced visibility, when directed by the commodore or, when lacking such orders, by any portion of the convoy being obscured by fog, snow, heavy rain, mist, etc. When assumed for this reason, ships are to revert to condition A when directed by the commodore or when good visibility is restored throughout the convoy.

During exceptionally heavy weather, condition B is maintained, when directed by the commodore, until ships are ordered to revert to condition A.

While in condition B, all ships guard 500 kcs. If equipment or personnel prevents any ship from guarding MERCAST or special guards and 500 kcs simultaneously, the 500 kcs guard must be maintained and the other guards discontinued. Guards are maintained as follows:

Commodore

A continuous guard on 500 kcs.

A guard on all MERCAST schedules appropriate to the area being traversed.

A continuous guard on convoy voice radio circuit.

Vice Commodore

Same as for condition A, except a continuous guard also is kept on the voice radio circuit.

One-radio operator ships

Continuous guard is kept on 500 kcs. MERCAST schedules are guarded only if a simultaneous guard can be maintained on 500 kcs.

A continuous guard is maintained also on convoy voice radio circuit if there is enough equipment.

Two- or three-radio operator ships

During enemy attack or alarm, continuous guard is kept on 500 kcs.

During fog or in heavy weather, a guard on 500 kcs is maintained during the first 2 hours; thereafter, during single-operator watchkeeping periods. Ships shift to guard MERCAST schedules only if a simultaneous guard can be maintained on 500 kcs. A continuous guard is kept on the convoy voice radio circuit if there is enough equipment.

DF guardships

DF guard is kept in accordance with directives contained in the convoy communication plan, or as the commodore may order.

When not maintaining DF guard, 500 kcs is guarded. MERCAST schedules are guarded only if a simultaneous guard can be maintained on 500 kcs.

A continuous guard is kept on the convoy voice circuit (if there is enough equipment) while DF guard is maintained, and from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

Special search guardships

Guard is kept in accordance with directives contained in the convoy communication plan, or as the commodore may order.

When not maintaining special search guard, ships with this duty establish guard on 500 kcs. MERCAST schedules are guarded only if a simultaneous guard can be maintained on 500 kcs.

A guard is kept on convoy voice circuit (if there is enough equipment) while maintaining special search guard, and from 1 hour before sunset to 1 hour after sunrise, or as the commodore may direct.

RECEIVERS

Certain types of radio receivers radiate sufficient energy to permit enemy vessels operating nearby to obtain DF bearings. Such receivers are considered nonapproved. In certain circumstances, however, the importance of

receiving official messages outweighs the possible danger from the use of nonapproved receivers. The instructions contained below must be strictly observed:

Approved communication receivers may be used at any time.

Ships, whether in convoy or sailing independently, are required to guard MERCAST schedules even though their receivers may be nonapproved.

Ships with nonapproved receivers should not normally maintain watch on 500 kcs. An exception, however, occurs when a ship is sailing in convoy under convoy radio condition B. Guard on 500 kcs is then to be maintained by all ships, even though their receivers are nonapproved.

Approved DF receivers may be used at any time.

Nonapproved DF receivers are to be used only on receipt of specific instructions from the escort force commander or the convoy commodore (when in convoy), or from the master (if sailing independently).

Approved broadcast receivers may be used at sea provided they are connected to their own independent antennas. An antenna used in connection with a broadcast receiver may not be erected within a radius of 50 feet of a DF antenna or in a position where it is liable to cause interference with the ship's other radio installations. Nonapproved broadcast receivers are not to be used at sea under any circumstances.

ACCESS TO RADIO AND RADAR ROOMS

Admittance to the radio room is to be permitted only to persons performing their duties.

If, for any reason beyond the control of the master, it should be necessary to leave the radio room unattended while the ship is at sea, the room must be locked and the key given to the master or deck officer of the watch.

If the ship is fitted with radar, it is the responsibility of the master to see that the radar room is kept securely locked when not in use. When the ship is in port, a guard must be placed on the radar room. If there is difficulty in maintaining a continuous guard from the ship's personnel when in port, the master should apply to the local naval command for men to act as sentries.

In some ports, radio transmitting equipment may be sealed by local authorities. While in port, these seals must not be broken without the approval of the local authorities; but, on standing out to sea, the seals should be broken and the transmitters made ready for immediate use.

COMMUNICATIONS IN PORT

In wartime, the use, control, supervision, inspection, and closure of radio stations on merchant ships in port and inland waters are governed in accordance with instructions issued by the appropriate authorities. Instructions governing the use of radio in specific harbors and inland waters may be issued locally by naval command or other appropriate authority.

While in port, messages (other than distress messages) are not to be transmitted by radio from a merchant ship. If it is necessary to send other than a distress message, either by radio or cable, it is to be taken to the local allied military authority/command (the military includes all forces—Army, Navy, or Air Force) for encryption and transmission. If there is no allied military authority/command at the port, application should be made to the appropriate consul.

Procedure primarily is designed to attain reliability and speed in communications; secondarily, as an aid to security. Familiarity with the prescribed procedure and its employment is essential for effective communications. Procedure properly employed minimizes the number and length of transmissions necessary to effect delivery of messages by providing a concise, definite method. A degree of security is also attained through shorter and fewer transmissions.

CALL SIGNS

Navy call signs are described as collective, individual, or indefinite. The same nomenclature is applied to call signs for use by ships of the convoy, plus another: convoy call signs.

Collective Call Signs

Collective call signs are used to address a number of ships simultaneously. The definition is the same as applied to naval vessels, but the breakdown is different. Collective call signs for combatant ship groups would break down to such as DESDIV 121, CARDIV 6, SUBRON 9, etc. Following are some samples of collective call signs allocated for use of wartime merchant ships:

Call Sign	*Meaning*
NUKO ∅	All ships guarding MERCAST.
NADN ∅	All United States merchant ships.
NADN 1 to 13	All United States merchant ships in area indicated.
NRMS ∅	All allied merchant ships.
NRMS 1 to 13	All allied merchant ships in area indicated.
GBMS ∅	All British merchant ships.
GBMS 1 to 13	All British merchant ships in area indicated.

You can see that the meanings of collective call signs as defined for wartime merchant ships are similar to the definitions of indefinite call signs discussed in *General Communications*. Indefinite call signs as used by merchant ships are applicable to merchant ships only and will be discussed later.

Individual Call Signs

In wartime, all merchant ships have both international radio call signs and war radio call signs. As NCLO, you must know where and when these call signs are used.

International radio call signs.—The first thing to remember about using these call signs in wartime is that the message *must be in plain language*. That is a primary requisite. They can be used when communicating with neutral ships or neutral shore stations, or when transmitting a message relating to navigation and business of the ship when it is operating within inland waters of the United States.

War radio call signs.—These call signs are allocated to merchant ships by naval authorities prior to the ship's sailing. The merchant ship is not informed of any war radio call sign other than its own. You readily can see that these call signs are not to be divulged. They are used by merchant ships transmitting contact reports, distress messages, or plain language amplifying reports when the merchant ship is *not* in convoy. They also are used by independent ships when communicating with naval vessels or naval shore stations in plain language. Merchant ships operating independently use their assigned war radio call signs when transmitting encrypted messages to naval vessels or naval shore stations. In this case, an indefinite call sign (described below) is used as the ship's call sign in making the "call-up" and in the heading, but the ship's war radio call sign is spelled out phonetically in the encrypted text of the message. Although the instructions are not identical, you can see the similarity of this latter use and codress messages, as used for service messages.

Indefinite Call Signs

Following are examples of indefinite radio call signs used by merchant ships:

NUMS 1 to 9	Any United States merchant ship.
MVSS 1 to 9	Any British merchant ship.
NJMS 1 to 9	Any allied merchant ship.

Any one of the indefinite call signs allocated to merchant ships is selected at random and used as the ship's radio call sign to indicate that the originator of the message is a United States, British, or other allied merchant ship (as appropriate).

In order to identify the particular merchant ship using an indefinite radio call sign, you do as previously prescribed—phonetically spell out the war radio call sign in the text of the message. The text, of course, is then encrypted. If the ship does not have a war radio call sign, the name of the ship and its international call

sign are encrypted in the text.

Here is an important factor to remember when using indefinite radio call signs: The same indefinite radio call sign that is used to establish communication must be used until all traffic *at that time* is cleared. On the next and each separate occasion of breaking radio silence, a different indefinite radio call sign is used.

Indefinite radio call signs are never used to address any or all merchant ships.

Convoy Call Signs

Convoy radio call signs are of two types, *internal* and *external.* Internal types are used for messages between ships and escorts within a convoy and between ships and supporting aircraft on short range communication channels. External types are used for messages addressed to convoys from authorities or commanders ashore or outside of the convoy, other than the escort.

Convoy internal radio call signs and convoy voice radio call signs are based on a two-letter or figure-letter group. This is referred to as the convoy radio distinguishing group and is allocated to each convoy before sailing. A convoy radio distinguishing group, when supplemented by certain stipulated suffixes, forms the complete convoy internal call sign. These call signs are intended primarily for intraconvoy communication and are never used by ships when working a shore radio station or contacting naval forces outside the convoy or escort.

Convoy external radio call signs consist of four-character groups which change daily. These groups, when augmented by certain authorized suffixes, form the complete convoy external radio call signs. Prior to sailing, a list of basic calls is prepared for all ships in the convoy sufficient to provide for the estimated length of the voyage plus a margin for contingencies.

When used by voice, convoy distinguishing groups and suffixes are spoken phonetically. If the occasion should arise that you require a voice radio suffix and one hasn't been provided, apply the CW radio suffix and use that for voice communications.

METHODS

There are two principal methods of radio communication used by merchant ships in time of war. These are the *receipt method* and the *broadcast method.*

In the *receipt* method, both the transmitting and receiving stations use their transmitters in order to effect delivery of messages. The transmitting station requires and obtains a receipt for each message transmitted. This method is the most reliable, since no doubt exists as to receipt of the message by the adees. However, a very decided disadvantage in the use of this method in wartime is that it entails the use of transmitters by both stations. The presence of both stations is thereby disclosed to the enemy and their positions can be determined by DF. For this reason, your ship's orders will probably call for strict radio silence except in emergency, and all traffic will be sent by the broadcast method.

In the *broadcast* method, although the message is addressed directly, the stations addressed are not permitted to receipt for the message or to use their transmitters for any purpose directly connected with receipt of the message. The transmitting station broadcasts the call and message, but the receiving station maintains silence and gives no indication of its presence. The advantage of this method is that the station addressed does not answer and thus avoids disclosure of its position. The broadcast method is the primary method used by shore stations in time of war for delivering traffic to merchant ships.

MERCAST TRANSMITTING SPEEDS

In the transmission of radio traffic, accuracy is far more important than speed. The difference in time required to transmit a message at 18 words per minute and the time required to transmit the same message at 25 words per

minute is small. Even this slight gain in time may be nullified by the time required for repetition due to transmitting too fast.

The speed of transmission of headings by manually operated shipboard stations should be appreciably slower than the speed of transmission of texts.

Messages broadcast by shore stations normally will not be faster than 18 words per minute.

PROCEDURE

Radiotelegraph procedure is the basis of all communication procedure. Radiotelephone and visual procedures are only modifications of it.

Once you understand procedure as used in radiotelegraph, the rest will be easier. You must, of course, have the necessary "know-how" to handle a communication job aboard a merchant ship as well as a combatant vessel.

Three things must be emphasized when thinking of military communications: *reliability, security,* and *speed.* In order to combine these in each message, the system must be based on clarity and brevity. This is partially attained by the use of procedure signs, called prosigns, which are single letters or combinations thereof. Their function is to facilitate communications by conveying in condensed form certain frequently used orders, instructions, requests, reports, and information related to communications.

A list of prosigns is provided and it is imperative that all communication personnel know and understand it. An overscore indicates that the letters under it are transmitted as a single character, that is, without pause between.

Procedure used by merchant vessels is based on international commercial procedure.

In order to deal with various special types of messages required in war and to provide the necessary security, some modification of commercial procedure is necessary. Explanations and examples of these variations are given but, apart from these variations, normal commercial procedure may be employed.

List of Prosigns

$\overline{AA}$	Unknown station
AA	All after
AB	All before
$\overline{AR}$	End of transmission
$\overline{AS}$	Wait
$\overline{BT}$	Long break
C	Correct
$\overline{CT}$	Starting signal
DE	From
EEEEEE	Error
G	Repeat back
GR	Group sign
$\overline{IMI}$	Repetition
$\overline{IX}$	Execute to follow
IX (5 *sec. dash*)	Execute signal
K	Go ahead
R	Received
WA	Word after
WB	Word before

Assignment of precedence.—Precedence indicates to communication personnel the relative order of handling and delivery, and to the addressee(s) the relative order in which to note the message.

The assignment of precedence to a message is the responsibility of the originator and is determined by the subject matter of the text. It is important that a message not be assigned a precedence higher than that required to effect delivery in time to all addressees.

The precedence assigned a message by the originator does not indicate the action to be taken by the addressee or the precedence of a reply. Such instructions, if necessary, are included in the text of the message or in other special orders.

The appropriate use of the various precedence designations is to be determined by careful consideration of the following definitions:

Designation	*Use*	*Handling*
FLASH	Reserved for initial enemy contact reports or special emergency operational-combat traffic originated by specifically designated high commanders or by operational commanders of units directly affected. This traffic to be SHORT reports of emergency situations of vital proportions.	Hand carried, processed, transmitted, and delivered in the order received and ahead of all other messages. Messages of lower precedence will be interrupted on circuits involved until handling of the FLASH message is completed.
EMERGENCY	Reserved for amplifying reports of initial enemy contact, for messages required in situations of emergency which affect the current implementation of a tactical action, and in situations which gravely affect the national security, or concerning distress, which demand immediate delivery to the addressee.	Processed, transmitted, and delivered in the order received and ahead of all messages of lower precedence, even to the extent of interrupting processing and transmission of lower precedence messages already in progress.
OPERATIONAL IMMEDIATE	Reserved for important tactical messages pertaining to the operations in progress, or important administrative messages having an immediate bearing on tactical operations; and when necessary, messages concerning the immediate movement of ships, aircraft, or ground forces. This precedence is to be used only when the value of a message is dependent upon expeditious delivery to the addressee.	Processed, transmitted, and delivered in the order received, and ahead of all messages of lower precedence, even to the extent of interrupting processing and transmission of lower precedence messages already in progress.
PRIORITY	Reserved for important messages which must have precedence over routine traffic. This is the highest precedence which normally may be assigned to messages of an administrative nature.	Processed, transmitted, and delivered in the order received, and ahead of all messages of lower precedence. ROUTINE messages being transmitted should not be interrupted unless they are extra long.
ROUTINE	Reserved for all types of messages which are not of sufficient urgency to justify a higher precedence, but must be delivered to the addressee without delay.	Processed, transmitted, and delivered in the order received, and after all messages of higher precedence.
DEFERRED	To be employed for all types of messages which justify transmission by rapid means, but which will admit of the delay necessary for prior transmission of messages of higher precedence.	Processed and transmitted in such order as will clear traffic with due regard for messages of a higher precedence.

A reply takes precedence according to its own merit, as determined by the originator of the reply. Precedence is not necessarily the same as that assigned the message to which the reply refers.

Precedence begins when a message is drafted, and is a guide for communication personnel, not addressees. It is better to ask whether the text alone requires prompt action than to insist on speed of transmission, since high precedence only gains speed on the circuits and does not demand prompt action by the addressee.

Date-Time Groups

In time of war, messages, except certain messages broadcast on schedules, are not normally given station serial numbers or letters but are identified by their date-time groups.

The date-time group is expressed in six digits, followed by the time zone suffix letter. The first pair of digits denotes the date; the second pair, hours; and the third pair, minutes. If the day of the month is the ninth or earlier, a zero is used as the first digit in order to complete the six-digit group. For example, ø71714Z denotes the seventh day of the month at 1714 GCT.

The time included in the date-time group is the time of origin of a message and is the time at which the message is authorized for transmission. For internal convoy communications, convoy time is to be used. In this case, it is not necessary to include the zone suffix letter. In external convoy communications and independent ship communications, the date-time group is based on Greenwich civil time. The zone suffix letter "Z" must, in such cases, be included in the date-time group.

The date-time group is inserted in the heading of messages as shown in the examples at the end of this chapter.

When the date-time group is quoted in the text of an encrypted message for purposes of reference or identification, it should be treated as any other word or group and must be encrypted. In this case, the zone suffix should be spelled out phonetically. The month and year may be added if necessary for clarity.

Operating Signals

International regulations allow for the use of certain 3-letter operating signals by commercial radio operators. These begin with the letter "Q" and are commonly known as "Q-signals". Certain other 3-letter operating signals beginning with the letter "Z" are reserved for use by the military services, although the military also uses some of the Q-signals.

Although these are 3-letter signals, some are amplified or completed by adding appropriate call signs, time groups, numerals, etc., such as QBW: I received the message (information) sent at———(time).

Operating signals may be given an interrogatory sense. These signals are divided into question, answer, or advise, such as QBW. By insertion of the prosign $\overline{\text{IMI}}$ *after* the "Q" signal and any data used with it, QBW $\overline{\text{IMI}}$ 15øøZ would break down to "Did you receive the message (information) sent at 1500Z?"

These signals possess no security and are regarded as the equivalent of plain language.

We have discussed the prosigns, the relative order of precedence, the use of call signs, and the operating signals. Before being able to apply them, you must know how to construct the message. Note, in the examples that follow, that prosigns are not used to indicate precedence. When used in merchant ship communications, precedence is spelled out.

EXAMPLES OF MESSAGES TRANSMITTED BY MERCHANT SHIPS

A merchant ship which has need to break radio silence to pass an encrypted message to the shore will draft the message in the following form, using an indefinite radio call:

NPG NPG NPG	Call sign of shore station
DE	From
NJMS4	Indefinite radio call sign of an allied merchant ship.

Priority	Precedence
151732Z	DTG
GR 13	No. of encrypted groups
BT	Long break
Encrypted text	FROM TWO JIG BAKER SIX OWING TO HEAVY WEATHER HAVE BEEN DELAYED TWO ZERO HOURS
BT	Long break
K	Go ahead

When ships are ordered to break radio silence (as for transmitting a weather report or an ETA), it is necessary to indicate to whom the message is addressed. In these cases the address is inserted in plain language immediately after the group count (or DTG).

NSS NSS NSS	Radio call sign of shore station
DE	From
NJMS7	Indefinite radio call sign of an allied merchant ship
300927Z	DTG
GR 17	Group count
FOR CNO	Authority to whom message is addressed
BT	Long break
Encrypted text	FROM BAKER SIX JIG SEVEN X ESCORT NOT MET X ETA SEVENTEEN HUNDRED
BT	Long break
K	Go ahead

Should it be found essential to pass a plain language message to an allied shore radio station, the merchant ship's war radio call sign is used and the message transmitted in the following manner:

NSS NSS NSS	Radio call sign of shore station
DE	From
ZGOX	Ship's war radio call sign
Priority	Precedence
190732Z	DTG
GR 3	Group count
BT	Long break
Text	MAIN ENGINES REPAIRED
BT	Long break
K	Go ahead

Messages between ships in convoy are made as follows:

CT	Starting signal
(XY)D3	Internal collective call sign of convoy
DE	From
(XY)D1	Internal radio call sign of commodore
2045	Time group
GR 4	Group count
BT	Long break
Text	BURN BLUE STERN LIGHT
BT	Long break
AR	Ending sign

Note: If the commodore wished the ship (or ships) called to answer, he would end the message with the procedure sign "K". If he does not require an answer, he ends the message with AR. The convoy radio distinguishing group may be omitted if no ambiguity or confusion with another convoy will result.

CHAPTER 9

RADIOTELEPHONE

Radiotelephone procedure is designed to attain reliability and speed in communications. When properly used, it minimizes the number and length of message transmissions. The procedure is used by joint and combined forces and is designed so that all concerned speak the same language.

Messages are spoken in standard phrases and not word for word; but words should not be run together in such a way that they confuse the receiver. The person transmitting over the radiotelephone should speak clearly and slowly, with natural emphasis on each word, so that the person receiving the message can understand it easily.

The voice radio procedure prescribed herein is used for all voice radio communications. The escort force commander is the control for voice radio communications on the convoy common frequency. Strict compliance with his orders, adherence to the prescribed procedure, and good circuit discipline are essential if voice communications are to be efficient.

PHONETIC ALPHABET

The standard phonetic alphabet is used to identify any letter of the alphabet.

Letter	*Spoken as*	*Letter*	*Spoken as*
A	ABLE	N	NAN
B	BAKER	O	OBOE
C	CHARLIE	P	PETER
D	DOG	Q	QUEEN
E	EASY	R	ROGER
F	FOX	S	SUGAR
G	GEORGE	T	TARE
H	HOW	U	UNCLE
I	ITEM	V	VICTOR
J	JIG	W	WILLIAM
K	KING	X	XRAY
L	LOVE	Y	YOKE
M	MIKE	Z	ZEBRA

The names of the signal flags are the same as the phonetic equivalents of the letters of the alphabet. Five are also governing flags. Signals which convey orders do so in a positive or affirmative sense in nearly all cases. To impart some other sense to a signal, the signal must be preceded by one of the governing flags. Signals, even though transmitted by voice radio or radiotelegraphy, represent flag signals and thus require the use of the names of the flags in all transmissions. These governing flags are:

"A"—The Immediate Execution
"P"—The Preparative
"N"—The Negative
"Y"—The Interrogative
"C"—The Affirmative

Complete use of the governing flags is explained in chapter 10.

PRONUNCIATION OF NUMERALS

To distinguish numbers from words similarly pronounced, the following rules for the pronunciation of numbers are observed:

Figure	*Spoken*	*Figure*	*Spoken*
0	ZERO	5	FI-YIV
1	WUN	6	SIX
2	TOO	7	SEVEN
3	THUH-REE	8	ATE
4	FO-WER	9	NINER

In transmitting, the proword FIGURES may be used to indicate that numerals or figures follow.

Numbers are transmitted digit by digit, except exact multiples of hundreds and thousands, which may be spoken as such.

Number	*Spoken as*
150	WUN FI-YIV ZERO
600	SIX HUN-DRED
8000	ATE THOW-ZAND

PROWORDS

Prowords are pronounceable words or phrases which have been assigned meanings for the purpose of expediting message handling on circuits where voice radio procedure is employed. They are used only between operators. A proword or a combination of prowords is never substituted for the textual component of a message.

The following prowords are authorized for general use:

Proword	*Explanation*
ACTION	The addressees whose designations immediately follow are to take action on this message.
ALL AFTER	The portion of the message to which I have reference is all that which follows_____.
ALL BEFORE	The portion of the message to which I have reference is all that which precedes_____.
BREAK	I hereby indicate the separation of the text from other portions of the message.
CORRECTION	An error has been made in this transmission. Transmission will continue with the last word correctly transmitted. An error has been made in this transmission (or message indicated). The correct version is_____. That which follows is a corrected version in answer to your request for verification.
DISREGARD THIS TRANSMISSION.	This transmission is in error. Disregard it. (Not to be used to cancel any message that has been completely transmitted and for which receipt or acknowledgement has been received.)
DO NOT ANSWER	Stations called are not to answer this call, receipt for this message, or otherwise to transmit in connection with this transmission. (When this proword is used, the transmission shall be ended with the proword OUT.)
EXECUTE	Carry out the purport of the message or signal to which this applies. (To be used only with the executive method.)
EXECUTE TO FOLLOW.	Action on the message or signal which follows is to be carried out upon receipt of the proword EXECUTE. (To be used only with the executive method.)
EXEMPT	The addressee designations immediately following are exempted from the collective call.
FIGURES	Figures or numbers follow.
GROUPS	This message contains the number of groups indicated by the numeral following.
INFO	The addressee designations immediately following are addressed for information.
I READ BACK	The following is my response to your instructions to read back.
I SAY AGAIN	I am repeating transmission or portion indicated.
I SPELL	I shall spell the next word phonetically.
I VERIFY	That which follows has been verified at your request and is repeated. (To be used only as a reply to VERIFY.)
MESSAGE FOLLOWS	A message which requires recording is about to follow. (Transmitted immediately after the call.)
NUMBER	Station serial number.
ORIGINATOR	The originator of this message is indicated by the address designation immediately following.
OUT	This is the end of my transmission to you and no answer is required or expected.
OVER	This is the end of my transmission to you and a response is necessary. Go ahead; transmit.
READ BACK	Repeat this entire transmission back to me exactly as received.
RELAY (TO)	Transmit this message to all addressees or to the address designations immediately following.
ROGER	I have received your last transmission satisfactorily.

Proword	*Explanation*
SAY AGAIN	Repeat all of your last transmission. (Followed by identification data means repeat the portion identified.)
SILENCE	Cease transmissions immediately. Silence will be maintained until instructions are received to resume.
SILENCE LIFTED	Silence is lifted. (Can be sent only by station imposing silence, or by higher authority.)
SPEAK SLOWER	Your transmission is at too fast a speed. Reduce speed of transmission.
THAT IS CORRECT	You are correct, or what you have transmitted is correct.
THIS IS	This transmission is from the station whose designation immediately follows.
TIME	That which immediately follows is the time or date-time group of this message.
UNKNOWN STATION	The identity of the station with whom I am attempting to establish communication is unknown.
VERIFY	Verify entire message (or portion indicated) with the originator and send correct version. (To be used only at the discretion of the addressee to whom the questioned message was directed.)
WAIT	I must pause for a few seconds.
WAIT OUT	I must pause longer than a few seconds.
WILCO	I have received your message, understand it, and will comply. (To be used only by addressee. Since the meaning of ROGER is included in that of WILCO, the two prowords are never used together.)
WORD AFTER	The word of the message to which I have reference is that which follows_____.
WORD BEFORE	The word of the message to which I have reference is that which precedes_____.
WORDS TWICE	Communication is difficult. Transmit(ting) each phrase (or each group) twice. (This proword may be used as an order, as a request, or as information.)
WRONG	Your last transmission was incorrect. The correct version is_____.

PRECEDENCE DESIGNATIONS

Precedence designations, in order of precedence, are as follows:

FLASH
EMERGENCY
OPERATIONAL IMMEDIATE
PRIORITY
ROUTINE
DEFERRED

Use of precedence designations was explained in chapter 8. The same rules apply to their use in radiotelephony.

COMPOSITION

Every message is composed of three parts: the heading, the text, and the ending. Each part contains elements which are to be spoken in a specified manner to insure clarity and understanding. Messages may be transmitted over voice circuits in either normal or abbreviated normal form.

Heading

The heading consists of all the elements of a message from the beginning of the transmission to the separation between the heading and text.

The call of a message serves to identify the stations between which that particular message is being transmitted. It may also serve as the address of the message when the originator and addressees are in communication with each other on the same circuit. The call may take one of the following forms:

Full call

(XRAY YOKE)[1]
DOG WUN SIX_____Call sign receiving station
THIS IS_____From
(XRAY YOKE) CHIEF_____Call sign station calling

[1] "Xray Yoke" is the convoy radio distinguishing group. It may be omitted if no ambiguity or confusion with another convoy will result.

Abbreviated call

The call sign of the called station may be omitted when the call is part of an exchange of transmissions between stations and when no ambiguity will result.

THIS IS	From
(XRAY YOKE) CHIEF	Call sign station calling

Where relay is involved, concise instructions to the receiving station as to the handling of the message must be included.

Example:

(XRAY YOKE) DOG WUN SIX	Call sign receiving station
THIS IS	From
(XRAY YOKE) CHIEF	Call sign station calling
RELAY TO	Relay proword
(XRAY YOKE) BOSS	Call sign station to whom relay is to be made.

Precedence is seldom necessary in voice radio messages; but, if used, the appropriate precedence designation will be transmitted immediately following the call and any transmission instructions that may be given.

Example:

(XRAY YOKE) DOG WUN SIX—THIS IS (XRAY YOKE) CHIEF—RELAY TO (XRAY YOKE) BOSS—EMERGENCY, etc.

The date-time group, when appearing in messages, may be transmitted in the heading, the ending, or both. When used in the heading, it will appear immediately preceding the group sign or, if the group sign is not used, the first long break.

Example:

DOG WUN SIX—THIS IS CHIEF—RELAY TO BOSS—EMERGENCY—TIME WUN SIX THUH-REE ZERO—BREAK, etc.

When used in the ending, the DTG will appear immediately following the long break.

British ships transmit the DTG only in the message ending. United States ships usually transmit the DTG in the message heading.

An address consists of the call signs of the originator and the addressees, and the appropriate prowords to identify each.

Example:

(XRAY YOKE) DOG TEAM	Call sign receiving station
THIS IS	From
(XRAY YOKE) CHIEF	Call sign station calling
PRIORITY	Precedence designation
TIME	Time proword
WUN SIX THUH-REE ZERO	Time-group
ORIGINATOR	Originator proword
(XRAY YOKE) CHIEF	Call sign of the originator
ACTION	Action addressee proword
(XRAY YOKE) DOG TEAM	Call sign action addressee
INFO	Information addressee proword
(XRAY YOKE) BALONEY	Collective call sign information addressees
EXEMPT	Exempted addressee proword
(XRAY YOKE) DOG ZERO WUN	Call sign exempted addressee

When the originator and the addressee(s) are in communication with each other on the same circuit, the call serves as the address.

Example:

(XRAY YOKE) DOG TEAM	Call sign receiving station (and action addressee)
THIS IS	From
(XRAY YOKE) CHIEF	Call sign station calling (and originator)
PRIORITY	Precedence designation
TIME	Time proword
WUN SIX THUH-REE ZERO	Time group

Group counts.—Because voice radio messages are normally short and concise, a group count is not always employed. If used, however, the number of groups indicated will be preceded by the proword GROUPS and will immediately precede the text.

Break.—To prevent confusion or ambiguity which may result from portions of a transmission being misinterpreted as part of the text, the proword BREAK may be used to separate the text from other parts of the message.

Text

The text is that portion of a message between the heading and the ending. It contains

the thought or idea which the originator desires to communicate.

The text may consist of plain language, voice code words, code or cipher groups, or numerals.

The phonetic equivalents are used in spelling words for transmissions where the text is composed of cipher groups. The proword I SPELL is used when spelling words, except for texts consisting of signals or voice code words.

Ending

Every radiotelephone message ends with either the proword OVER or OUT. When using OVER, the transmitting station is telling the receiver to "go ahead; transmit; this is the end of my transmission to you and a response is necessary." When using OUT, the transmitting station is telling the receiver, "This is the end of my transmission to you and no answer is required or expected." The prowords OVER and OUT are never used together.

Upon completion of the transmission of the text, and prior to transmitting either the proword OVER or the proword OUT, an operator may correct portions of the transmission (which he knows were transmitted incorrectly) by use of the proword CORRECTION followed by identification data and the correct version.

Example:

(XRAY YOKE) DOG TEAM—THIS IS (XRAY YOKE) CHIEF—EMERGENCY—TIME ZERO ATE ZERO FI-YIV—BREAK—SOUND CONTACT—WUN SEVEN SIX DEGREES TRUE—BREAK—CORRECTION—WORD AFTER SEVEN—NINER—OVER.

OPERATING RULES

To avoid confusion which may result from interrupting transmissions in progress, operators will listen in and assure themselves that the circuit is clear.

In the interests of security, transmissions by voice radio will be as short and concise as possible, consistent with clarity. Brevity is best achieved by use of standard phraseology.

Transmissions over voice radio should be clear and slow, with natural emphasis on each word. The text is spoken in natural phrases, not word by word. Words should not be run together. To facilitate the answering of requests for repetitions to insure accuracy, and to permit clear uninterrupted speech, messages should be written down prior to their transmission. This should be done either by the originator or by the operator from the originator's oral dictation. Messages which must be given by the receiving operator to another person preferably should be written down. Transmissions containing the proword MESSAGE FOLLOWS will always be written down by the receiving operator.

The proword ROGER means "I have received all of your last transmission."

The proword WILCO is used to acknowledge receipt and the capability to comply with an order, or as a response if the term ACKNOWLEDGE appears in the text of a radiotelephone message.

The meaning of ROGER is included in that of WILCO and the two words are never used together.

On many voice radio circuits, the addressee is either operating the equipment or is in close proximity to the operator. In these instances, the response to the transmission may represent the acknowledgement, and the term WILCO is authorized for this method of acknowledgement. An acknowledgement should not be confused with a reply, although a prompt reply referring to the message may serve in lieu of an acknowledgement. It is the prerogative of the originator to request an acknowledgement to a message from any or all addressees of that message. The request is included in the text. If the message has been transmitted, the request for acknowledgement will constitute a new message. Acknowledgements are originated only by the addressee to whom the request for acknowledgement was made.

If authority to acknowledge is not immediately available, or the addressee wishes time to consider the message, the operator goes ahead and receipts by transmitting ROGER-OUT. When authority is received later to acknowl-

edge, the originator is called and the message acknowledged.

Example:

THIS IS DOG WUN SIX—WILCO—YOUR LAST TRANSMISSION—OUT

SIGNAL STRENGTH AND READABILITY

A station is understood to have good readability unless it is notified otherwise. Questions concerning strength of signals and readability should not be exchanged unless one station cannot hear another clearly, or unless an operator doubts that another station hears him clearly.

The request for reception conditions is "how do you hear me?" The response should be a short, concise report of the actual reception, such as "loud and clear," "strong but distorted," or "weak but readable."

Reports such as "five by five," "four by four," etc., are not used to indicate quality and strength of reception.

When a text is composed of pronounceable words, they will be spoken as written. When a text is encrypted, the groups, even though occasionally pronounceable, are to be transmitted by the phonetic equivalents of the individual letters, and without use of the proword I SPELL.

Example:

The encrypted group LUXOW is spoken:

LOVE UNCLE XRAY OBOE WILLIAM

CALL SIGNS

Call signs composed of letters or letters and figures must be spoken by means of the phonetic alphabet and numeral pronunciation.

Example:

The call ABD3 will be transmitted as:

ABLE BAKER DOG THUH-REE

Call signs, as we have seen, are allotted for internal convoy use. Attention is called again to the permissibility of using the suffix alone as the call sign for intraconvoy voice radio communications *unless* use of the complete call sign is necessary to avoid ambiguity or confusion when two or more convoys are within communication range.

ESTABLISHING COMMUNICATIONS

Assume the commodore desires to establish communication with the senior officer of the escort.

Example 1.—Communications good. (The convoy has been allocated convoy distinguishing group "AB.")

Commodore transmits:

(ABLE BAKER) BOSS—THIS IS (ABLE BAKER) CHIEF—OVER

Senior officer of escort transmits:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) BOSS—OVER

The commodore then proceeds with his message.

Example 2.—Communication difficult.

Commodore transmits:

(ABLE BAKER) BOSS—(ABLE BAKER) BOSS—THIS IS (ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) CHIEF—HOW DO YOU HEAR ME—OVER

Senior officer of escort transmits:

(ABLE BAKER) CHIEF—(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) BOSS—THIS IS (ABLE BAKER) BOSS—WEAK BUT READABLE—OVER

The commodore then proceeds with his message.

ESTABLISHING A NET

The use of correct procedure in establishing a net will be followed when opening a net for the first time or when reopening a net. Proper control by the net control station and adherence to operating rules by the stations within the net enable the net to begin an exchange of traffic in the minimum possible time and, by doing so, to increase transmission security.

Example 1.—Assume a 4-station net is being established. (Convoy has been allocated convoy distinguishing group "AB.")

CHIEF	CONVOY COMMODORE (NET CONTROL)
DUFFER 1	HFDF SHIP NO. 1
DUFFER 2	HFDF SHIP NO. 2
DUFFER 3	HFDF SHIP NO. 3
DUFFER	COLLECTIVE CALL FOR HFDF SHIPS

At a designated time or when ready to establish the net, CHIEF listens on the assigned frequency and, if finding it clear, transmits:

(ABLE BAKER) DUFFER—THIS IS (ABLE BAKER) CHIEF—OVER

Each station then answers the call in order:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER WUN—OVER
(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER TOO—OVER
(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER THUH-REE—OVER

The net control then proceeds with the transmission of traffic.

Example 2.—Assume the same 4-station net with calls as in example 1 above. However, this time DUFFER 2 is, for some reason, not ready to answer the collective call.

CHIEF transmits:

(ABLE BAKER) DUFFER—THIS IS (ABLE BAKER) CHIEF—OVER

DUFFER 1 transmits:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER WUN—OVER

DUFFER 3, hearing no answer from DUFFER 2, waits approximately 5 seconds, then transmits:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER THUH-REE—OVER

CHIEF, after receiving answers from all stations except DUFFER 2, transmits:

(ABLE BAKER) DUFFER TOO—THIS IS (ABLE BAKER) CHIEF—OVER

DUFFER 2, when able to transmit, calls:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER TOO—REPORTING IN TO NET—OVER

Example 3.—Assume same 4-station net with calls as in example 1 above. Net control, upon establishing the net, desires to ascertain amount and precedence of traffic on hand.

CHIEF transmits:

(ABLE BAKER) DUFFER—THIS IS (ABLE BAKER) CHIEF—OF WHAT PRECEDENCE—AND FOR WHOM ARE YOUR MESSAGES—OVER

Each subordinate station then answers in order, indicating traffic on hand:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER WUN—I HAVE WUN—OPERATIONAL IMMEDIATE—FOR YOU—OVER

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER TOO—NO TRAFFIC—OVER

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DUFFER THUH-REE—I HAVE—WUN ROUTINE—FOR YOU—OVER

CHIEF then informs the stations that their transmissions have been heard and clears the traffic in order of precedence.

PRELIMINARY CALLS

When communication is difficult, or when the calling station wishes to ascertain whether the station called is ready to receive a message, a preliminary call will be sent before the message is transmitted.

Example 1.—(Convoy has been allocated convoy distinguishing group "FN".) BOSS wishes to transmit a message to CHIEF and desires to know whether CHIEF is ready to accept it.

BOSS transmits:

(FOX NAN) CHIEF—THIS IS (FOX NAN) BOSS—MESSAGE FOR YOU—OVER

CHIEF, ready to accept the message, transmits:

(FOX NAN) BOSS—THIS IS (FOX NAN) CHIEF—SEND YOUR MESSAGE—OVER

BOSS transmits:

THIS IS (FOX NAN) BOSS—ROUTINE—(etc.)

Example 2.—BOSS wishes to transmit a message to CHIEF and desires to know whether CHIEF is ready to accept it.

BOSS transmits:

(FOX NAN) CHIEF—THIS IS (FOX NAN) BOSS—I HAVE WUN ROUTINE—OVER

CHIEF, for some reason not ready to accept the traffic immediately, transmits:

(FOX NAN) BOSS—THIS IS (FOX NAN) CHIEF—WAIT—

After a short pause, CHIEF is ready and transmits:

(FOX NAN) BOSS—THIS IS (FOX NAN) CHIEF—OVER

If CHIEF's delay would have been longer than a few seconds, he would have transmitted:

(FOX NAN) BOSS—THIS IS (FOX NAN) CHIEF—WAIT—OUT

When ready, he would transmit:

(FOX NAN) BOSS—THIS IS (FOX NAN) CHIEF—SEND YOUR MESSAGE—OVER

TRANSMITTING A MESSAGE

When communication reception is satisfactory, messages need be transmitted only once and preliminary calls are optional.

Example 1.—Convoy has been allocated convoy distinguishing group "VZ".

BOSS transmits:

(VICTOR ZEBRA) CHIEF—THIS IS (VICTOR ZEBRA) BOSS—TIME WUN SIX THUH-REE ZERO —BREAK—BOSTON SECTION ARRIVED—BREAK —OVER

CHIEF, having received the transmission satisfactorily, transmits:

THIS IS (VICTOR ZEBRA) CHIEF—ROGER—OUT

Example 2.—CHIEF missed the text and desires repetition.

CHIEF transmits:

THIS IS (VICTOR ZEBRA) CHIEF—SAY AGAIN—ALL AFTER—BREAK—OVER

BOSS transmits:

THIS IS (VICTOR ZEBRA) BOSS—I SAY AGAIN—ALL AFTER BREAK—BOSTON SECTION ARRIVED —BREAK—OVER.

CHIEF transmits:

THIS IS (VICTOR ZEBRA) CHIEF—ROGER—OUT.

COMMUNICATION DIFFICULT

When communication is difficult, call signs will be made twice and phrases, words, or groups transmitted twice, as indicated by the use of the proword WORDS TWICE. Correct reception may be verified by use of the proword READ BACK. Under such conditions, preliminary calls normally are employed.

Example 1.—(Convoy has been allocated convoy distinguishing group "SU".)

BOSS transmits:

(SUGAR UNCLE) CHIEF—(SUGAR UNCLE) CHIEF —THIS IS (SUGAR UNCLE) BOSS—THIS IS (SUGAR UNCLE) BOSS—MESSAGE FOR YOU—MESSAGE FOR YOU—OVER—OVER

CHIEF transmits:

(SUGAR UNCLE) BOSS—(SUGAR UNCLE) BOSS—THIS IS (SUGAR UNCLE) CHIEF—THIS IS (SUGAR UNCLE) CHIEF—SEND YOUR MESSAGE —SEND YOUR MESSAGE—OVER—OVER

BOSS transmits:

(SUGAR UNCLE) CHIEF—(SUGAR UNCLE) CHIEF —THIS IS (SUGAR UNCLE) BOSS—THIS IS (SUGAR UNCLE) BOSS—WORDS TWICE—WORDS TWICE—TIME ZERO SIX WUN SIX—TIME ZERO SIX WUN SIX—BREAK—BREAK—UNIDENTIFIED OBJECT BEARING ZERO NINER WUN TRUE—UNIDENTIFIED OBJECT BEARING ZERO NINER WUN TRUE—DISTANCE ABOUT TOO MILES—DISTANCE ABOUT TOO MILES—AM INVESTIGATING—AM INVESTIGATING—OVER—OVER

CHIEF transmits:

(SUGAR UNCLE) BOSS—(SUGAR UNCLE) BOSS—THIS IS (SUGAR UNCLE) CHIEF—THIS IS (SUGAR UNCLE) CHIEF—ROGER—ROGER—OUT —OUT

Example 2.—The text consists of encrypted groups.

BOSS transmits:

(SUGAR UNCLE) CHIEF—(SUGAR UNCLE) CHIEF —THIS IS (SUGAR UNCLE) BOSS—THIS IS (SUGAR UNCLE) BOSS—WORDS TWICE—WORDS TWICE—PRIORITY—PRIORITY—TIME WUN TOO ZERO ATE ZERO WUN—TIME WUN TOO ZERO ATE ZERO WUN—BREAK—ABLE MIKE LOVE QUEEN DOG—ABLE MIKE LOVE QUEEN DOG—ROGER OBOE CHARLIE ZEBRA YOKE—ROGER OBOE CHARLIE ZEBRA YOKE—(etc.)—OVER—OVER

CHIEF transmits:

THIS IS (SUGAR UNCLE) CHIEF—THIS IS (SUGAR UNCLE) CHIEF—ROGER—ROGER—OUT—OUT

CORRECTION DURING OR AFTER TRANSMISSION

When an error is made by the transmitting operator, the proword "CORRECTION" is transmitted, followed by the last word, group, proword, or phrase correctly transmitted. Transmission then continues.

Example.—(Convoy has been allocated convoy distinguishing group "YE".)

CHIEF transmits:

(YOKE EASY) LUCK—THIS IS (YOKE EASY) CHIEF—TIME WUN ZERO WUN TOO—BREAK—CONVOY SECTION SUGAR—SHOULD ARRIVE—WUN THUH-REE ZERO LOVE—CORRECTION—SHOULD ARRIVE—WUN THUH-REE ZERO ZERO LOVE—OVER

LUCK transmits:

THIS IS (YOKE EASY) LUCK—ROGER—OUT

When an error in transmission is discovered after the transmission is concluded, the message, word, group, proword, or phrase must be properly identified and the correct version given.

Example 1.—CHIEF transmits:

(YOKE EASY) DOG SIX WUN—THIS IS (YOKE EASY) CHIEF—TIME WUN ZERO SIX THUH-REE ZERO—BREAK—SUPPLIES WILL BE AVAILABLE—BREAK—OVER

D61 transmits:

THIS IS (YOKE EASY) DOG SIX WUN—ROGER—OUT

Subsequently, CHIEF discovers that he has made an error in transmission. In order to correct the error, he transmits:

(YOKE EASY) DOG SIX WUN—THIS IS (YOKE EASY) CHIEF—CORRECTION—TIME ZERO SIX THUH-REE ZERO—WORD AFTER WILL—NOT—OVER

D61 transmits:

THIS IS (YOKE EASY) DOG SIX WUN—ROGER—OUT

REPETITIONS

When words are missed, repetition will be requested by the receiving stations before receipting for the message. The proword SAY AGAIN or the proword ALL AFTER will be used for this purpose. In complying with requests for repetition, the transmitting station will identify that portion which is being repeated.

Example.—CHIEF transmits:

(FOX GEORGE) LUCK—THIS IS (FOX GEORGE) CHIEF—PRIORITY—TIME WUN TOO ZERO ATE ZERO WUN—BREAK—ABLE MIKE BAKER QUEEN DOG—OVER

LUCK, having missed all after "BAKER," transmits:

(FOX GEORGE) CHIEF—THIS IS (FOX GEORGE) LUCK—SAY AGAIN—ALL AFTER BAKER—OVER

CHIEF transmits:

THIS IS (FOX GEORGE) CHIEF—I SAY AGAIN—ALL AFTER BAKER—QUEEN DOG—OVER

LUCK transmits:

THIS IS (FOX GEORGE) LUCK—ROGER—OUT

READ BACK

If it is desired that a message or a portion thereof be read back, the proword READ BACK and identification data will be transmitted immediately following the call.

Example.—CHIEF transmits:

(ABLE BAKER) LUCK—THIS IS (ABLE BAKER) CHIEF—READ BACK TEXT—TIME WUN SIX THUH-REE ZERO—BREAK—CONVOY HAS ARRIVED—BREAK—OVER

LUCK transmits:

THIS IS (ABLE BAKER) LUCK—I READ BACK TEXT—CONVOY HAS ARRIVED—OVER

CHIEF transmits:

THIS IS (ABLE BAKER) CHIEF—THAT IS CORRECT—OUT

NOTE: When READ BACK is employed, the proword ROGER is not necessary to indicate receipt of the message.

The proword READ BACK, when not preceded by identifying call signs, means that all stations called are to read back. If a collective call is used, but only part of the stations represented in the call are required to read back, they will be identified by appropriate call signs preceding the proword READ BACK. When the order to read back is given, only those sta-

tions directed to do so will read back; remaining stations called will keep silence unless directed by the calling station to receipt.

Example 1.—In this example, assume that the collective call is HAWKER and the convoy distinguishing group is "JB".

CHIEF transmits:

(JIG BAKER) HAWKER—THIS IS (JIG BAKER) CHIEF—(JIG BAKER) HAWKER WUN READ BACK—TIME WUN SIX THUH-REE ZERO—BREAK—PREPARE TO LAUNCH AIRCRAFT—OVER

HAWKER 1 transmits:

THIS IS (JIG BAKER) HAWKER WUN—I READ BACK—(JIG BAKER) HAWKER—THIS IS (JIG BAKER) CHIEF—(JIG BAKER) HAWKER WUN READ BACK—TIME WUN SIX THUH-REE ZERO—BREAK—PREPARE TO LAUNCH AIRCRAFT—OVER

CHIEF transmits:

THIS IS (JIG BAKER) CHIEF—THAT IS CORRECT—OUT

Example 2.—If HAWKER 1 in the above example had read back incorrectly, CHIEF would correct HAWKER 1's read-back by use of the proword WRONG, followed by the correct version.

HAWKER 1 transmits:

THIS IS (JIG BAKER) HAWKER WUN—I READ BACK—(JIG BAKER) HAWKER WUN—THIS IS (JIG BAKER) CHIEF—(JIG BAKER) HAWKER WUN READ BACK—TIME WUN THUH-REE SIX ZERO—BREAK—PREPARE TO LAUNCH AIRCRAFT—OVER

CHIEF transmits:

THIS IS (JIG BAKER) CHIEF—WRONG—TIME WUN SIX THUH-REE ZERO—OVER

HAWKER 1 transmits:

THIS IS (JIG BAKER) HAWKER WUN—TIME WUN SIX THUH-REE ZERO—OVER

CHIEF transmits:

THIS IS (JIG BAKER) CHIEF—THAT IS CORRECT—OUT

"DO NOT ANSWER" TRANSMISSIONS

When it is desired to direct stations called not to reply or receipt for a message, the proword DO NOT ANSWER is transmitted immediately following the call and the complete transmission is sent twice.

Example.—(Convoy distinguishing group is "AB".)

CHIEF transmits:

(ABLE BAKER) DOG THUH-REE WUN—THIS IS (ABLE BAKER) CHIEF—DO NOT ANSWER—TIME WUN SIX THUH-REE ZERO—BREAK—NAN OBOE PETER QUEEN—I SAY AGAIN—(ABLE BAKER) DOG THUH-REE WUN—THIS IS (ABLE BAKER) CHIEF—DO NOT ANSWER—TIME WUN SIX THUH-REE ZERO—BREAK—NAN OBOE PETER QUEEN—OUT

CANCELING MESSAGE DURING TRANSMISSION

During the transmission of a message and prior to the transmission of the ending proword OVER (OUT), the message may be canceled by use of the proword DISREGARD THIS TRANSMISSION. A message which has been completely transmitted may be canceled only by another message.

Example.—During the transmission of a message, CHIEF discovers that the message is in error.

CHIEF transmits:

(ABLE BAKER) DOG WUN SIX—THIS IS (ABLE BAKER) CHIEF—ROUTINE—TIME ZERO SIX ZERO TOO—BREAK—COMMENCE UNLOADING AT DAWN—SIXTEENTH—XRAY—PROCEED—DISREGARD THIS TRANSMISSION—OUT

VERIFICATIONS

When verification has been requested on a message or a portion thereof, the originating station will verify with the originator, and send the correct version.

Example 1.—(Convoy distinguishing group "AB".)

D16 transmits:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DOG WUN SIX—VERIFY—MESSAGE—TIME WUN ZERO ZERO ATE ZERO WUN—ALL BEFORE BREAK—OVER

CHIEF transmits:

THIS IS (ABLE BAKER) CHIEF—ROGER—OUT

CHIEF, after checking with the originator,

finds that the heading as previously transmitted is correct, and transmits:

(ABLE BAKER) DOG WUN SIX—THIS IS (ABLE BAKER) CHIEF—I VERIFY—MESSAGE—TIME WUN ZERO ZERO ATE ZERO WUN—ALL BEFORE BREAK—(ABLE BAKER) DOG WUN SIX—THIS IS (ABLE BAKER) CHIEF—PRIORITY—TIME WUN ZERO ZERO ATE ZERO WUN—ORIGINATOR—(ABLE BAKER) CHIEF—ACTION—(ABLE BAKER) DOG WUN SIX—INFO (ABLE BAKER) BOSS—GROUPS WUN SEVEN—BREAK—OVER

D16 transmits:

THIS IS (ABLE BAKER) DOG WUN SIX—ROGER—OUT

Example 2.—CHIEF transmits:

(ABLE BAKER) DOG TOO NINER—THIS IS (ABLE BAKER) CHIEF—VERIFY MESSAGE—TIME ZERO ATE FO-WER FI-YIV—WORD AFTER—PROCEED—OVER

D29 transmits:

THIS IS (ABLE BAKER) DOG TOO NINER—ROGER—OUT

D29, after checking with the originator, finds that originator meant "Hong Kong" instead of "Shanghai" as the word after "proceed."

D26 transmits:

(ABLE BAKER) CHIEF—THIS IS (ABLE BAKER) DOG TOO NINER — CORRECTION — MESSAGE — TIME ZERO ATE FO-WER FI-YIV—WORD AFTER PROCEED—HONG KONG—OVER

CHIEF transmits:

THIS IS (ABLE BAKER) CHIEF—ROGER—OUT

RELAY

The proword RELAY TO, followed by a call sign, indicates that the station called is to relay the message to the station indicated by that call sign. When more than one station is called, the call sign of the station designated to perform the relay precedes the proword RELAY TO.

Example.—(Convoy distinguishing group is "HT".)

BOSS transmits:

(HOW TARE) CHIEF—THIS IS (HOW TARE) BOSS—RELAY TO—(HOW TARE) LUCK—ROUTINE—TIME ZERO NINER WUN ZERO—ORIGINATOR—(HOW TARE) BOSS—ACTION—(HOW TARE) LUCK—INFO—(HOW TARE) CHIEF—PROCEED ON MISSION ASSIGNED—OVER

CHIEF transmits:

THIS IS (HOW TARE) CHIEF—ROGER—OUT

CHIEF Relays to LUCK:

(HOW TARE) LUCK—THIS IS (HOW TARE) CHIEF—ROUTINE—TIME ZERO NINER WUN ZERO—ORIGINATOR (HOW TARE) BOSS—ACTION—(HOW TARE) LUCK—INFO—(HOW TARE) CHIEF—PROCEED ON MISSION ASSIGNED—OVER

LUCK transmits:

THIS IS (HOW TARE) LUCK—ROGER—OUT

THE EXECUTIVE METHOD

The executive method is used to execute a signal at a given instant so that addressed vessels will take the required action at the specified moment.

Maneuvering messages sent by the executive method will carry the instruction EXECUTE TO FOLLOW immediately after the call, and the text will be made twice through.

Example:

(ABLE BAKER) TEAM—THIS IS (ABLE BAKER) CHIEF—EXECUTE TO FOLLOW—BREAK—SUGAR TOO SIX FI-YIV—I SAY AGAIN—SUGAR TOO SIX FI-YIV—OUT

When ready to execute the message, the commodore transmits:

(ABLE BAKER) TEAM—THIS IS (ABLE BAKER) CHIEF — STANDBY — SUGAR TOO SIX FI-YIV—EXECUTE—OUT

CHAPTER 10

FLAG SIGNALING

Flag signaling is especially adapted for brief messages and for tactical commands associated with maneuvering. It is the quickest way to communicate simultaneously with all ships under way. All vessels can read the signals at the same time and all can receipt at the same time. It is more secure than flashing light and more visible than semaphore.

FLAG HOIST TERMS

A brief glossary of flag hoist terms is included here.

Hoist. All the flags or pennants displayed on a single halyard.

Superior halyard. The halyard carrying the first flag or pennant of a hoist. On ships having yardarms, the order of superiority is from the outboard halyard in. On ships having triatic stays, the order of superiority is from the forward halyard aft.

At the dip. A signal is said to be at the dip when it is hoisted about half the full extent of the halyard.

Close-up or *two-blocked.* A signal is said to be close-up or two-blocked when it is hoisted to the full extent of the halyard.

Tackline. A length of halyard about 6 feet long used to separate groups of flags on the same halyard which, if not separated, would convey a different meaning from that intended.

CALL SIGNS

International call sign. A ship's international call sign is used for all communications, radio as well as visual, in the absence of any other assigned call signs. A ship makes its international call sign by flag hoist—

When entering or leaving port, other than allied defended ports. When an allied defended port is entered or left, the ship is notified of procedure by the local naval authority.

When ordered to do so by signal.

When joining the convoy, to help identify herself to the escort. The international call sign is hoisted inferior to the merchant ensign; the convoy visual call sign is hoisted; and the ship's nameboard is displayed.

When passing, by day, Lloyd signal stations in the United Kingdom. Merchant ships (other than troop ships), whether independent or in convoy, may not only identify themselves by hoisting their international call signs, but may, upon request, spell out their names by flashing light.

Convoy visual call signs. Convoy visual call signs are assigned for each column of a convoy and for each ship in the convoy. These call signs are always used for intraconvoy communication.

The columns of a convoy are numbered consecutively from port to starboard. The port wing column is always No. 1. The visual call sign of a column is pennant ∅ followed by the numeral pennant corresponding to the column number. Thus, "pennant ∅ pennant 1" is the flag hoist call sign for No. 1 column; the numerals "∅2" represent the flashing light and semaphore call sign.

(Notice that numeral pennants are spoken of as "pennant one," "pennant two," and so on, and that pennant zero is written as "∅" to distinguish it from the letter O.)

All the ships of a convoy are numbered, the vessels in each column being numbered consecutively from fore to aft. The first ship in

No. 1 column is ship No. 11; in No. 2 column, No. 21; in No. 3 column, No. 31, etc.

The visual call signs of individual ships, regardless of special duties, are represented by numeral pennants corresponding to their convoy numbers. Thus, "pennant 2 pennant 3" is the flag hoist call sign for ship No. 23; the numerals "23" are the flashing light and semaphore call sign.

If a ship leaves a convoy permanently, or for a considerable time, no changes are made in the convoy visual call signs of the remaining ships unless changes are specially ordered. Ships in the rear merely close up and fill the gaps without further orders. If a number of ships leave the convoy, the commodore usually will order the remaining ships to assume new call signs.

A ship ordered to a new place in the convoy takes the visual call sign of her new position. If two ships exchange positions, they also exchange call signs.

Ships of a convoy hoist their convoy call signs when the convoy is forming up or when it is reforming after having dispersed. The call signs are kept flying until the convoy is formed up.

The commodore can order convoy visual call signs to be hoisted any time he deems it necessary.

Special visual call signs. The following is a breakdown of special visual call signs assigned for intraconvoy visual communication. Numeral pennants are always used. With a few special exceptions, the last element of the call sign is always the ANSWERING (ANS) pennant.

Call Sign	*Ships or Authorities*
Pennant 1 ANS	Commodore
Pennant 2 ANS	Vice commodore
Pennant 3 ANS	Convoy collective
Pennant 4 ANS	Commodore's section
Pennant 5 ANS	Vice commodore's section
Pennant 6 ANS	Rear commodore
Pennant 7 ANS	Rear commodore's section
Pennant 8 ANS	Escort force commander
Pennant 9 ANS	Stragglers from convoy
Pennants 1 1 ANS	Escort vessels collective
Pennants 1 4 ANS	Patrol/support group commander
Pennants 1 5 ANS	Patrol/support group collective
Pennants 1 6 ANS	Escort carrier No. 1
Pennants 1 7 ANS	Escort carrier No. 2
Pennants 1 8 ANS	Escort carrier No. 3
Pennants 1 9 ANS	Escort carrier No. 4
Pennants 2 Ø ANS	Rescue ships collective
Pennants 2 2 ANS	HFDF ships collective
Pennants 2 4 ANS	MFDF ships collective
Pennants 2 6 ANS	Ships operating aircraft collective
Pennants 2 8 ANS	Ships in or near the van
Pennants 2 9 ANS	Ships in or near the center
Pennants 3 Ø ANS	Ships in or near the rear
Pennants 3 1 ANS	Antiaircraft cruisers
Pennants 3 2 ANS	Ships controlling aircraft
Pennants 3 3 ANS	Even-numbered ships
Pennants 3 4 ANS	Odd-numbered ships
Pennants 3 5 ANS	Leading ships of columns
Pennants 3 6 ANS	Leading ships on port side of guide
Pennants 3 7 ANS	Leading ships on starboard side of guide
Pennants 3 8 ANS	Rear ships of columns
Pennants 3 9 ANS	Rear ships of port side of guide
Pennants 4 Ø ANS	Rear ships on starboard side of guide
Pennants 4 1 ANS	All even-numbered columns
Pennants 4 2 ANS	All odd-numbered columns
Pennants 4 3 ANS	Columns on port side of guide
Pennants 4 4 ANS	Columns on starboard side of the guide
Pennants 4 5 ANS	Escorting aircraft
Pennants 4 6 ANS	Escorting carriers with numbers indicated
Pennants 4 7 ANS	Screen commander
Pennants 4 8 ANS	All ships whose convoy visual call signs end with the figure indicated
Pennants 4 9 ANS	Ships of number of knots indicated and above
Pennants 5 Ø ANS	Ships of number of knots indicated and below
Pennants 5 1 ANS through Pennants 5 9 ANS	Ships bound for or from_____
Pennants 6 Ø ANS through Pennants 9 9 ANS	For temporary assignment by proper local authority

"Pennants 4 6 ANS____" and "pennants 4 8 ANS____" through "pennants 5 ∅ ANS____" are the only special visual call signs which do not have ANS as the final element.

The destinations or departure points of ships assigned the calls, "pennants 5 1 ANS" through "pennants 5 9 ANS" are filled in at the convoy conference as necessary.

To have a special visual call apply only to a designated section of the convoy, the designating letter of the section is prefixed to the appropriate call sign. For example:

Call sign of convoy collective.....pennant 3 ANS
Call sign of S section collective.....S pennant 3 ANS
Call sign of rescue ships
collective.....pennant 2 pennant ∅ ANS
Call sign of rescue ships of
E section collective.....E pennant 2 pennant ∅ ANS

"All ships signals" are those addressed to all ships in the convoy. They are recognizable by being preceded by "3 ANS" or by *not* being preceded by a call sign. If there are other ships in the immediate vicinity, and the omission of the call sign may cause confusion, the originator uses the collective call sign for the convoy to indicate an all-ships signal to vessels under his tactical command.

ORDERS SENT BY FLAG

The majority of signals made to ships in convoy convey orders. As a rule, the convoy commodore originates signal orders, and acknowledgements are made to him. His orders remain in force until they are canceled or have been completely executed.

Instructions for carrying out signal orders are given either in the signal or by executive signal. Instructions given in the signal direct that the order is to be carried out at a certain time or by a certain time, or at arrival at a particular position. The executive method is used when it is desirable to execute a signal at a certain instant, or to insure that two or more units take action at the same time. The procedure is the same for merchant ships as for naval vessels. The signal to execute, after the hoist has been two-blocked, is the hauling down of the hoist by the originator.

On some occasions, such as altering course in an emergency, the commodore may desire execution of the signal as soon as it is seen. In this event, A flag is hoisted on the next inferior halyard. Sometimes, for less urgent messages, special instructions are included in the signal which indicate that it is to be executed immediately upon receipt.

TRANSMITTING SIGNALS

When the commodore addresses a signal to the entire convoy (all ships signal), all hoists are repeated immediately at the dip, flag for flag, by every ship in the convoy. Each leading ship in a column is responsible for the leading ship in the next outer column away from the commodore, and is also responsible for all ships astern in its own column. Any vessel seeing a ship for which it is responsible flying the wrong hoist must make, by flag or light, the signal meaning, "You are repeating the flag signal incorrectly. Correct it." A ship does not two-block the signal until its meaning is understood and the ships for which it is responsible have two-blocked it.

When the commodore addresses a signal to a part of a convoy, the signal is preceded by the collective visual call sign for that part, as pointed out previously. All ships addressed repeat the signal at the dip as soon as it is seen and two-block it when it is understood. To expedite its transmission, the leading ships of columns between the commodore and the addressees repeat the signal.

Signals made to an individual ship are preceded by its convoy visual sign. The ship called answers by repeating the signal, flag for flag, at the dip, as soon as it is seen, and two-blocking it when it is understood. The commodore answers signals addressed to him by hoisting ANS. If it is necessary to indicate which ship is being answered, he hoists the visual call sign of that ship, followed by tackline ANS.

Any ship in the convoy which sees a ship

trying to communicate by flag hoist with some other ship in the convoy should, if it will expedite the communication, repeat the signal exactly as hoisted by the originator. It is followed by the call sign of the originating ship, at the dip.

If a ship cannot understand a signal, it hoists that signal at the dip and two-blocks on a different halyard the signal meaning "Signal made is not understood though the flags can be distinguished." If the signal cannot be made out, the ANS pennant is hoisted at the dip and the signal meaning "Signal cannot be distinguished as now hoisted" is two-blocked on a different halyard.

TIME

The time kept by a convoy is ordered by the commodore and is termed "convoy time." Convoy time is used for visual messages within the convoy.

Any ship proceeding independently which has occasion to communicate visually with another ship uses the zone time of the locality. The time used should be specified in the signal, whether in plain language or by the appropriate code group from the *International Code of Signals*. A ship in port uses local time for its visual signals.

When sent by signal, the four digits indicating hours and minutes from 0000 to 2359 are immediately preceded by either the letter T or by a code group that signifies "time."

COURSES, BEARINGS, AND POSITIONS

Courses and bearings are always expressed in three figures, denoting degrees, from 000 to 359; they are always true, never magnetic nor relative.

When a course is signaled, the three figures denoting course are preceded by the appropriate groups from ACP 148 referring to course. When a bearing is signaled, the three figures denoting degrees are preceded by the letter X, or by the proper group taken from ACP 148 in which the word "bearing" appears in the meaning.

To signal a position in latitude and longitude, two hoists of four figures are two-blocked, the hoists indicating, in sequence, degrees of latitude and longitude. Occasionally, five figures may indicate longitude. Each group of four figures is preceded by the letter P. To avoid ambiguity, these groups may be followed, where necessary, by one of the letters N, S, E, or W.

CODE BOOKS

Ships in convoy use the signals provided in the current ACP 148. They may also use signals from the *International Code of Signals*, volume I, to supplement the signals in ACP 148. If signals from the *International Code of Signals* are used, the international code pennant must always be displayed superior to the signal.

The following rules govern selection of code books to use when *reading* signals:

Single flag and single pennant hoists, and two-letter hoists *not* preceded by the code pennant are found in ACP 148.

Four-letter hoists beginning with the letter A, and three- or two-letter hoists immediately preceded by the CODE pennant are found in the *International Code of Signals*, volume I.

FLAGS AND PENNANTS USED IN CONVOYS

The standard international flags and pennants are used for flag signaling in convoys. These include the 26 alphabet flags; the ten numeral pennants; the code (answering) pennant; the first, second, and third repeaters (substitutes); and the tackline. There also are a number of special flags and pennants.

Code (answering) pennant. The Navy has separate code and answering pennants; but, in the International Code used by merchant ships, the code and answering pennants are the same. When the pennant is hoisted above a signal, it is referred to as CODE. When it is a part of a hoist other than the superior pennant, it is referred to as ANS. When hoisted on a separate halyard by itself, it is sometimes referred to as CODE and sometimes as ANS. The code or answering pennant is used—

By the commodore to acknowledge a signal addressed to him.

By ships to indicate when signals are not readable.

By a warship that wishes to communicate with a merchant vessel by International Code. The warship hoists CODE in a conspicuous place and keeps it flying while signals are being made.

When the escort force commander or the commodore is to be informed that all ships of a convoy have finished streaming or getting in paravanes. CODE is two-blocked while paravanes are being streamed, and is hauled down when paravanes are out and running correctly. While the paravanes are being recovered, CODE is two-blocked; it is hauled down again when both paravanes are inboard and the ship is ready to proceed.

To express a decimal point when numbers are being signaled. When so used, ANS is disregarded in determining the selection of repeaters.

When the J signal (semaphore indicator) is observed by the ships addressed. ANS is hoisted at the dip. When the ships are ready to read semaphore, ANS is two-blocked.

Substitutes (repeaters). Although referred to as substitutes by personnel in the merchant service, these pennants will be referred to here as repeaters, as they are called throughout the Navy.

Repeaters are used to enable a signalman to repeat a flag or pennant one or more times, even though the ship may carry only one or two sets of signal flags. By the use of three additional repeater flags, a ship with only one set of flags can hoist any two-, three-, or four-letter group.

There are two classes of signal flags employed in the *International Code of Signals.* These are alphabetical flags and numeral pennants. A repeater can repeat only a single flag of the same class as that immediately preceding it. If a repeater immediately follows one or more alphabetical flags, it represents one of those flags; similarly, if a repeater follows one or more numeral pennants, it represents one of those pennants.

The repeaters are named the first, second, and third repeaters, respectively.

The *first repeater* always repeats the uppermost signal flag of that class of flags which immediately precedes the repeater.

The *second repeater* always repeats the second signal flag (counting from the top) of that class of flags which immediately precedes the repeater.

The *third repeater* always repeats the third signal flag (counting from the top) of that class of flags which immediately precedes the repeater.

A particular repeater cannot be used more than once in the same group.

Here are some examples of the use of repeaters:

The signal JULL would be made by signal flags as follows—

J
U
L
Third repeater

The signal BBCB would be made as—

B
First repeater
C
Second repeater

In the above example, the first repeater is used once, so it cannot be used again. Having been used, it is equivalent to having hoisted B as the second flag; therefore, the second flag must be repeated as the last flag of the group. Hence, the second repeater is used.

The signal 1ØØØ would be made by signal flags as follows:

1
Ø
Second repeater
Third repeater

The signal BB, T133Ø would be made—

B
First repeater

T
1
3
Second repeater
Ø

It will be seen, in the final group (T133∅) in the last example above, that two classes of flags are employed, an alphabetical flag (T) and four numeral pennants (133∅). As the second repeater immediately follows a numeral pennant, it can be repeating only a numeral pennant. Being the second repeater, it can be repeating only the second numeral pennant, namely, 3.

Governing flags. The signals in ACP 148 which convey orders in nearly all cases do so in a positive or affirmative sense. To impart some other sense to a signal, that signal must be preceded by one of certain flags termed "governing flags," which are usually hoisted on a separate halyard, or hoisted above the signal and separated from it by a tackline. These governing flags are—

"A" flag—The immediate execution
"C" flag—The affirmative
"N" flag—The negative
"P" flag—The preparative
"Y" flag—The interrogative

The A flag indicates the signal is to be executed at once. The other flags give the signal an affirmative, negative, preparatory, or interrogatory sense, respectively.

ASSUME THE SIGNAL "MO" MEANS STREAM PARAVANES

Signal	*Meaning*
A tackline MO	Stream paravanes at once, as soon as this signal is seen.
P tackline MO	Prepare to stream paravanes. (Paravanes are not actually streamed until the signal "MO", without a governing flag, is received.)
Y tackline MO (hoisted by a ship and addressed to the commodore)	May I stream paravanes?
C tackline MO	You may stream paravanes.
N tackline MO	Do not stream paravanes.
Y tackline MO (hoisted by commodore and addressed to a ship.)	Have you streamed paravanes?

The affirmative C flag has the meanings of "approved" and "yes."

Hoisted singly by a senior officer in answer to a flag signal containing a request, it indicates the request is approved. Ship No. 21 in convoy has requested permission by signal for No. 2 column to keep to the northward of the sweepers. The convoy commodore hoists "C" in reply, indicating the request is approved. The commodore might wish to hoist his signal inferior to the call sign of the ship addressed to avoid possible confusion. In reply to ship 21's request, then, his signal would be "21 C."

When the senior officer orders C flag hoisted inferior to the visual call sign of a ship and superior to four numeral pennants, it indicates that the proposal contained in the signal of the subordinate, whose time of signal origin is indicated by the four numeral pennants, is approved. *Example:* Commodore hoists "35 C 1427" to indicate that the proposal contained in a signal from ship No. 35, bearing time of origin 1427, is approved.

The N flag can be used in the same way as the C flag, but expresses opposite meanings ("not approved" and "no"). In the last example given above, for instance, the commodore would have hoisted "35 N 1427" to indicate his disapproval of ship 35's request bearing time of origin 1427.

Flag N, hoisted on a separate halyard while a signal is flying, means that the signal is now to be disregarded or is canceled. When hoisted singly after a flag signal (other than a maneuvering signal) has been hauled down, it signifies that the last flag signal is to be disregarded or is canceled. *Example*: Commodore has sent a signal at 1630 to the effect that the rear commodore's portion of the convoy is to proceed in company to its destination. At 1645, he receives a hurricane warning which necessitates canceling the order. He then hoists N, indicating that his last flag signal is canceled. If other flag signals had been hoisted in the meantime, he would hoist "N 163∅" to show which signal he was canceling.

A signal that has been executed by other

ships by hauling down cannot be canceled. A new signal must be made canceling its purport.

Example: Assume the convoy is steaming at 9 knots. The signal for a decrease to 7 knots has been made and executed by hauling down. Immediately after the hauling down, the commodore decides to continue at 9 knots. To annul his order, he makes a new signal, "Speed 9 knots."

Should the commodore wish to exempt one or more ships from a signal, the signal would be drafted by using the N flag for the exempt sign. When so used N is beneath the signal on the hoist. The calls which in turn are beneath N are the only calls exempt. For example, the commodore hoists "LB tackline N2" to indicate that all ships except those of No. 2 column are to comply with the signal "LB."

Commodore's flag. The commodore's flag is a large white rectangular flag with a blue cross in the center. It is flown whenever the commodore wishes to make his ship readily identifiable, as when the convoy is forming or reforming. It is flown on similar occasions by the vice commodore or rear commodore if such an officer either has assumed command of the convoy or is independently in charge of some portion of the convoy. If a special flag or pennant is not available, the ship's merchant ensign is flown instead.

CHAPTER 11

FLASHING LIGHT AND SEMAPHORE

PART I: FLASHING LIGHT

Flashing light is rapid and simple to use, but its greatest advantage over other visual signaling methods is its visibility. While semaphore has a maximum range of a little over 2 miles, and flag hoist about 5 miles, it is a familiar experience of Quartermasters to send and receive flashing light to and from ships almost invisible over the horizon.

The greatest advantage of flashing light is also its greatest weakness. Since enemy eyes as well as friendly ones may observe the signals, flashing light must be used cautiously. In general, it should be restricted to daytime use when flag hoist or semaphore are not practical. It is not used at night except in emergency and in preference to breaking radio silence.

Directional lamps, visible only from the viewing point of the addressee, are used in time of war. The light should be at minimum practicable brilliance and, at night, screened and covered with a colored filter. A daylight signal lamp, or any lamp which shows through a wide arc or emits a bright light, must not be used at night.

In transmitting signals by searchlight, the light must be kept accurately trained on the receiving ship. Two men should be employed, if necessary, one to train and one to transmit. The iris shutters should be full open and the signal shutter operated at a constant speed, each character being made accurately and smartly. Small ships are inclined to be lively, so greater care must be exercised in keeping the light trained on them. The Quartermaster operating the light should watch his carbons carefully and keep the light bright. Often a Quartermaster will continue to transmit when the carbons are burning badly and the light is poor. This causes requests for repetition and consequent delay.

There is a tendency on some ships to use a light of reasonable and proper power but to request the receiving ship to send with a stronger light. This should not be necessary. A light of the minimum power required for good reception should be used, and the same type of light, as far as practicable, should be used to answer. It is not reasonable to expect a ship to answer with a larger light than that which she is copying.

Signal searchlights are delicate and expensive pieces of machinery and must be handled accordingly. No more power than is absolutely necessary for satisfactory communication should be used, and the light must be turned off when it is not actually in use. The Quartermaster should know how to adjust the carbons and keep the arc of the light in focus, but he should not attempt to tinker with electrical or mechanical defects that appear. Repairing a searchlight is a job for a qualified electrician.

Aldis lamps and blinker tubes are primarily for use when the ship is darkened. Blinker tubes and aldis lamps fitted with the screening tube have a very limited arc and range of visibility. Great care must be exercised to keep the light trained exactly on the recipient, with the roll and pitch of the ship allowed for.

Three special call signs are used in flashing light which have no place in flag signaling or radio. These are—

Commodore	Succession of B's
Vice commodore	Succession of H's
Escort force commander	Succession of J's

In flashing light and sound usage, the special sign MM, made as a single character, represents the code/answering pennant or a decimal point. The answering pennant, as we saw in the last chapter, forms the final element in most special visual call signs. Thus in flashing light the commodore's flag hoist call of "pennant 1 ANS" becomes "1MM." If the commodore's ship is being directly addressed, a succession of B's may be used as the call.

Flashing light procedure instructions are contained in *International Code of Signals,* Vol. I, Chapter 6. Applications peculiar to convoy signaling are presented here step by step in the order in which the items may confront the operator in the handling of a message.

Flashing Light Procedure

Calling and answering. To send a message by directional procedure, the transmitting ship always calls the receiving ship by call sign. The identity of the calling ship is usually apparent, and it is necessary only to gain the attention of the receiving ship by making, until answered, her visual call sign. Assume ship 23 wishes to send a message to ship 35.

Ship 23	*Ship 35*
35 35 35	TTTTT

When it is necessary for the calling ship to identify herself, she does so after receiving the answering sign (TTTTT) from the ship addressed. The ship addressed repeats the identity:

Ship 23	*Ship 35*
35 35 35	TTTTT
DE 23	DE 23

Should ship 35 be called at the same time by two or more ships, she must specify which she is answering by prefixing the answered ship's call sign to the answering sign:

23 TTTTT

When more than one station is being called in the same direction or during low visibility, it may be necessary for the answering ship to indicate her own identity when answering:

23 DE 35 TTTTT

Headings.—The heading of a visual message may include many of the procedure signs used for radio procedure, although abbreviated form usually is used in other than messages given to guard ships for retransmission by radio.

The foregoing examples have shown a number of ways in which two ships can establish communication. As long as only two ships are involved, abbreviated form may be used.

Text.—The text of a message consists of cipher groups or words of plain language. The receiving signalman acknowledges the receipt of each plain language word or cipher group with a T on his light.

When code signals from one of the signal books are transmitted, the standard phonetic alphabet is used. If the receiving ship does not acknowledge the receipt of a phonetic letter, the transmitting ship immediately repeats the last letter transmitted.

Ship 23 originates and transmits to Ship 35:

Ship 23	*Ship 35*
35 35, etc.	TTTTTTTTTTT (or 23 TTTTT)
DE 23 (may be omitted)	DE 23 (may be omitted)
BT	BT
RETURN	T
MY	T
DOCTOR	(Does not T. Did not receive the word)
DOCTOR	T
BT	BT
AR	R

6MM originates and transmits to a ship in the screen whose international call sign is NBGC:

6MM	*NBGC*
NBGC NBGC, etc.	TTTTTTTT
BT	BT
LOVE	T
BAKER	T
BT	BT
AR	R

Relaying messages.—Messages for a part of the convoy are passed to the leading ship of the column or columns concerned. From there they go down each column from ship to ship until all the addressees have received the mes-

sage. Each ship is responsible for the ship astern and leading ships are responsible, in addition, for the leading ship of the next outer column away from the commodore.

So that the leading ship of a column may know when all the ships of that column have received the message, the letter R, followed by DE and the visual call sign of the rear ship in the column, is passed back up to the leading ship.

The commodore or escort force commander knows his message has reached all the addressees when the letter R, followed by DE and the visual call sign of that part of the convoy (or call signs of the individual addressees), is passed back to him by reverse route of the outgoing message.

When a message is passed to more than one column, such as a message to all ships in the convoy, leading ships of columns notify the commodore of receipt by their columns. The column leaders nearest the commodore wait until the columns away from the commodore receipt to them before they in turn receipt for the message.

Example: The convoy commodore sends a message to all ships in the convoy. He is on ship 51 of a convoy composed of nine columns.

(a) Ship 91 will receipt for column 9 to ship 81, i. e., R DE ϕ9.
(b) Ship 81 will receipt for columns 8 and 9 to ship 71, i. e., R DE ϕ8 ϕ9.
(c) Ship 71 will receipt for columns 7, 8, and 9 to ship 61, i. e., R DE ϕ7 ϕ8 ϕ9.
(d) Ship 61, in turn, will receipt to 1MM for the four columns in that direction, i. e., R DE ϕ6 ϕ7 ϕ8 ϕ9.
(e) The same system is used for ships on the other side of the convoy, receipting from column 1 to column 2, etc., until receipts are received by the convoy commodore.

Example. The convoy commodore, located in ship 51, wishes to send a message to all ships in the No. 3 column, composed of three ships, Nos. 31, 32, and 33. The receipt comes back to him by reverse route of the outgoing message. This second example is illustrated in figure 11–1.

Executive method.—The executive method is used when it is desirable to execute a signal at a particular instant or when it is necessary that two or more units take action at the same time. Only abbreviated form messages may be employed with the executive method.

A message which requires a signal of execution carries the procedure sign IX immediately before the first BT. The signal of execution consists of IX followed by a 5-second dash. At the end of the dash, the signal is executed by the addressee.

Executive method messages may or may not carry the time group. As shown in the examples below, the time of origin group (1248Z) need not always be included in the execution:

The Message: ϕ4 DE 1MM 1248Z IX BT HOW VICTOR BT AR
Receipt: 1MM DE 41 R DE ϕ4 AR
Execution: ϕ4 DE 1MM 1248Z IX *(5-second dash)* AR

The executive signal IX *(5-second dash)*, alone after a call, means "Execute all unexecuted messages which I have transmitted to this call." IX may be repeated a few times in the pause before the 5-second dash is transmitted.

All-round messages are those messages sent to several ships at the same time by nondirectional light. The light of the transmitting ship is situated at some advantageous point, such as a yardarm end, where it can be seen by every ship in the convoy. It is operated by keying. All-round procedure is used only when there is no need for security.

To send an all-round message to the entire convoy, the commodore's signalman makes the general call (AA, AA, etc.) and after a short interval makes the message through slowly. After transmitting the date-time group at the end of the message, the Quartermaster transmits the procedure sign UD, followed by the general call again, and then a complete retransmission of the message. At the end of

1MM	*Ship 41*	*Ship 31*	*Ship 32*	*Ship 33*
41 41	TTTTTT			
ø3 DE 1MM	ø3 DE 1MM			
BT	BT			
LOVE	T			
BAKER	T			
BT	BT			
AR	R			
	31 31	TTTTTTTT		
	ø3 DE 1MM	ø3 DE 1MM		
	BT	BT		
	LOVE	T		
	AS	T		
	LOVE	T		
	BAKER	T		
	BT	BT		
	AR	R		
		32 32	TTTTTT	
		ø3 DE 1MM	ø3 DE 1MM	
		BT	BT	
		LOVE	T	
		BAKER	T	
		BT	BT	
		AR	R	
			33 33	TTTTTT
			ø3 DE 1MM	ø3 DE 1MM
			BT	BT
			LOVE	T
			BAKER	T
			BT	BT
			AR	R
		TTTTTTTT	31 31	
		R DE 33	R DE 33	
		R	AR	
	TTTTTT	41 41		
	R DE ø3	R DE ø3		
	R	AR		
TTTTT	BBB			
R DE ø3	R DE ø3			
R	AR			

Figure 11–1.—Example of relaying a message.

the second transmission, he sends AR, indicating the end of the transmission.

On completion of the transmission, each light-repeating ship receipts to the commodore by directional light. If an individual ship has failed to read the message completely, it obtains a repetition of the missing parts from the responsible light repeater.

Retransmission by radio.—If a vessel desires to pass a message by visual means to a radio guard for retransmission by radio, the message, except for the call, is passed visually

in the exact form in which it is to be re-transmitted.

For example, Ship 41 (wartime radio call sign XXXX) wishes to pass to the radio guard, Ship 31, a message for re-transmission by radio to Radio Washington (NSS):

Ship 41	*Ship 31*
31 31	TTTTTTTT, etc.
BT	BT
PASS	T
TO	T
NSS	T
DE	T
XXXX	T
PRIORITY	T
190732Z	T
GR	T
18	T
BT	BT
CODED TEXT	Repeats back each group
BT	BT
AR	R

PART II: SEMAPHORE

Semaphore should be used for messages requiring maximum security precautions. It is also well adapted for administrative traffic and messages too long to go by flag hoist.

Semaphore requires little signal equipment—two hand flags are all that is needed. Generally, these flags are 15 to 18 inches square, and are attached to staffs about 22 inches long. They are similar in design to PETER or OBOE flags. On occasion, larger than normal flags are used to insure better reception.

Only flags in proper condition should be used. Flapping two torn and dirty rags through the air is not a very effective way of signaling. The flags should be kept clean and should be carefully rolled before they are stowed.

Messages in semaphore can be sent in plain language, cipher groups, or by signals from either ACP 148 or the *International Code of Signals*. The procedure for semaphore is the same, in most essentials, as that used for flashing light or radiotelegraph.

Establishing Communications

If two vessels are steaming close aboard, direct communication may sometimes be established by semaphore, although it usually will be necessary to attract the attention of the receiving ship by calling her by light and sending the signal SEM. A warship wishing to establish semaphore communication with a merchantman may call by light or by hoisting the visual call sign of the ship followed by the JIG flag, "I am going to make a message by semaphore."

Semaphore Prosigns

Answering sign.—The receiving signalman acknowledges each word or cipher group by making the letter C. If the receiver fails to make C, the sender repeats the word or group.

Attention sign.—This sign is used to initiate transmission between two vessels steaming in close company. The sender may make it by waving his arms. In Navy signaling, the attention sign is the same as the letter J.

Front sign.—This sign is used before and after each call sign, word, cipher group, and procedure sign, and between letters of a code group. Its purpose is to make the character or word stand alone.

Move signs.—These signs are used by the receiving station to direct the sender to move to a better position.

MD—Move down
ML—Move to your left as you face me
MR—Move to your right as you face me
MU—Move up

The directing signalman makes D's until the mover reaches the best place, at which time he makes the front sign.

Numerals follow.—This sign, the opposite of the letter T, indicates that the sender is about to transmit numerals. The first ten letters of the alphabet are used to represent the numbers 1 through ∅. Numerals transmitted in this manner are used only in the date-time group; numbers in the text are spelled out. To indicate that he has finished transmitting numerals, the sender makes the numeral sign again.

Receipting

Receipt for a semaphore message can be made in any of the following three ways:

(1) By making R by semaphore, which is answered by R from the transmitting station.

(2) By making R by flashing light, which is answered in semaphore from the transmitting station.

(3) By hauling down of the answering hoist by the receiving ship.

CHAPTER 12

MISCELLANEOUS SIGNALING

SOUND SIGNALING

While sound signaling in the Navy is mainly confined to navigational signals as laid down by the International Rules of the Road, it plays an important part in convoy communications. Basic sound signaling procedure is set forth in *International Code of Signals,* volume I, chapter 7. This procedure is primarily intended for signals between two ships. Signals in convoy, however, are normally intended for all ships, or a particular group, and sound signals between individual ships are rare. Therefore, the procedure has been modified to meet the particular needs of convoy work.

Sound-repeating ships.—In convoy work, certain vessels are specifically designated to repeat sound signals. These sound-repeating ships are selected on the basis of advantageous location with reference to the commodore's ship and the remainder of the convoy. They commonly are column leaders. Except when a particular ship is addressed, they repeat all sound signals. Should a sound-repeating ship be ordered to another place in the convoy, the ship taking its place assumes the duties of sound repeater.

If the commodore wishes to contact a particular ship, he will pass his signal direct. If the ship is out of sound range, the signal will be passed by the most direct route through intervening ships.

To send an all-ships signal, the commodore will sound the general call (AA, AA, etc., as in flashing light). There is a short pause, then the signal twice through. After the commodore has finished his transmission, the sound repeaters repeat the same message. For example, the commodore might signal the convoy to proceed into port, using the signal LS. He will sound, in International Morse Code:

AA (short pause) LS (short pause) LS

In succession outward from the originator, the leading ships of port columns begin to repeat. Ships on the starboard side begin to repeat as soon as the signals from the port ships cannot be clearly heard. Assume the commodore is aboard ship 51 of an 8-column convoy. Leading ships on his port hand repeat in sequence, 41, 31, 21, 11; leading ships to starboard, 61, 71, and 81. Each of these leading ships is responsible that the leading ship next outside her repeats the signal correctly, as well as the first sound-repeating ship in her own column.

Sound repeaters in column repeat signals immediately after the lead ships in their columns have finished. In each column, the ship nearest the leading ship repeats first.

It may happen that more than one ship is repeating the signal at the same time. If a ship responsible for other repeating ships finds that she cannot check the accuracy of their signals simultaneously, she makes the letter W repeatedly until they cease. She then makes the convoy call of one of the ships, followed by the letter G, whereupon the ship addressed is to repeat the message. She then signals the other ship to repeat.

The commodore may use the same procedure to control the repeating sequence of the leading repeater ships and the sound repeaters in his own column. This device is for emergency use and is not employed in routine sound signaling.

Should a repeating ship miss a group or word

made by the ship next ahead, it immediately sounds the repeat sign UD, and waits for the missing portion to be signaled again.

If a ship fails to repeat a message within half a minute of its proper turn, the next ship in succession repeats. The ship responsible for another ship which has failed to repeat, sounds the convoy call of the defaulting ship followed by the letter G. She repeats this several times, if necessary.

Occasionally, an authorized command may wish to address part of the convoy or part of a column. He sends the convoy call for that section followed by DE and his own call. The signal is passed in exactly the same manner as received. For example, the vice commodore decides that column 1 should adjust distances between vessels to 3 cables (600 yards). He makes:

Ø1 Ø1 Ø1 DE 2MM (short pause) OW3
(short pause) OW3

Alarm signals.—Sound signals are very effective for emergency use. Unlike visual signals, there is no chance they will go unnoticed for several vital seconds.

Emergency situations which occur a sufficient number of times are given special alarm signals. For example, the figure 7 means, "I have cut a mine adrift with my paravane." A vessel having occasion to make an alarm signal sounds the numeral rapidly three times, pauses, and sounds it three times more. The originator's call sign ends the signal. Should Ship 32 cut a mine adrift with her paravane, she would signal:

777 (short pause) 777 (short pause) DE 32

Sounding numbers in a fog.—When the visibility is poor enough to warrant, the commodore may order the use of whistles to help ships keep correct station. He initiates the signaling by periodically sounding the second numeral in his ship's call sign.

Leading ships of columns 1 through 9 sound the second numeral of their own visual calls in the same sequence used in an all-ships call. If there are more than 9 columns, the leading ships of columns 10 and up sound the third numeral of their visual calls. For example,

Ship 101, column visual call sign Ø1Ø, sounds number Ø
Ship 111, column visual call sign Ø11, sounds number 1
Ship 121, column visual call sign Ø12, sounds number 2

In the above instances, each ship sounds its number only once to avoid confusion with visual calls or alarm signals.

Ships other than column leaders usually keep silent and listen to the calls of their column leaders, although the master of any ship may sound his call if he fears another ship is drawing dangerously close.

Sound silence.—It may sometimes be urgent that all sound signaling cease in order to clear the air for an urgent message. The senior officer will make the silence signal HM three times, or until all signaling stops. On hearing the signal, no ship except that of the senior officer may make any sound signal until silence is lifted by the signal UO.

Executive signal.—The executive method may be used with sound signaling. The procedure is the same as though the signal were sent by flashing light. The executive signal is made by sounding the character IX on the whistle. This is followed by a 5-second blast, upon completion of which the signal is executed.

Publications.—Additional information on sound signaling will be found in the current ACP 148, in the International Rules of the Road, and in *International Code of Signals.*

PYROTECHNICS

Pyrotechnics are fireworks used for signaling, with meanings assigned to the various types and combinations. Aboard ship, pyrotechnics are used largely in emergency and distress situations. Aircraft also use pyrotechnics to a considerable extent because they are a form of visual signaling well adapted to a rapidly moving plane.

Maneuvering.—Convoy commodores may, at their discretion, order the use of pyrotechnics for maneuvering in thick weather. Their use

implies urgency in completing the movements.

Submarine attack.—A ship in convoy which sights a submarine or torpedo boat fires two white rockets or Roman candles. The same signal is made by vessels which have been torpedoed. Masters of independently routed ships should immediately turn away from such signals. This may seem heartless, but a favorite tactic of submarine commanders is to skulk in the vicinity of a "kill" and sink the vessels coming to the rescue. Remember that a torpedoed merchantman has all the communication facilities necessary to make its plight known, and rescuers will be dispatched at once. Naval vessels and aircraft are equipped to defend themselves against submarines and make a rescue a reality instead of a short-ended gamble.

Accidental firing.—Should a ship accidentally fire a rocket or Roman candle, it must immediately make the colored light signal for negation. In addition, it might sound $\overline{\text{NO}}$ on the siren. The nullifying signals save the escorts the trouble of taking the usual countermeasures against enemy attacks.

Lifeboat signals.—Roman candles are supplied for use in some lifeboats and life rafts. When fired, the signal emits five red stars, the first rising to a height of about 100 feet and the last to about 250 feet, with an interval between stars of from 5 to 6 seconds.

ACP 148 contains instructions for use of white Roman candles, as well as a table of pyrotechnic signals.

United Kingdom's uses of Very's signals.—A vessel within 15 miles of the coast of the United Kingdom uses Very's signals only to indicate the presence of the enemy. A vessel may not use the international firework signals of distress except when an immediate response is not received to a radio distress signal.

COLORED LIGHTS

A system of communicating by colored lights has been adopted by the merchant service to enable the convoy commodore to make emergency maneuvers at night. Even though the lights are visible only about 2 miles, there is a certain element of risk in their use. They are exposed only long enough for the commodore to be sure they are seen by the rest of the ships in the convoy.

If the convoy is large, certain vessels are designated as colored light repeating ships. These are often the same ships that repeat the sound signals, and the relaying procedure is similar.

The colored light signaling apparatus must be located so that it has all-round visibility, and the light must be of sufficient strength to be seen by ships close by. The equipment should be tested daily to insure that it is always in working order. All color combinations must be kept ready.

The switchbox for the equipment is usually located on the bridge; in any case, it is convenient to the watch officer and plainly marked so that no mistakes are made when the lights are turned on. If any of the lights should happen to fail, the entire circuit is switched off immediately.

Execute to follow messages may be sent by colored light. The signal of execution is the switching off of a fixed light, and the cessation of flashing of a flashing light.

RECOGNITION AND IDENTIFICATION

One of the most important duties of the merchant ship communicator in time of war is establishing identity. A vessel must be able to identify herself readily to any friend, and she must be able to recognize her enemies promptly.

Few firm rules can be set down for standard identification procedures. Identification procedures and identification signals are constantly changing due to the very nature of their purpose. Each situation must be dealt with by the rules in force at the time. Recognition signal information will be given out in the convoy conference. Each area may have its own procedure.

Convoy rendezvous.—A ship waiting for its escort at a rendezvous point identifies itself. By day, it displays its nameboard, hoists its

convoy visual call sign, and hoists its international call sign inferior to its ensign. By night, it hoists a white light over a red light. When a ship is lying to in a fog, WE (for "want escort") may be sounded on the whistle or siren.

Escort vessels awaiting a convoy hoist their international call signs during the day, and at night hoist a red light over a white light. To identify himself, the escort force commander will probably keep his lights hoisted for a short period after the convoy has formed. The other escort vessels haul down after forming. In a fog, escort vessels sound EW for "escort waiting."

Identifying minesweepers.—Occasionally, convoys encounter vessels engaged in minesweeping.

By day, minesweepers show a black ball at the masthead and a black ball at the side having the paravane. During hours of darkness, all-round green lights are displayed in the same positions as the black balls. Vessels or formations showing these lights should not be approached within 500 yards on either beam, and ships are not to pass through a formation of minesweepers under any circumstances.

Ships working with mine nets show a basket at the masthead or two all-round lights in accordance with regulations for preventing collision at sea.

Approaching anchorages.—Large ports the world over have inspection anchorages where incoming vessels drop their hooks and await inspection by boarding officers, and immigration, health, and customs officials.

By day, if the port is closed, examining vessels display three red balls in vertical arrangement at the yardarm. At night, they show the lights vertically, 6 feet apart—white lights when the port is open, red lights when it is closed. These lights are not to be confused with navigation lights.

The display of lights at night is always conditioned by the degree of security required by local regulations.

Nameboards.—Merchant vessels are so similar to one another they cannot often be readily identified. There are large ships, such as former passenger liners, whose identity is apparent; but for the most part, the only way to identify a merchantman not displaying a call sign is by its nameboard.

Local wartime regulations often restrict the display of nameboards for reasons of security. They are not usually displayed when the vessel is under way inside harbor limits unless the vessel is in a convoy anchorage.

Large nameboards are displayed by ships—

1. In a convoy, by order of the commodore.
2. Sailing independently, on being met by their own escorts or by friendly aircraft.
3. About to be tested on a degaussing range.
4. In allied nations' anchorages.

Small nameboards are displayed when in dock or at a regular berth in an allied port.

Recognition signals.—You will be issued recognition-identification signals by naval authorities before sailing. You should take particular care of these signals and see that the officer of the watch has a current copy. You must be able to identify yourself promptly should you be challenged by aircraft or by another vessel. Unfortunate incidents have resulted when recognition signals went unanswered or were answered incorrectly.

CHAPTER 13

CONVOY COMMODORE'S NCLO

DUTIES—GENERAL

The duties of a United States naval convoy commodore's naval communication liaison officer differ from the duties of an NCLO on a usual ship assignment. His duties are comparable to those of the communication officer and flag lieutenant on the staff of a flag officer.

The commodore's crew usually consists of one NCLO, four Quartermasters, and one Radioman (or two Radiomen for coastal convoy). The NCLO and enlisted men should always refer to, and address, the commodore as "Commodore" rather than by his actual naval rank in order to distinguish him from the master of the ship and other officers aboard.

The orders for the commodore's NCLO also will include the enlisted personnel in the commodore's crew and will instruct all concerned to report to a vessel for duty with the commodore. When the crew has reported aboard, these orders must be endorsed by the commodore. Both date and time of reporting are recorded in the endorsement, since enlisted personnel are included in the orders. In addition, the convoy designation is shown on the endorsement.

Many of the most important duties of the commodore's NCLO must be performed prior to sailing. Some of these are set forth in official instructions while others have been sanctioned by experience and common sense. For the benefit of officers newly assigned to duty with commodores, both categories will be mentioned here.

Upon first meeting his commodore, and again before each succeeding trip, the NCLO should confer with the commodore in order to ascertain the latter's wishes and receive instructions concerning such matters as charts, signaling equipment, personal gear, choice of flagship, and personnel problems.

The NCLO should keep in touch with the NCSO of the NAVPORCO during the process of making up the convoy and keep the commodore advised of progress, as the commodore may have personal preferences for certain ships and masters.

If the commodore has no preference, it may become necessary for the NCLO to inspect some of the ships scheduled to sail in the convoy, with a view to selecting a flagship. In making such inspections, he should check the signal and radio equipment, navigation equipment (noting whether the ship has a gyrocompass), and the adequacy and location of quarters for the commodore and his crew. Some of this information is available on forms, but experience has shown that there is no substitute for a personal inspection.

The NCLO should also consult the NAVPORCOF's communication officer concerning all phases of communications in the convoy. Voice codes and procedure, light and sound repeaters, and special communication problems should be thoroughly discussed before the NCSO establishes final cruising formation of the convoy. This must be done not later than 24 hours prior to the convoy conference.

The NCLO must be familiar with all publications issued to the commodore. These must be checked for corrections at the NAVPORCO at every port of call. The publications are drawn in the name of the commodore, but the NCLO may sign for them if he presents an appropriate chit signed by the commodore.

A sextant may be drawn by the NCLO in the commodore's name.

The NCLO must make sure that the commodore's charts are corrected by the NAVPORCO branch hydrographic office between trips.

Foul weather gear for the commodore is usually drawn at the nearest naval shipyard, while that for the NCLO and enlisted personnel comes from the armed guard center. Supplies and defensive equipment are provided by agencies of the NAVPORCO, and should be drawn well in advance of sailing. Whenever gear is held over from one trip to another, it should be carefully checked by the NCLO and necessary repairs and replacements made.

A commodore will often require his NCLO to plot rendezvous and landfalls and handle other simple navigational problems. The NCLO should avail himself of the generous assistance that often will be offered him by masters and mates, being careful to use good judgment and consideration in order to avoid interrupting them in any way while they are engaged in performing their navigational duties.

The commodore's NCLO should inspect equipment and clothing when they are first loaded on board the flagship in order to make sure that nothing is missing. The NCLO should arrange to have the commodore's personal gear brought aboard and stowed in the commodore's quarters.

Before sailing, the commodore's NCLO should confer with the armed guard commander and the NCLO of his ship, and explain to them the commodore's wishes concerning such matters as uniforms, watches, quarters, loading drills and test firing, maintenance of equipment, and division of responsibility. Tact and understanding on the part of the commodore's NCLO will be helpful in establishing working relations with the armed guard unit, ship's communication liaison unit, ship's officers, and Army officers who may be aboard.

Signal and radio watches must be drawn up and published before the ship sails. The flagship should have a continuous signal watch, and there should be at least one Quartermaster from the commodore's crew on watch at all times.

When both flag and ship's NCLO's are on board, some division of communication responsibilities is necessary. The commodore's NCLO is responsible for communications on the flagship—subject, of course, to the orders of the commodore. If there is a ship's NCLO aboard, the commodore's NCLO arranges a clearly defined division of work with him before sailing. The ship's NCLO is responsible for the internal distribution of messages and such other duties as are assigned him, but any deviation from the commodore's orders or wishes will be charged to the commodore's NCLO regardless of who is on the bridge at the time. The commodore's NCLO should, therefore, personally supervise important signals, such as alarms, rendezvous positions, time changes, and VHF radio calibrations.

The senior Quartermaster of the commodore's crew is considered the senior Quartermaster present for the duration of the trip. He should consult with the senior Quartermaster of the ship's NCLO concerning the details of watch-standing, log-keeping, and methods of signaling.

ADVICE TO THE NCLO

The following is an excerpt from an informal memorandum prepared by a group of experienced commodore's NCLO's for the old office of the port director, New York. It is quoted for the guidance of all commodore's NCLO's.

"Operations must be conducted with consideration for others. First, the manner in which you conduct the signaling will be one basis for the commodore's reputation among the masters. Second, the more consideration you give the convoy and the more expertly you handle your business with the convoy, the better consideration and finer signaling you will get from them. Lastly, don't presume on your position. Make sure the commodore grants you certain privileges and that he always knows exactly what you are doing. The same for the senior officer of the escort. Never forget that the SOE is the final boss.

"Do not send more than one signal at a time.

The other ships have only one signalman on the bridge at a time, and he has only one pair of arms. Particularly, don't send flashing light and flag hoist through the convoy at the same time, unless it is urgent.

"Establish a routine. Send the same signals at the same time each day (noon position, rendezvous, night maneuvers). This is vital to get good results from the convoy. Keep signaling to a minimum. If you send 'SN' and 'US' day in and day out, on the slightest provocation, it will mean nothing after a time. Use it sparingly, but with justification. If a ship is having trouble, ask it what is the matter. 'UV' means nothing to a master who is having periodic engine trouble. Do not signal at chow time unless it is urgent.

"Calibrate radiotelephones at the same time daily. You will complete the job quicker that way. Try to establish an agreement with the SOE prior to sailing concerning the time and method of calibrating. Also, for courtesy's sake, secure the SOE's permission each day to calibrate so that he will know the circuit will be busy. Always announce the time of the sunset watch (time radiotelephone is to be manned for the night) and always secure the watch in the morning, or after an emergency. Never let watches secure of their own accord. Never keep them on longer than is necessary. By announcing the time of the sunset watch, you eliminate guesswork. Masters and mates on other ships are not pestered, and all stations are brought on simultaneously. Keep posting the convoy on fog and emergency conditions that are anticipated and remind them of the necessary watches. You can then count on their being on the circuit when you have to pass a message under those conditions.

"Keep vigilant! Since your staff is mostly on the originating end of messages, do not relax your attention to the convoy. When a ship calls the commodore, it is usually under extraordinary circumstances. Don't make him wait because you don't see him. Always watch the SOE. The gunners on the ship can assist in this but the main responsibility rests on the signal crew. See that lagging, smoking, and irregularities, especially of signaling, are reported immediately to the SOE and commodore."

DUTY WITH A COMMODORE

Duty with a commodore includes frequent transfer from ship to ship (sometimes at sea) and from port to port (sometimes by plane). Consequently, the commodore's crew must travel as lightly as possible, and gear must be checked constantly, and lashed and stowed with the greatest care.

Immediately before leaving a ship, the commodore's NCLO should inspect the quarters of the commodore's crew to make sure that they are left completely shipshape.

Upon arrival in a port, the commodore's NCLO must take his (and the crew's) orders to the NAVPORCOF for endorsement as to date and time of arrival and departure, and for availability of public quarters and subsistence. If ordered to another port, the same procedure must be repeated. The commodore's crew will be granted per diem allowance while ashore overseas if the nonavailability of public quarters and subsistence is plainly endorsed on the orders.

When transferring from one ship to another, the commodore's NCLO must see that his (and the crew's) basic orders are amended by the commodore to show the date and time of the transfer.

At the end of each round trip, the commodore's NCLO files a communication report similar in form to the communication report filed by a ship's NCLO. The commodore's NCLO's report shows the name of the commodore rather than the name of the ship in the heading and will be endorsed by the commodore.

Paragraph 2 of the commodore's NCLO's communication report must give the required data for each ship used as flagship during the complete voyage, and the dates of boarding and leaving each ship.

Since the commodore is responsible for the entire convoy, it is the duty of his NCLO to

include in his communication report detailed descriptions of infractions of established communication procedure committed by any ship in the convoy as well as general difficulties experienced by the convoy as a whole. The commodore's NCLO will do better to keep a special notebook for jotting down incidents for inclusion in his communication report rather than to rely on his memory for the times and details of such occurrences.

The commodore's NCLO should make a point of being the first NCLO (or armed guard commander acting as NCLO) to hand in his communication report to the NAVPORCOF. If he does so, the NAVPORCOF's communication officer will often be able to explain incidents or conditions that will be brought up by the other NCLO's from the same convoy. He will also be armed with the necessary information for prompt correction of errors committed by individual ships of the convoy during the trip.

The commodore's NCLO will also find it helpful to review the communication reports filed by the other NCLO's in the convoy, for the purpose of studying their criticism of his work. The NAVPORCOF's communication officer will cooperate in making this material available to the commodore's NCLO.

The commodore's NCLO will often be called upon to assist the commodore in handling his convoy papers.

The commodore's NCLO should familiarize himself with the convoy form which is submitted by the commodore at the end of each trip. The information required on this form, such as dates and times when vessels joined or broke off from the convoy, must be noted during the trip so that it will be readily available when the time comes to fill out the form.

Many commodore's NCLO's have found it helpful to make a board to hold cards, each card representing a ship and all of them arranged on the board in cruising formation. If a ship takes a new place in the convoy, its card is moved. Various items of information may be written on the cards. The board should be kept in a weatherproof place on the bridge.

If the commodore places his sailing orders in the custody of his NCLO, the latter should keep them in a suitable place on or near the bridge, where they will be available to the commodore on a moment's notice.

CHAPTER 14

ENEMY ATTACK

RESPONSIBILITY FOR DEFENSE

The military defense of a convoy rests with the escort force commander, who immediately assumes command of the convoy when attack from the enemy seems imminent or contact is made. All evasive action is ordered by him. There are exceptions to this rule, however, which common sense demands. Masters are always responsible for the safe navigation of their ships, and must take the necessary action to avoid collision with other vessels of the convoy or to avoid torpedoes or other imminent danger.

Merchant vessels occasionally are sailed independent of naval escorts if their speed is deemed sufficient to minimize the risk involved or if the waters are relatively safe from enemy opposition. With these vessels, the armed guard officers remain as the military defenders of the ships and advise masters on the best methods of protection.

Navy communication personnel are not charged with the tactical defense of a merchant ship. However, the situation might arise where the NCLO is called upon to advise the master what action to take in an emergency when the armed guard officer is busy manning his guns. The purpose of this chapter, therefore, is to indicate to naval communication personnel a few methods of defense against the enemy developed during the last war.

ATTACKS FROM AIRCRAFT

Any convoy or independently sailed ship is fair game for enemy aircraft. At sea, when within reasonable distance of enemy bases, or in the vicinity of suspected enemy carriers, you should expect air attack at any time of day or night. Your safety will depend on the state of preparedness of your vessel.

In general, air attacks can be classified into two broad types: the medium- and high-level attack, and the low-level attack.

Medium- and High-Level Attack

High-level horizontal bombing of surface vessels offers few problems while the ships have sea room and way on. As a general rule, the higher the bomber, the less difficult it is to maneuver to avoid the bombing. There are two factors which aid the surface vessel in this respect: first, the bomber must remain on a steady course for a few moments; second, the time consumed by the fall of the bomb favors the ship.

Planes bombing from medium to high levels drop clusters or "sticks" of bombs and rely on saturation rather than pin-point accuracy. Such air attacks are not common to surface shipping because lower level attacks exact a greater toll of vessels sunk or damaged. In case of heavy attack by groups of high-level bombers, the escort force commander may scatter the convoy and have the vessels take individual evasive action until the attack is over.

Masters and armed guard officers in time of war should be familiar with bombing tables that give the optimum angles for the release of bombs at specified altitudes. Estimating the altitude of enemy aircraft, the master enters these tables and determines the expected point of release of the bomb and duration of the time in its fall. He then sees how much time he has to take evasive action and will commence his turn when he estimates

the bomber to be in position for the drop. The direction of the turn should be such that it will place the aircraft most nearly abeam, thereby presenting the smallest target to the direction of the fall of the bombs. These maneuvers are made at full speed and by using full rudder.

When under an air attack, the escort force commander may deem it unnecessary to scatter the convoy; hence, he may order emergency turns to the right or left of the base course. In the event these maneuvers are ordered, it is always advisable to keep a sharp lookout for a signal from the escort force commander to "star" the convoy.

Low-Level Attack

Low-level air attack is the most severe air assault on surface craft. These attacks can be carried out by any or all combinations of the following types of aircraft: dive bombers, torpedo bombers, medium-capacity bombers, rocket-carrying aircraft, medium- and large-sized seaplanes equipped with torpedoes or bombs, strafing fighters, and skip bombers.

When the situation is conducive, aircraft making low-level attacks usually prefer to attack from downwind and from directly out of the sun. The attack from downwind is particularly suitable for torpedo bombers in that the pilot seeks to drop his torpedo against the trough of the sea rather than with it. There is also some slight advantage in the sound being carried away, and the possibility of lookouts failing to spot aircraft coming from out of the sun.

The preferred time of attack is either dawn or dusk when the ship offers the best silhouette against the sky, when wind and weather are propitious for air attack, and obscurity favors the planes.

The optimum distance for a torpedo drop is approximately 1,000 yards from the target at very low altitudes. The torpedo is launched when the aircraft is somewhere in the segment between 40° and 110° relative.

The torpedo plane will attempt to hit the ship somewhere aft of the bridge (preferably broad on the beam) as this area of a ship is the most vulnerable. Therefore, the master takes his evasive action in such a manner that, if the torpedo should hit, it would not make contact in the after regions. Unless turning in the opposite direction is faster, or the beam of the vessel is brought perpendicular to the course of the missile, the turn is made toward the torpedo.

When a simultaneous attack by many torpedo bombers is made, the master should employ the principle of "combing wakes"; that is, the wakes of the oncoming torpedoes should be considered as teeth of a comb and the vessel navigated between these wakes.

Low-flying bombers may also drop circling torpedoes into the midst of a convoy. These are released from less than 1,000 feet and are dropped by parachute. On immersion, they run in circles or on opening spiral courses at relatively slow speeds. Course should be altered to give these torpedoes a very wide margin. Their characteristics are unpredictable. When fuel is exhausted, the torpedoes may remain on the surface as floating contact mines, or sink and become mines exploded by magnetic disturbances. Torpedoes of this type may also veer off their circling orbits and become self-seeking when an acoustic signal is picked up.

Frequently, circling torpedoes are dropped in fleet anchorages or enclosed harbors that restrict maneuverability.

Dive Bombers

Dive bombers attack from directly overhead, usually approaching from astern and releasing the bomb at a low altitude. The aircraft passes directly over the ship. However, with toss-bombing equipment which launches the bomb on a direct course without a trajectory, the release may be made from considerably higher altitudes. It is up to the master to observe the characteristics of the dive bomber and then make his emergency turn (using full rudder and utmost speed) in the direction which will place the bombing attack broad on the beam.

Skip Bombing

During the last war, aircraft of medium bomb capacity and some torpedo bombers were employed in skip bombing. This consists of the aircraft making a broadside run and attempting to skip a bomb into the side of the ship much in the same manner as a child would skip a flat stone on water. A skip-bombing aircraft usually makes a very low-level run, and the best defense is to turn in his direction, or in such a manner as to present the minimum amount of broadside to the aircraft.

Rocket Launching and Strafing

The fundamental principle of presenting the smallest target applies equally as well to rocket-launching and strafing aircraft as it does to the dive bombers. Here again, the master has to watch the characteristics of the attack and turn in such a manner as to present the smallest target or the least vulnerable area to the attack.

Jet Aircraft

With the advent of jet aviation, the picture of tactical operations changed somewhat. Jet planes travel at a considerably higher speed than reciprocating-engine aircraft. Due to this and the fact the propeller has been eliminated and the radar return reduced thereby, it takes an expert operator to spot a jet plane on a conventional radar gear. Even though he may spot the target on a radar scope, the "pip" is often just a mere flash of light from which it is next to impossible to obtain distance and bearing.

However, the picture is not completely dark. In some cases, the extreme speed of the jets is in favor of the surface craft. High-speed strafing will give a far greater dispersal of the fire pattern than strafing from slower planes. In other words, the concentration of fire is considerably less than that encountered from World War II aircraft. In any future war, few jets will be equipped for strafing; rockets will undoubtedly take the place of airborne machine guns for action against surface craft.

Warning Signals

The escort force commander occasionally will have advance warning of air attack. He will then hoist the warning signal "pennant 6" at the dip and at the same time sound a prolonged blast on the whistle or siren to draw attention to this signal. In addition to the warning signal, a true bearing may also be indicated by the flag hoist, X, followed by three numeral pennants on a separate halyard. All ships repeat the flag signal and prolonged blast.

This signal is kept flying until the aircraft are identified as friend or foe, or until the signal is hauled down by order of the escort force commander.

If the aircraft are identified as hostile, the escort force commander two-blocks the warning signal and sounds a blast to draw attention to the change.

Should a ship sight enemy aircraft not previously detected, she hoists "pennant 6" two-blocked and sounds a prolonged blast, with all ships repeating. The bearing may be indicated in the manner described previously. This signal is kept flying until hauled down by order of the escort force commander.

Hiding in Fog

Trying to hide in a *shallow* fog bank is like crawling under a rug. Even if the fog bank is deep enough to cover the superstructure of the ship, there is a pronounced rise in the bank just over the funnels and the ship's position is clearly defined. The only thing resulting from hiding in a shallow bank is the effective prevention of the ship's gunners from seeing the enemy plane, thereby making it much easier for the attacker to accomplish his mission. In general, no fog bank *less than 400 feet high* should ever be entered to avoid detection from aircraft. But it must be remembered that a deeper bank, if available, is an excellent screen.

CONTACT REPORT

A ship sailing independently should open up with a contact report if it sights an enemy plane

and is attacked, or is positive that the enemy aircraft has sighted her and will bring attack. A ship equipped with HF radio should use it for these reports in preference to 500 kcs unless she is under actual attack.

Contact Signals and Alarms

A ship sighting a submarine, torpedo boat, or torpedo wake near a convoy during the day immediately sounds the alarm. This is done by hoisting the appropriate alarm signal for the type of contact and sounding one group of six short blasts if the enemy is on the starboard side or two groups of six blasts if he is on the port.

At night, a ship in convoy sighting a submarine or torpedo boat immediately fires at least two white rockets and sounds the alarm signal on the whistle or siren to indicate the location.

Should you see an enemy sub or torpedo boat outside attacking distance from the convoy, hoist the appropriate alarm signal (pennant 3 two-blocked) and, at the same time, sound a prolonged blast to draw attention to the signal.

If a ship is hit by a torpedo during the day and it has seen neither the attacker nor the trace of the torpedo, she hoists the alarm signal (DU1 or DU2) signifying "I have been hit by torpedo on my _____ side." The 1 or 2 in the signal shown indicates the side on which the ship was hit. If the number of torpedoes is known, this is indicated by a numeral pennant inferior to the tack line.

At night, the damaged ship fires two white rockets or Roman candles in quick succession and switches on one red light where it may best be seen. This red light is used only if the source of the torpedo is unknown or assumed to be a submarine.

If the ship attacked does not display these signals after a reasonable wait, the ship next to her should do so, omitting the red light.

Should one of the ships in a convoy be attacked, all ships continue to carry out their latest orders and maintain the course or zigzag plan until further orders are received.

SUBMARINE ATTACK

The quickest way to indicate that a submarine has been sighted is to fire a couple of rounds from a large gun in the direction the enemy was last seen. This method is advisable even though the submarine has submerged. During the night, a few rounds of tracer ammo from one of the automatic weapons should be fired in the direction of the submarine.

If attacked by a surfaced submarine, an independent merchant ship usually turns tail to the sub, proceeds at full speed, and opens fire with her stern gun. Where it is possible, while keeping stern-on to the sub, she heads for shallow water. If a submarine has been sighted on the surface and later is seen to submerge, course is altered to keep well clear and a wide non-uniform zigzag is commenced. In convoy, evasive action is ordered by the escort force commander.

INDEPENDENT SHIP DEFENSE

On sighting a torpedo track or periscope trace, the master should order full speed and maneuver the ship as follows:

If the periscope is sighted forward of 60° on the bow, or a torpedo track is seen approaching from forward of 60° on the bow, he turns toward the periscope or the point at which the torpedo track appears to start.

If, in a smooth sea, a periscope is seen aft of 60° on the bow and more than 2 miles away and no torpedo wake is observed, it is better to turn away. If a periscope is seen aft of 60° on the bow, or a torpedo wake is observed in this direction, the master should steer directly away from it and proceed at full speed.

INDIVIDUAL ACTION IN CONVOY

Ships in convoy sighting a torpedo wake or a submarine or torpedo should maneuver in such manner that other ships are not placed in danger of collision nor the escorts hampered from proceeding to the attack. To be effective, such action should be taken immediately upon sighting of a torpedo wake.

SMOKE FLOATS

Smoke floats are particularly useful at night or in poor visibility when gunfire proves ineffective. In addition to making your vessel a difficult target, alterations of course behind a smoke screen will confuse and may shake off a pursuing submarine. Smoke floats are not to be burned on deck at night. The fire may be seen through the smoke.

ACTION AFTER A CONVOY HAS BEEN SCATTERED

All ships set the radio watch for independent ships immediately after a convoy has been scattered. The action of each vessel is left to its master who, if failing to receive orders to the contrary from the commodore or escort force commander, will proceed to his destination. However, the convoy normally will reform at the next noon position or rendezvous.

ATTACK BY RAIDER

While it is doubtful that a merchant vessel could outrun or outmaneuver an enemy raider, the situation may arise where the master decides to risk being sunk for a chance at escaping a surface raider. He would probably adhere to the following procedure:

1. Turning stern to the enemy and proceeding at full speed.
2. Making a distress message by radio.
3. Opening fire on the enemy and making as much smoke as possible.

If the master takes these steps, there is little doubt the enemy will open fire as soon as he sees the master's intentions. The master of the escaping vessel should try to reduce the effectiveness of enemy fire by maneuvering as follows:

1. Watching for the fall of the shot and altering course toward the side on which the shot last fell.
2. Changing course immediately when the shot is directly over or astern or the vessel is hit. The direction of turn does not matter as long as it is executed at once.

MINES

Mines are one of the most unpredictable hazards to navigation encountered by merchant masters both in time of war and for long periods thereafter. No definite defense can be established against mines due to the inherent characteristics of these weapons. However, there are some "rules of thumb" which will reduce the likelihood of coming in contact with mines:

Rule one: Plot and check positions of all mines reported by all warning systems.

Rule two: When approaching port, the *only* place to navigate is in the prescribed channel.

Rule three: When mines are suspected or known to be in the vicinity, keep sharp lookouts and maintain slow speeds.

Rule four: Do not approach mines sunk by rifle fire, nor sink mines directly ahead of the ship by this method. Sinking mines often explode after disappearing below the surface.

Rule five: Insure proper functioning of degaussing.

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