

CHAPTER 9

VISUAL SIGNALING

Basic communication doctrine stipulates that visual signaling, in preference to radio, is to be utilized for communications whenever practicable. This practice provides a greater degree of security against signal interception, distributes the communication workload within the ship, and obviates the need for parts of the r-f spectrum for short-range transmissions. Visual communications, therefore, constitute an integral part of the overall communication effort of the ship.

SIGNAL BRIDGE

The signal bridge, serving as an adjunct to the ship's main communication center, plays an

important role in the effectiveness of communications as a function of command.

The signal bridge always is located high in the ship to provide all-around visibility. As an example, a DD 931 class destroyer has her signal bridge located on the 02 level abaft the navigation bridge, as in figure 9-1. The 02 level, or deck identifies the second horizontal division of the ship above the main deck. On other ships, the signal bridge may be on the flag bridge level or on the flying bridge.

Flag bags, which are stowage receptacles for flags when the latter are not in use, are installed on either side of the signal bridge. From the flag bags, halyards for flaghoist signaling lead up to the yardarm. In the vicinity are

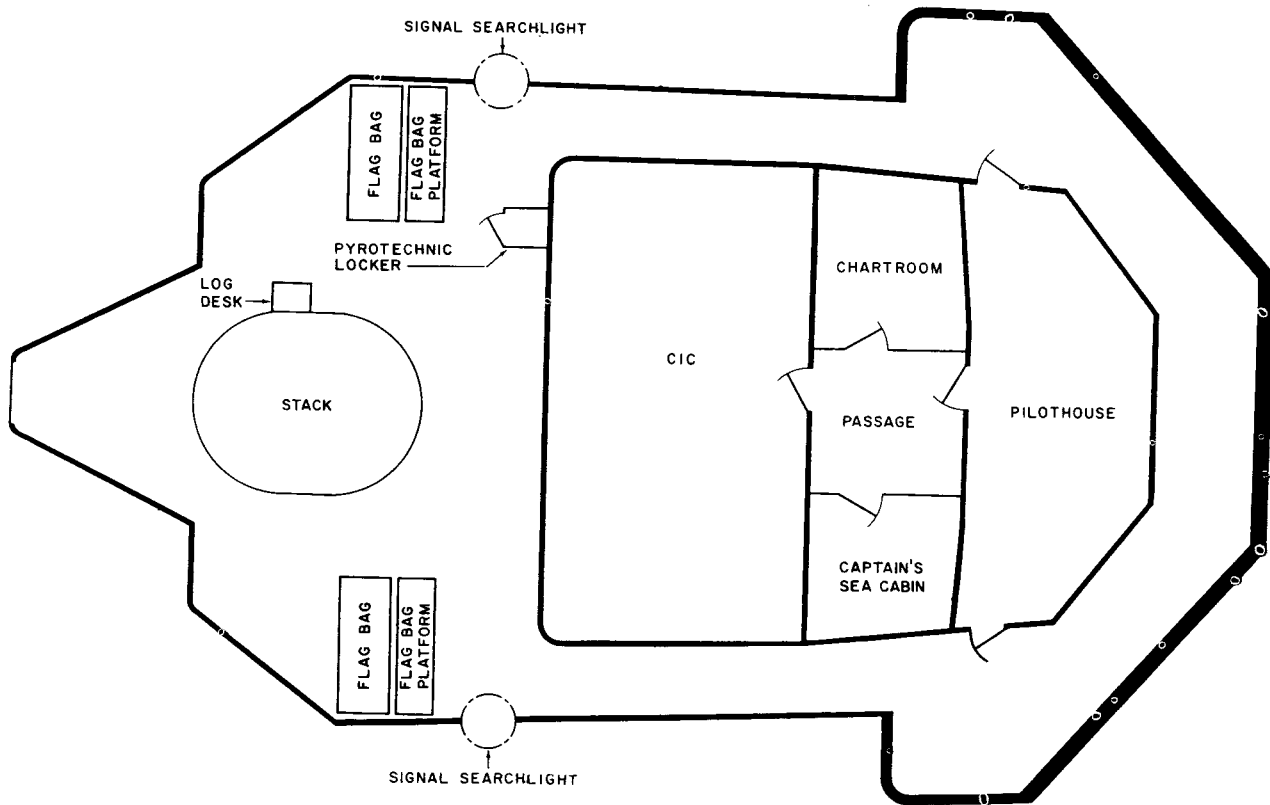


Figure 9-1. —The signal bridge is located abaft the ship's bridge.

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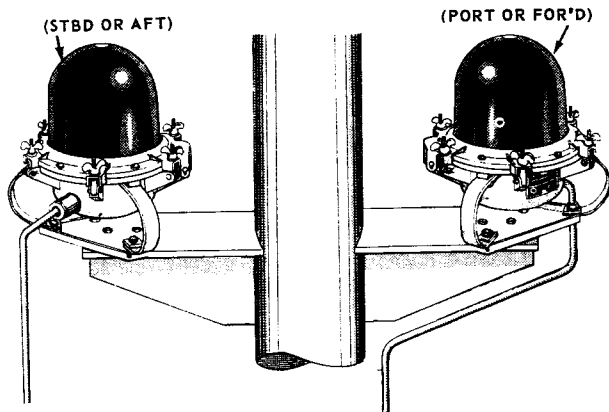
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appropriate means of communication with other stations within the ship, such as radio central and CIC. A 12-inch signal searchlight is mounted on either side of the bridge, and two additional 12-inch lights are located on the O3 level (anti-air warfare station) above the pilothouse. Searchlight operating controls are on the searchlights, but the on-off power switches are installed separately.

Normally, a signal shelter provides some sort of desk facility for writing up visual messages in inclement weather, as well as stowage space for the various required publications. Message-passing tubes run between the signal bridge and radio central.

Infrared transmitting and receiving equipments, usually employed only at night, are available to signal bridge personnel.

In our example, the infrared transmitters (fig. 9-2) are mounted on the foremast. Like ordinary yardarm blinker lights, two beacons are installed, one on the port side and one to starboard, to provide a coverage of 360°. The two transmitters are controlled by separate permanently mounted operating keys on the signal bridge. The transmitter control switch, however, is located in the pilothouse. The same control energizes both the infrared and blinker light communicating systems. The two systems are interlocked at the control switch, thus having a common keying system, but only one can operate at a time. This precaution eliminates the possibility of simultaneous keying of both infrared and yardarm blinkers under blackout conditions.



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Figure 9-2. —Infrared beacons are mounted in pairs for all-around coverage.

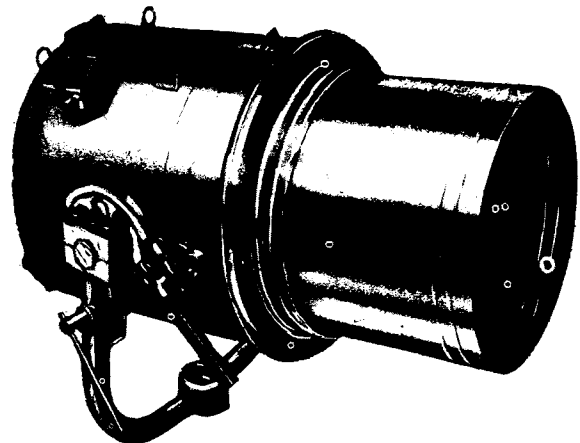
In addition to installed infrared omnidirectional transmitters, searchlights are provided with detachable infrared conversion hoods (fig. 9-3) to permit nighttime directional transmissions.

Infrared receivers are of two types: those which are electronic in design and require connections with the ship's power (fig. 9-4), and those which are completely independent in operation. The latter operate on the principle of phosphor conversion of infrared rays to visible wavelengths and are useful when long-range reception is not involved.

SIGNAL FORCE

The signal force must be continually on the alert, particularly while the ship is underway. Each signalman, in addition to performing his normal duties, is a qualified lookout. As such, he must be able to identify such details as the various types of both U. S. and foreign ships and aircraft, flags and ensigns of the principal maritime powers, and visual aids to navigation. He should be quick to note nearby ships (not part of own formation) and aircraft, objects in the water, and so on.

A good spotter is invaluable for spotting visual signals. When operating in company and performing tactical maneuvers by flaghoist, a spotter may be needed continuously. This is especially true when the flagship is some distance away.



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Figure 9-3. —Infrared searchlight conversion hoods permit directional transmissions.

TOD or TOR	TOX	METHOD	FROM	TO	ORIG	ACTION ADEE	INFO ADEE	TEXT OR DTG
TIME ZONE: +8 UNIFORM		WATCH: 1200-1600			DATE: 6 OCT. 1961			
1311		FL	Dp8p4p2		NABC	NDEF	NGHI	Ø621ØØZ
1415	1418	FH			pØp7	p7		TURN TWO
1430		SEM	Cp8p5		NAUP	NDEF		REQUEST BOAT FOR OPS OFF
1510		FL	EXCHANGED CALLS WITH THE SS UNITED STATES					
1530			12" S/L, PORT SIDE AFT, INOPERATIVE NOTIFIED ELEC. WORK SHOP					
1540			12" S/L BACK IN OPERATION.					
1545		WATCH	PROPERLY RELIEVED BY F.C. COLLINS, SM3					
								L.E. Rife SM2

Figure 9-5. -- Visual log entries.

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Following are some general terms associated with flaghoist signaling.

HALYARD: A light line, usually braided or plaited, used to hoist signal flags. Halyards are numbered from outboard to inboard. Thus, number 1 starboard halyard is the outboard halyard on the starboard yardarm.

HOIST: A signal consisting of the flags and pennants flown on a single halyard.

DISPLAY: A complete signal, whether on one hoist or on two or more adjacent hoists.

POINT OF HOIST: The highest point to which a signal can be raised; the yardarm block through which the halyard carrying the hoist is rove.

CLOSE UP: A hoist is close up when the top flag touches the point of hoist.

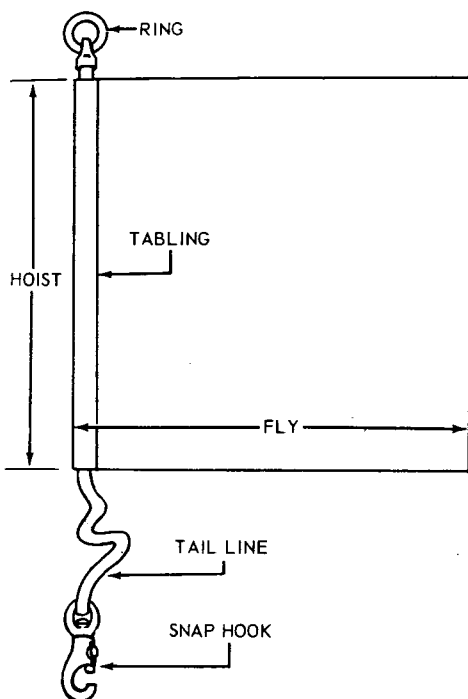
AT THE DIP: A hoist is at the dip when it is stopped about three-fourths of the way up toward the point of hoist.

HAULED DOWN: Said of a hoist when it has been lowered and cleared from sight on the halyard.

Reading

The flags of a single hoist are read from the top down. When a signal requires more flags than can be made into a single hoist, the signal is continued on another halyard. The hoists then are read from top down and from outboard to inboard, as in figure 9-7. To avoid ambiguity when a signal is broken into two or more hoists, the breaks are made where TACK normally would be inserted. (Tack and tackline are explained in chapter 5.) On occasion, flags may be hoisted at the triatic stay, which is a fore-and-aft line between masts or between a mast and a stack. A triatic display (fig. 9-8) is read from top to bottom and from forward aft.

When a display consists of more than one hoist, the separate hoists are run up one by one in the correct order. Usually, when a signal is too long to be shown completely on three halyards, two or more displays are employed. The heading flies on a separate halyard until the last hoist of the text is hauled down.



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Figure 9-6. — Flag and pennant nomenclature.

All flaghoist signals used for tactical communications are based on ATP 1(A), Volume II, the Allied Naval Signal Book. All the signals in that publication are based on the standard signal flags and pennants shown in figures 9-9 and 9-10, which also illustrate the phonetic and written version of each flag and pennant.

As can be seen in figure 9-9, each alphabet flag has the phonetic name of the letter that it represents, and each numeral flag takes the name of the numeral it represents. Numeral flags are written as numbers alone, but numeral pennants (fig. 9-10), which are used only in calls, are written as digits preceded by the small letter p (e. g., p1, p2). The special flags and pennants in figure 9-10 are used in tactical maneuvers to direct changes in speed, position, formation, and course; to indicate units; to identify units; and for other specialized purposes.

SUBSTITUTES. —Substitute pennants are utilized to prevent alphabet flags, numeral flags, and numeral pennants from appearing more than once in the same hoist. As the name implies, they are substitutes for other flags and pennants. They are used as follows:

- FIRST SUB Repeats the first flag or pennant in the hoist.
- SECOND SUB. Repeats the second flag or pennant in the hoist.
- THIRD SUB. Repeats the third flag or pennant in the hoist.
- FOURTH SUB Repeats the fourth flag or pennant in the hoist.

Substitutes are written simply as 1st, 2nd, 3rd, and 4th. For example, the signal T 1415 is copied as T 1 4 2nd 5; 151Ø15 is hoisted as 1 5 1st Ø 3rd 2nd.

BASIC MANEUVERING SIGNALS. —Most flaghoist traffic at sea deals with tactics and maneuvering. As a matter of familiarization, this section discusses a few of the more common signals.

When three numeral flags are used in a tactical signal, they indicate a true course or bearing, depending upon the special pennant with which they are displayed. When fewer than three numeral flags are hoisted, the signal indicates a relative course or bearing in units of 10 ; e. g., the FIVE flag means 50° relative. The ANS pennant represents a fraction; in the text of a signal it means decimal point or one-half.

The course pennant is spoken, written, and transmitted as CORPEN. One of its most common uses is to maneuver ships, either by signaling a change of course in succession (column movement) or by indicating the base course of the formation. When CORPEN is hoisted above the numeral flags, the movement is to the right; when hoisted below, movement is to the left.

The foregoing may be summarized as follows:

CORPEN Ø9Ø Alter course to 090° by wheeling to starboard.

Ø9Ø CORPEN Alter course to 090° T by wheeling to port.

CORPEN 9 Alter course by wheeling 90° to starboard.

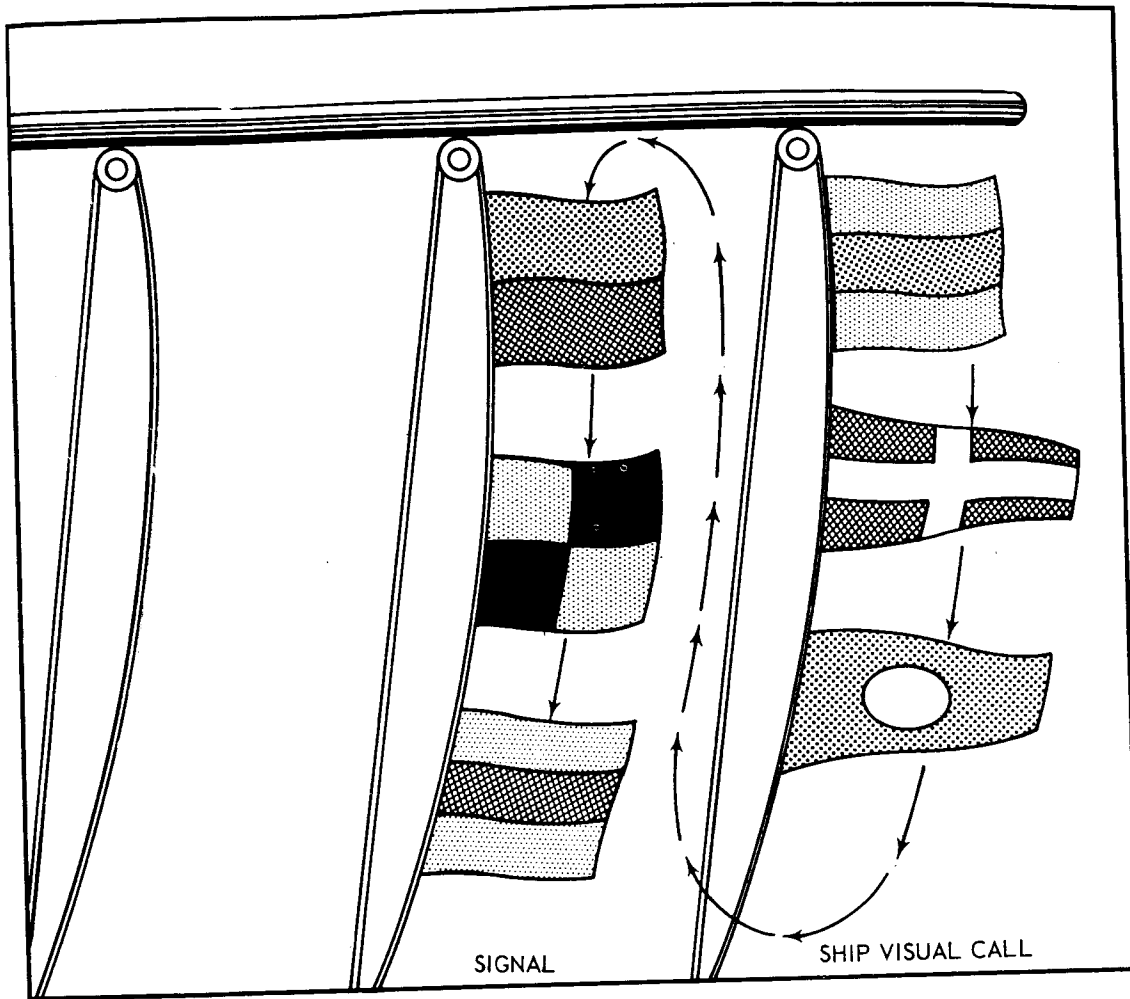
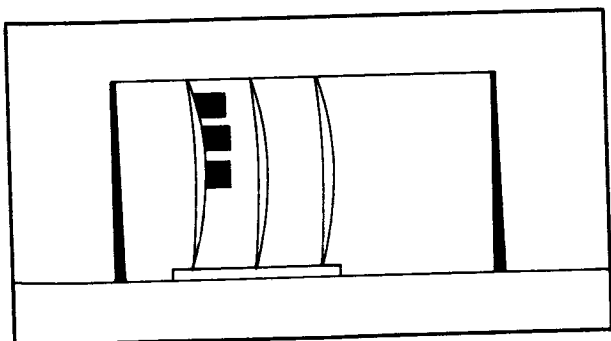


Figure 9-7. —Hoists are read from the top down, starting with the outboard halyard.

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Figure 9-8. —The triatic stay.

4 ANS CORPEN . . . Alter course by wheeling 45° to port.

SPEED 16 ANS 8 . . Speed 16.8 knots.

The TURN pennant in a signal requires that all units addressed put over their rudders simultaneously upon the signal of execution. The interpretation of a turn signal is always a turn together to port or starboard. The rule for the direction of turn is similar to the CORPEN pennant. For example:

TURN 9 Ships turn together 90° to starboard.

270° TURN Ships turn together to port to course 270° T.





































FLAG and NAME	Spoken	Written	FLAG and NAME	Spoken	Written	FLAG and NAME	Spoken	Written
 A	ALFA	A	 M	MIKE	M	 Y	YANKEE	Y
 B	BRAVO	B	 N	NOVEMBER	N	 Z	ZULU	Z
 C	CHARLIE	C	 O	OSCAR	O	 1	ONE	1
 D	DELTA	D	 P	PAPA	P	 2	TWO	2
 E	ECHO	E	 Q	QUEBEC	Q	 3	THREE	3
 F	FOXTROT	F	 R	ROMEO	R	 4	FOUR	4
 G	GOLF	G	 S	SIERRA	S	 5	FIVE	5
 H	HOTEL	H	 T	TANGO	T	 6	SIX	6
 I	INDIA	I	 U	UNIFORM	U	 7	SEVEN	7
 J	JULIETT	J	 V	VICTOR	V	 8	EIGHT	8
 K	KILO	K	 W	WHISKEY	W	 9	NINE	9
 L	LIMA	L	 X	XRAY	X	 0	ZERO	0

Figure 9-9. — Alphabetical and numeral flags.

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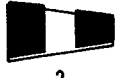








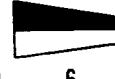













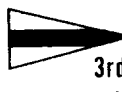


PENNANT and NAME	Spoken	Written	PENNANT or FLAG	Spoken	Written	PENNANT or FLAG	Spoken	Written
 1	PENNANT ONE	p1	 CODE or ANSWER	CODE or ANSWER	CODE or ANS	 NEGATIVE	NEGAT	NEGAT
 2	PENNANT TWO	p2	 BLACK PENNANT	BLACK PENNANT	BLACK	 PREPARATIVE	PREP	PREP
 3	PENNANT THREE	p3	 CORPEN	CORPEN	CORPEN	 PORT	PORT	PORT
 4	PENNANT FOUR	p4	 DESIG-NATION	DESIG	DESIG	 SPEED	SPEED	SPEED
 5	PENNANT FIVE	p5	 DIVISION	DIV	DIV	 SQUADRON	SQUAD	SQUAD
 6	PENNANT SIX	p6	 EMERGENCY	EMERGENCY	EMERG	 STARBOARD	STARBOARD	STBD
 7	PENNANT SEVEN	p7	 FLOTILLA	FLOT	FLOT	 STATION	STATION	STATION
 8	PENNANT EIGHT	p8	 FORMATION	FORMATION	FORM	 SUBDIVISION	SUBDIV	SUBDIV
 9	PENNANT NINE	p9	 INTER-ROGATIVE	INTER-ROGATIVE	INT	 TURN	TURN	TURN
 0	PENNANT ZERO	p0	SUBSTITUTES					
			 1st. SUBSTITUTE	FIRST SUB	1st.	 3rd. SUBSTITUTE	THIRD SUB	3rd.
			 2nd. SUBSTITUTE	SECOND SUB	2nd.	 4th. SUBSTITUTE	FOURTH SUB	4th.

Figure 9-10. — Numeral pennants; special flags and pennants.

C17. 68

TURN 1 ANS Ships turn together 15° to starboard.

The FORM pennant is used in all signals to form an unformed group of ships. When ships already are in formation, the purpose of the FORM pennant is to change the formation to a new line of bearing from the guide, to order a fleet disposition, to order a special formation, and so on. Ships and lines of ships always form on the guide unless another ship is indicated by the OTC.

The most common use of a FORM signal is to order a group of ships to arrange or rearrange themselves on an indicated line of bearing from the guide. When the indicated direction is true, the usual three numeral flags are hoisted. When the indicated bearing is relative, the PORT or STARBOARD pennant is hoisted as part of the signal to indicate whether the new line of bearing is to the left or right of the guide. Example:

FORM 090. Ships are to form on true bearing of 090° from their guide.

FORM PORT 9. Ships are to form on a bearing of 090° relative to the port side of the guide.

Relative bearings normally are thought of as running from 000° to 360° clockwise around the ship. For purposes of forming up, however, these bearings run only to 180°—bow to stern—and may be on either side of the ship. A good reason for this is that there are a number of standard form signals consisting simply of FORM and a number. For instance, FORM 9, without the amplifying direction pennant, means "Form divisions in line abreast to starboard, division guides bearing astern," a signal entirely different from FORM PORT 9.

Although the execution of a form signal may require a change of course to carry out the maneuver, the original course always is the same as the final course. The only element that changes is the maneuvering ship's position relative to the guide.

STATION pennant signals are utilized mainly to assign a position or station to a ship or unit that is joining another ship or unit, or to move a ship or unit from one station to another. An

accompanying distance or interval signal indicates the distance that the signaled ship or unit station is to be from the guide.

When used only with a ship's call sign, STATION directs that ship to take proper station.

Governing Pennants

To impart a different sense of a signal, three governing pennants—PREPARATIVE, INTERROGATIVE, and NEGATIVE—are available. Governing pennants immediately precede or follow the basic group. Their meanings follow.

<u>Preceding the signal</u>	<u>Following the signal</u>
PREP. Prepare to ___.	My present intention is to ___.
INT Questions or queries.	Request permission to ___.
NEGAT. Cease; do not _____; or gives a negative sense to an otherwise affirmative statement.	Action is not being carried out.

If the signal to launch aircraft were BZ, the governing pennants modify the basic message in this fashion:

- PREP BZ Prepare to launch aircraft.
- BZ PREP My present intention is to launch aircraft.
- INT BZ Are you launching aircraft?
- BZ INT Request permission to launch aircraft.
- NEGAT BZ Do not launch aircraft; or cease launching aircraft.
- BZ NEGAT I am not launching aircraft.

Answering

Flaghoist signals normally are answered, or receipted for, by addressees representing the

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entire hoist at the dip when seen. If this is impossible, ANS alone or under the call sign of the originator may be used. A flag officer or unit commander, or his administrative flagship, may acknowledge a flaghoist signal addressed to him or to his administrative office from a ship or unit commander junior to him by hoisting ANS, either alone or under the junior's call sign.

When ANS is used to acknowledge a signal, and a further signal is hoisted after acknowledgment is given, ANS is to be dipped and rehoisted close up when the subsequent signal is acknowledged.

A hoist closed up constitutes an acknowledgment. When a tactical signal is closed up, it means that the unit(s) or ships concerned are ready to carry out the purport of that signal.

A senior officer may approve a request made by flaghoist signal from a junior ship by hoisting the call sign of the ship above ALFA. He may disapprove the request by hoisting NEGAT in the same manner. When signals are answered in this manner, the use of ANS by the senior is not required.

Emergency Signals

When an emergency exists, or when the tactical situation is such that speed is the main consideration in executing a maneuver, the originator hoists the EMERGENCY pennant as the first flag on the hoist.

Any received signal preceded by EMERG is to be acted upon as soon as understood. The originator sounds six short blasts on the whistle to call attention to his hoist and, if other than the OTC, passes the signal to the OTC by the most expeditious means authorized.

Emergency signals made by flaghoist are repeated by all ships. For an originator other than the OTC, the repeating ships hoist the call sign of the originator below FIRST SUB on an adjacent halyard.

When EMERG is used with several signal groups, it governs all groups when either separated from the group by TACK or hoisted in a superior position on an adjacent halyard. If EMERG is required to govern only one of several groups, it immediately precedes the group to be governed.

EMERG preceding a call executes all signals flying under a similar call sign as soon as understood. EMERG used without a call executes all signals flying without a call.

Signals of Execution

A flaghoist signal is executed when it is hauled down by the originator, except when execution is indicated otherwise, as follows:

1. Execution at a time designated in the signal;
2. Execution upon arrival at a position indicated in the signal; or
3. When execution is required as soon as understood in cases of emergency pennant and other signals prescribed in the Allied Naval Signal Book.

Nontactical signals that require no specific signal of execution, such as signals that transmit information, signals governed by PREP, NEGAT, and the like, are acted upon as soon as read, without waiting for the signal to be hauled down.

When a tactical signal is being made by the flagship, nontactical signals are not shown by other ships concerned with executing the tactical signal. Any nontactical signals then flying are canceled and hauled down at once.

When a signal is received by more than one method of signaling, the signal is executed on the first signal of execution received.

When the originator desires to have a signal executed at a specific time instead of when the signal is hauled down, he so indicates by means of the TANGO flag, which is the time indicator.

An exact hour transmitted in conjunction with the time indicator may be expressed in two digits, as 19 for 1900. The ANS pennant may be used in place of the last two figures of a time signal to express 30 minutes. Thus, 1630 is transmitted as 16 ANS.

When an indicated time is sent together with a signal group, TANGO is employed as follows:

Meaning

T preceding numerals.	Action will commence at that time.
T following numerals.	Action will be completed by that time.
T between numeral groups.	Time by which action is to be completed and time at which action is to commence, respectively.

Examples of the foregoing are—

- BZ TACK T 1845 Commence launching aircraft at 1845.
- BZ TACK 1845 T Complete launching aircraft by 1845.
- BZ TACK 19 T 1845 . . Commence launching aircraft at 1845; complete launching aircraft by 1900.

A time signal normally applies only to the group immediately preceding it. When the signal applies to two or more preceding groups, the flags AT are inserted before the first of the groups to which the time signal applies. Example:

FORM 3 TACK CORPEN 275 TACK SPEED 15 TACK T 13

The foregoing transmission means that FORM 3 and CORPEN 275 are to be executed when hauled down, but SPEED 15 will be carried out at 1300. On the other hand, the following transmission indicates that all signals between AT and T will be carried out at 1300.

AT TACK FORM 3 TACK CORPEN 275 TACK SPEED 15 TACK T 13

When AT is hoisted separately as the first hoist and remains flying during succeeding hoists, all signals made are executed when AT is hauled down. With this method of execution, no time signal is required.

Visual Responsibility

When underway in formation, flaghoist is reserved mainly for collective address signals from the OTC. The only noncollective address transmissions that go by flaghoist are—

1. Signals pertaining directly to current operations.
2. Reports requested by the OTC.
3. Emergency signals.

The responsibility of an individual ship does not end when a collective address signal is repeated flag for flag. Although ships may be designated specifically as repeating stations, every vessel on the inner part of the formation is responsible for relay to ships outboard that have not yet replied. The general rule for determining visual responsibility in any situation is: Each addressee is responsible for delivery to addressees beyond himself in the general direction away from the originator. It is the duty of any ship to expedite the transmission by relay if it is evident that she is in a better

position to do so than the vessel specifically responsible.

Relaying signals from the OTC is accomplished in the following manner:

1. Signals are relayed at the dip, then hoisted close up when the ships addressed have acknowledged.
2. The originator is not indicated.

Relay of signals from ships other than the OTC to ships other than the OTC is as follows:

1. The originating ship hoists the FIRST SUB, her call sign, the call sign of the addressee, and the text. If the identity of the originator is evident to all ships within visual communication range, FIRST SUB and originator's call sign need not be hoisted.

2. The relaying ship hoists the signal, flag for flag, at the dip.

When signals from individual units to the OTC are relayed, the call sign of the OTC is considered understood and therefore is omitted.

In multiple-line or circular formation, each task force (group) commander is responsible for his own subordinate commanders, and for other group commanders in the direction beyond and away from the originating ship. Each unit commander, in turn, is responsible for the division or line leaders of his own unit, and for other unit commanders in the direction beyond and away from the task group commander. The division or line leader is responsible for the ships of his division or line, and for ships of other divisions or lines in a direction beyond and away from the leader.

During maneuvers that alter the formation, visual responsibility for relay does not change until completion of the maneuver. A situation in which units change positions quickly relative to the OTC demands particular initiative and alertness by every ship if collective address messages are to be delivered rapidly and effectively.

The object of relaying is to reduce to a minimum the lag between the originator's original transmission and its accurate delivery to the last addressee. Ideal relaying is passing the message on, signal by signal or group by group, as it is being received. If the message is by flag, the next ship reads the message as the relay vessel repeats, flag for flag, the signal she is reading. If the message is by semaphore or light, fast relaying can be effected by having operators stationed on each side of the signal bridge, one receiving while the second is relaying.

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A ship having visual communication duty for a nest of ships in port is considered the communication guard for the nest so far as visual communications are concerned.

Canceling or Correcting a Signal

In flag signaling, the special pennant NEGAT as a separate hoist cancels all other signals then hoisted on that yardarm. If more than one signal is flying and only one is to be canceled, that signal is repeated under NEGAT. Signals already executed cannot be canceled. In this instance, a new signal is required to meet the new situation.

FLASHING LIGHT

Directional flashing light transmissions are sent by a signal searchlight pointed and trained directly at the receiving station. The Morse code dots and dashes are formed manually by opening and closing a venetian blind type of shutter mounted inside the searchlight between the lens and the source of illumination. The shutter is held in the closed position by two springs, and is opened by a lever on either side of the drum. A multipurpose, portable, trigger-type signaling light also is available. Because of its limited range, however, its use is confined normally to small boats.

Directional flashing light is the longest range visual signaling method. In daylight, it is possible for a 24-inch carbon arc light to be read from a ship so far hull down that only the light itself can be seen. With the new 12-inch high-intensity signal searchlights, small ships also are able to achieve long-range flashing light communications. Flashing light communication is utilized chiefly in peacetime. Normal practice in the Navy, even during peacetime operations, is to use colored filters or infrared equipment for night signaling.

Nondirectional signals are transmitted by yardarm blinkers. On a destroyer-type vessel, these lights usually are actuated by a telegraph key mounted on the bridge wing. This type of light communication has a 360° arc of visibility, affording an effective way to communicate simultaneously with several addressees. Although it occasionally is used underway in company, and only at night, most frequent usage is in port, where administrative traffic addressed to all ships is sent via yardarm blinker.

Executive Method

The executive method of communicating was described previously, notably in chapters 5 and 9. You may recall that in the immediate executive method, the executive signal is made in the ending of the original message, and receiving stations, therefore, are unable to receipt before the purport of the signal is carried out. In the delayed method, stations receipt for the message when received, and the executive signal is made as a later transmission. In either method, the end of the 5-second dash that follows the prosign \overline{IX} is the moment of execution.

No-Response Procedure

The prosign F, transmitted four times before a call and repeated as necessary, indicates that the station addressed is not to answer the call or receipt for the message. Transmission is then made twice. If the message is plaindress or codress, the prosign F is included in the transmission instructions also. For example, NBGE transmits a no-response, plaindress message to NBRF:

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FFFFNBRF DE NBGE-F-R-122356Z-
GR7 BT TEXT BT IMI NBRF-DE-
NBGE-F-R-122356Z-GR7-BT-
Text-BT AR
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Double-Flash Procedure

Double-flash procedure is for use at anchor when a recorder is unavailable. A called ship desiring to utilize this procedure transmits the appropriate operating signal (ZJJ). In this procedure, the first flash indicates receipt of a word or group; the second flash, that the word or group is recorded and that the receiving station is ready to receive the next word or group.

Steady Dim Light

If a station has difficulty keeping its light trained properly, the receiving ship or unit may be directed, by the signal OL, to show a steady dim light as a training mark. Flashes to indicate receipt must, of course, be brighter, or a second light must be used.

Infrared

One of the principal characteristics of infrared is its security advantage. This particular

equipment can be made highly directional, making it safe and difficult to jam. Infrared, like light, trends in straight lines, and its rays are only slightly bent by refraction as it passes through the atmosphere. This desirable characteristic, however, also imposes a range limitation to the horizon.

Infrared is absorbed by the atmosphere. Rain, snow, haze, and fog impose limitations as they do in the visible region of the spectrum. Infrared usually penetrates artificial smoke-screens and some kinds of fog, however. Although restricted largely to night operations, infrared can be used also during daylight, provided the visible region of the spectrum is excluded.

Directional infrared communication uses the standard signal searchlights with filters or special purpose equipment. At a predetermined time, or when alerted by the designated code word via radiotelephone, ships having traffic turn on the point-of-train (POT) light, locate the ships for which responsible or with which they wish to communicate, and clear their messages via directional infrared searchlights. (The point-of-train light is a steady infrared light that assists the sender in locating the receiving station and in keeping his light trained properly. It is turned on only to indicate that a station is communicating, or is ready to communicate, with infrared equipment.)

Nondirectional uses of the infrared yardarm blinkers with nondirectional flashing light procedure. This procedure is principally for multiple-address messages.

Definite periods usually are established for transmitting and receiving communication traffic via infrared. At other times, units are alerted by a code word transmitted over voice radio. The officer in tactical command normally controls use of infrared communication, including guardship assignments. Visual responsibility is similar to that for other means of visual communication.

SEMAPHORE

Semaphore is the preferred method of transmitting message (as opposed to tactical) traffic during daylight. Although semaphore's usefulness is limited by its short range, it is extremely reliable and efficient. When ships are steaming in company, it is common for the OTC to send most of his administrative traffic by semaphore. Because of the possible speed

of transmission, this method of communicating is better adapted to long messages than flag-hoist or flashing light.

The only equipment needed for semaphore are two hand flags, 15 to 18 inches square, attached to staffs about 22 inches long. In general, the flags are similar to the OSCAR alphabet flag, although the PAPA design sometimes is substituted. Figure 9-11 shows how the semaphore alphabet and most of the special characters used in connection with it are formed.

A call by semaphore is made by transmitting the attention sign or, if this is impracticable, the call sign of the station being called. It may be answered by transmitting either the answering sign by semaphore or the prosign K by flashing light. The call for a semaphore message may be by flashing light, in which case it is answered by flashing light. When answered, the transmitting ship or unit then sends the abbreviation SEM to indicate that a semaphore transmission is to follow. Prosigns and operating signals are used in semaphore but are signaled as groups.

To call by flaghoist, a ship or unit hoists the call of the addressee(s) above the JULIETT flag, whose meaning when flown close up is "Have a semaphore message to transmit." To call all ships and stations within visual range, JULIETT is hoisted singly. Ships in company (or other units within visual range) hoist the call of the transmitting station above ANS at the dip when JULIETT is seen. This call then is closed up when the ship is ready to receive the message.

Several special characters, used in connection with semaphore, are the—

1. ANSWERING sign, as an answer to a call.
2. ATTENTION sign, a preliminary call, which also establishes communications.
3. DIRECTION sign, following the attention sign, indicates the direction of transmission.
4. FRONT sign, used before and after each prosign, operating signal, word, and code group.
5. NUMERAL sign, before and after each group of numerals or group of mixed letters and numerals in the text that are to be recorded and counted as a single group consisting of letters and digits. In the heading, numbers are always recorded as digits, and the numeral sign is not needed.



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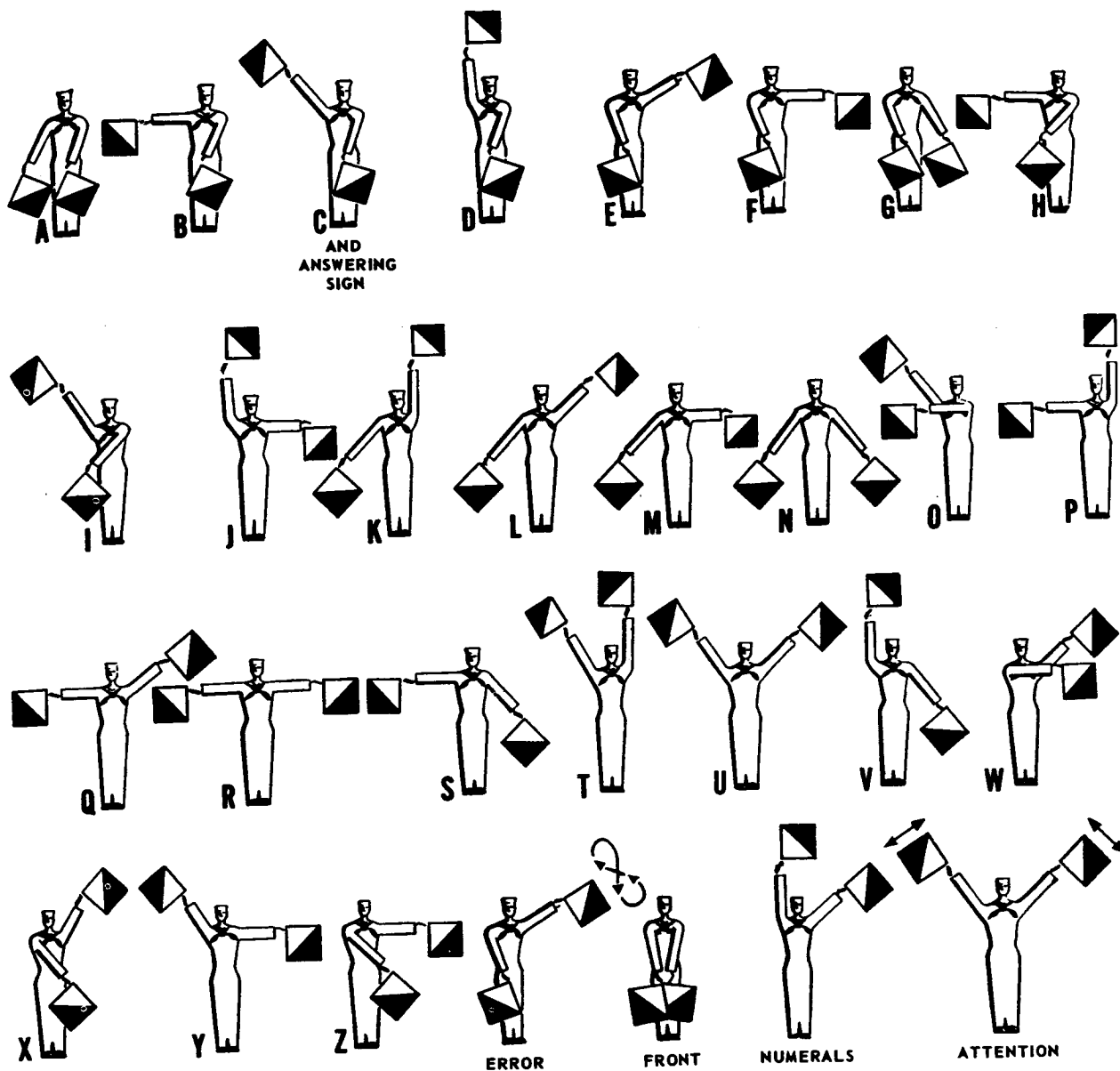


Figure 9-11. —Semaphore alphabet and special characters.

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6. SEPARATIVE sign, made by sending the character II as one group, separates letters or figures of adjacent groups.

7. EXECUTIVE signal, made by transmitting IX AR.

Table 9-1 shows how a semaphore message is transmitted and recorded as received.

A station having difficulty reading the semaphore signs may direct the sender to change his position by transmitting a move sign—MD,

MU, MR, or ML (move down, up, to your (sender's) right, to your left). When other than fluorescent flags are used, a good background is essential for accurate reception.

The addressed ship, after obtaining any needed repetitions, receipts for a message either by sending the prosign R by semaphore or flashing light, or by hauling down the ANS pennant.

Table 9-1. —Semaphore Message

Special characters are indicated by the following abbreviations:

ATTENTION	ATT
FRONT	FR
SEPARATIVE	SEP
NUMERAL	NUM
DIRECTION	DIR

Message originated and transmitted in plain-dress form:

ATT FR DIR FR SEP FR
 R (precedence) FR SEP FR ONE
 FR SIX FR ONE FR TWO FR
 ONE FR SIX FR Z FR SEP FR
 FM FR NTSF FR SEP FR
 TO FR NTSY FR SEP FR
 INFO FR NCFX FR
 GR FR FOUR FR
 BT FR
 HEAD FR FOR FR HATTERAS
 FR NUM FR ZERO FR SIX
 FR ZERO FR ZERO NUM FR
 BT FR
 K

Message as recorded:

R - 161216Z
 FM NTSF
 TO NTSY
 INFO NCFX
 GR 4
 BT
 HEAD FOR HATTERAS 0600
 BT
 K

IMPORTANT PUBLICATIONS

In addition to the effective editions of publications discussed earlier, there are a number of doctrinal publications with which communication personnel on the bridge should be familiar. A great part of the efficiency of the communicator and the signal force depends on their knowledge of where to look for needed information.

All publications mentioned in this section refer to the latest editions of those publications.

NWP 16, Basic Operational Communication Doctrine, primarily provides officers at all

levels of command with the basic doctrine, policies, and principles governing fleet operational communications. Secondly, it provides guidance to communication officers in conducting fleet communications within the limits imposed by command.

Perhaps the most widely used publication for tactical communications in the Navy is ATP 1(A), Volume II. A copy of this book is kept on the signal bridge as well as on the bridge, in CIC, and in main radio.

When flaghoist will not suffice, R/T transmissions of tactical maneuvering signals from ATP 1 may be employed, substituting the spoken version of the alphabetical and numerical flags and pennants.

ACP 129, Visual Signaling Procedure, prescribes the method to be followed in all military visual communications. When communicating with any but military units, international procedure described in H. O. 103 is employed.

ACP 118, Visual Call Sign Book, contains information on visual call signs and address groups.

ACP 121 Communication Instructions, General, and ACP 125, Radiotelephone Procedures, should be understood thoroughly by all communication personnel.

ACP 131, Operating Signals, and ACP 168, Pyrotechnic Signals, contain valuable information for visual communicators.

Volume I of H. O. 103, International Code of Signals, is, in effect, the visual signal book of the international merchant marine. It is the merchant marine service equivalent of ATP 1. Signals are set forth on a multilingual basis to facilitate communications along merchant ships.

When a Navy ship communicates with a merchant ship by flaghoist, she hoists the CODE pennant in a conspicuous position to let the merchant ship know that signals are based on those contained in H. O. 103, Volume I. When communicating by flashing light or semaphore, the signal PRB TACK as the first part of the transmission replaces the intent of the CODE pennant.

DNC 27, U. S. Naval Flags and Pennants, is a source of information on most matters pertaining to flags and pennants. It describes those used by the Navy, and includes a discussion of the customs and formalities to be observed in their use. Emphasis is placed on the ceremonial aspects of flag displays.

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PUBLICATION CUSTODY LOG

Many of the publications needed on the signal bridge contain classified information. For this reason they generally are retained in the communication or signal officer's safe while the ship is not underway.

While the ship is at sea, the signal supervisor exercises firm control over all publications issued to the signal bridge. For this purpose, a publication custody log is maintained continuously on a watch-to-watch basis. All accountable publications and extracts are listed on the log sheet. Each oncoming supervisor, before relieving the watch, sight checks each listed document and signs the custody log for the appropriate watch.

CALL SIGNS, ADDRESS GROUPS, AND PROSIGNS

For transmitting groups from authorized signal books, visual call signs contained in ACP 118 are employed to—

1. Address ships, units, or commands (precede the signal).
2. Complete, amplify, or vary the meaning of a signal (used in conjunction with the signal).
3. Denote or indicate ships, units, or commands (follow the signal).

In addition to the call signs in ACP 118, the following call signs, employed mainly to provide a short call for delivering flaghoist messages, are authorized for use in visual communications:

1. Radio call signs (except radiotelephone);
2. International call signs;
3. Tactical call signs;
4. Collective call signs;
5. Indefinite call signs;
6. Task organization call signs.

TYPE INDICATOR LETTERS

Abbreviated call signs consist of single-letter type indicators (according to vessel type), plus numeral pennants to identify all or part of the assigned hull number. The following type indicators are used by the U. S. Navy for U. S. and Allied visual communications:

- A — Auxiliary type;
- B — Battleship type;
- C — Cruiser type;

- D — Destroyer type;
- L — Amphibious type;
- M — Mine warfare type;
- P — Patrol type;
- R — Aircraft carrier type;
- S — Submarine type;
- Y — Service craft type.

To illustrate, the USS Albany (CA 123) would have the visual (flaghoist) call sign CHARLIE p1p2p3.

In utilizing a type indicator plus the hull number of the vessel called, certain digits of the hull number may be omitted if the addressee is unmistakable. Thus, the screen commander addressing a flaghoist to a destroyer, hull number 765, may shorten the call sign to Dp6p5 provided no other destroyer in the screen has the same last two digits in her hull number. Similarly, Dp5 may be used if no confusion will result.

When using any visual communications besides flaghoist, call signs are transmitted by international Morse code or semaphore equivalents. Call signs (except radiotelephone call signs) in the text of signals are preceded by the prosign PT, transmitted as a Morse symbol, meaning "Call sign follows." For example, the call sign of a cruiser with hull number 23 is transmitted as PT C23. When more than one such call is included in the text, each is preceded by PT.

UNIT INDICATOR CALLS

Call signs for organized naval units are constructed as follows:

<u>Unit indicator</u>	<u>Meaning</u>
SUBDIV	. . . This { <ul style="list-style-type: none"> Subdivision Division Squadron Flotilla
DIV	
SQUAD	
FLOT	

To illustrate, the call for destroyer squadron 8 is D SQUAD p8. Later D is the type indicator, SQUAD the unit indicator, and p8 the numeral pennant and specific squadron number.

To call the individual units under a command, the unit indicator may be followed by pØ. For example, DIV pØ is a collective call from a commander to each unit under his command.

Occasionally, units within visual range of each other have the same abbreviated visual call sign. This can happen, for instance, in LST

NAVAL COMMUNICATIONS

division 11 and LSD division 11. Both have the visual call sign L DIV p1p1. Under this condition, appropriate division, squadron, or flotilla address groups are utilized.

To form the visual call sign of the commander of an organized flotilla, squadron, division, or subdivision of ships, the unit indicator is followed by the type indicator.

- SQUAD D Commander this destroyer squadron.
- DIV D p2p2 Commander Destroyer Division 22.

NUMERAL PENNANT CALL SIGNS

One- and two-numeral pennant call signs may be used alone or followed by the type indicator and/or unit indicator. To form commander visual call signs, collective visual call signs are preceded by pØ. The collective visual call sign of the command includes the commander thereof and all subordinate commanders. Following is a partial list of numeral pennant call signs from ACP 118.

<u>Call sign</u>	<u>Meaning</u>
pØpØ	Commanders under my command.
pØp1	Officer in tactical command.
p1	All ships under my tactical command.
p2	All ships.
p3	Main body.
p4	This line.
p5	Screen.
p6	This task force.
p7	This task group.
p8	This task unit.
p9	This task element.
p1p1	All task group commanders.
p1p2	All task unit commanders.

Following are some examples of numeral pennant call signs.

- All destroyers under my tactical command p1D
- Division commanders under my command pØpØ DIV
- Screen commander pØp5

Single-letter type indicators may be used following the numeral pennant call signs. Example:

p2D All destroyers.

TASK ORGANIZATION CALL SIGNS

The visual call signs given in ACP 118 may be used in flaghoist communications as short call signs within a given task organization. These short call signs always begin with a numeral flag, followed by numeral pennant(s) indicating the number of the task organization. Type indicators may follow the call sign. The table of task organization visual call signs listed in ACP 118 follows.

<u>Call sign</u>	<u>Meaning</u>
(Numeral flag)	
Ø	Commander Task Force No. _____
1	*Commander Task Group No. _____
2	*Commander Task Unit No. _____
3	*Commander Task Element No. _____
4	
5	
6	Task Force No. _____
7	*Task Group No. _____
8	*Task Unit No. _____
9	*Task Element No. _____

*Within own task organization.

Examples:

- 6p4p5 Task Force 45.
- 8p3 Task Unit 3.
- 9p2D Destroyers of Task Element 2.
- 3p6 Commander Task Element 6.

TACTICAL CALL SIGNS

Tactical call signs are constructed from letter-numeral combinations to form a 4-letter-numeral group. All task organizations are assigned tactical call signs contained in ACP 112. Other tactical organizations are assigned call signs from the ACP 110 series. This type

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of call sign may be a letter-number, number-letter, or any other 4-unit combination thereof. By way of illustration, TF 88 may be assigned a collective call J5NX, and the commander call might be C319.

ADDRESS GROUPS

You will remember from chapter 2 that an address group is a four-letter group assigned to represent a command, authority, activity, or unit.

To illustrate the use of address groups, assume that USS Turner Joy (DD 951), with COMDESRON 28 embarked, is participating in a training exercise. The communication annex to the operation order includes appendixes listing task organization call signs, ship call signs, and administrative call signs.

In the discussion on tactical call signs, we depicted the collective and commander call signs for the task organization setup, with CTF 88 as the OTC. From the appendix listing ships' call signs appears this information:

Ship Turner Joy
 Hull number DD 951
 Radiotelegraph NENB
 Radiotelephone BALL ROOM

The appendix, entitled "Admin Call Signs," contains the following additional data:

ADMIN COMMAND . . . DESRON 28

	<u>Radiotelegraph</u>	<u>Radiotelephone</u>
Collective	ASAP	GUYS
Commander	SPUD	DOLL

In this example we demonstrated the ship's international call (described as signal letters when used visually), plus the collective address group for a naval commander, showing that he has both a commander and a collective address group call.

SPECIAL PROSIGNS FOR VISUAL PROCEDURE

In addition to the prosigns discussed in earlier chapters, certain special prosigns (following) are established for use only in visual communications.

D—Reduce brilliancy or use smaller light.

This prosign is restricted to flashing light procedure when the situation requires that a transmitting operator be informed that his light is too bright or too large.

L—Relay or Relayed. Used only in flashing light and semaphore procedures.

NEGATIVE—Exempted addressee. The NEGATIVE pennant in flaghoist signaling is the equivalent of prosign XMT.

WHISKEY—(1) In flaghoist procedure, flag W means that addressee following this letter is information addressee. (2) In flashing light procedure, the prosign W means "Your light is unreadable."