



KEARSARGE SIGNALMAN Ray Kidd operates a flashing light aboard the antisubmarine aircraft carrier. The number of signalmen aboard a CV varies with ship type and current manning level, but it usually averages 20. Signalmen are the carrier's visual communicators.

The Modern Aircraft Carrier

DELIVERING THE MESSAGE TO GARCIA

In 1900, Elbert Hubbard published an essay called "A Message to Garcia." In it, he emphasized the importance of individual initiative (or, as he put it, "independent action"), hard work, and courage in the face of danger. He told of the time President McKinley gave "the fellow by the name of Rowan" a message to deliver to insurgent leader General Garcia during the Spanish-American War. With instant, unquestioning obedience, Rowan took the message, sailed to Cuba, traversed a hostile country on foot, found Garcia, and delivered the message. There is seldom such drama in modern communications, but aboard an aircraft carrier urgency exists.

THE "ROWANS" of today's Navy—the carrier and its embarked flag communicators—must be able to transmit and receive intelligence from the Fleet and the shore establishment, and they must do it in a rapid, reliable, secure manner.

By way of example, one of the crucial tests undertaken by the *Enterprise* during Operation *Sea Orbit* was the testing of the carrier's capability to rove the ocean undetected and unobserved, still retaining the ability to copy communications traffic—without breaking radio silence. She had to receive weather and operational informa-

By Scot MacDonald

tion and, at the same time, keep abreast of world and local conditions.

To do this job, *Enterprise* came equipped with some of the Navy's most modern communications equipment. A report issued before the ship was commissioned said: "[*Enterprise's*] communications equipment is believed to be the largest assortment ever assembled on any ship. Besides more than 1,800 telephones, there is a complexity of numerous radio circuits, teletypes, a pneumatic tube ar-

rangement to carry messages from one station to another, and numerous announcing systems. . . .

"As modern and involved as this equipment has become, the . . . ship still has the two early naval communications systems, yardarm blinker lights . . . and voice tubes for internal communications."

Generally, CVAN-65 reported, communications during *Sea Orbit* were reliable and served the command effectively. Nuclear Task Force One did find communications in areas south of the equator less reliable than areas to the north, but this was hardly news to those

aboard. There are fewer transmitters and relay stations in the southern part of the world.

While the *Big E* found several marginal areas for receiving Fleet broadcasts, completion of the new U. S. Naval Communication Station at Northwest Cape, Australia, and improvements to existing facilities are expected to improve the quality of communications in the problem areas.

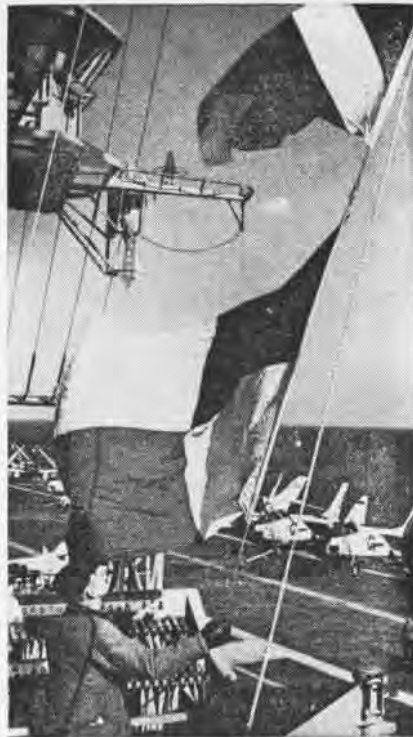
"If there is a single word that best describes naval communications as we know it today, that word would be 'pressure.'" That is the opinion of Commander Eugene H. Bouslog, former *Wasp* Communications Officer, now assigned to the Office of Naval Communications in Washington.

"A typical volume of traffic monitored by an aircraft carrier each month may average 30,000 messages," according to Cdr. Bouslog. "Of these 30,000, it is not unreasonable to expect 3,000 will be processed for both further routing within the carrier and relaying to other ships in the task group or task force."

The number of men who must do the processing may vary from 45 to 100, depending on the mission and operational status of the ship. At the upper end of this spectrum would be a carrier such as *Enterprise* when she is deployed. She carries some 100 enlisted men working in her radio communications spaces on a 24-hour basis.

The basic organization of a typical aircraft carrier's Communications Department calls for a Communications Officer, six to eight junior officer assistants, about 55 radiomen (RM's) and communications yeomen (CYN's), and about 20 signalmen (SM's).

The Communications Officer is usually a Naval Aviator of the rank of lieutenant commander. His top assistant in most carriers is a lieutenant junior grade. Other officers in the department are assigned both watch bill and collateral duty responsibilities. In addition to watchstanding, junior officers handle Crypto security and are assigned as the ship's Radio Division (CR) Officer and his junior division officer, the Signals Division (CS) officer and his junior divi-

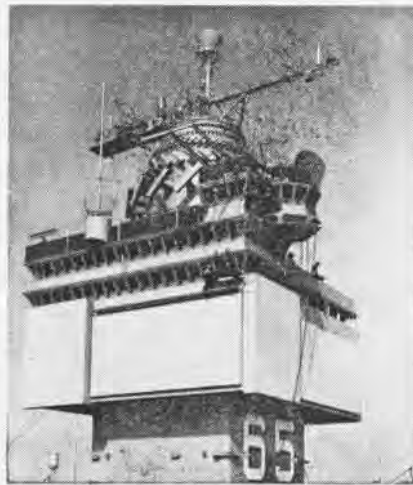


FLAG HOIST is run up by signalman aboard a carrier. Entire force can be signaled.

sion officer, the Registered Publications Custodian and his alternate.

"If there are any other officers available," Cdr. Bouslog added, "there is more than enough extra work to be done, particularly in training other officers and enlisted men assigned."

The manpower strength of an aircraft carrier's Communications Department does not increase when an Air Wing is embarked, as is the



SOME COMM GEAR used in Operation Sea Orbit is housed in island of *Enterprise*.

case with some other departments. "The squadron's communicators, as a general rule, have a completely different problem from the ship's communications personnel," Cdr. Bouslog said. "There are no RM's assigned. Aviation electronics technicians (AT's) and aviation electrician's mates (AE's) are assigned to squadrons instead of RM's because of the difference in requirement."

That difference is found "because squadron aircraft are generally required to be able to communicate only with the ship, an air traffic control facility, or another plane," Cdr. Bouslog explained. "A pilot is capable of handling this himself."

A squadron's Communications Officer more frequently fills an administrative billet in his unit. He is required to keep the squadron's pilots and personnel informed of communications policy, procedures, and voice discipline, to insure compliance with existing communications directives as they affect voice procedures or use of frequencies, and to see that the appropriate sections of Registered Publications are used.

Cdr. Bouslog went further than simply saying the task of being a naval communicator is a tough one. "I doubt that any individual unfamiliar with communications procedures can appreciate the terrific strain a carrier's message traffic places on the communicators who must see that every message gets where it is supposed to go," he said.

The traffic load is noticeably lighter during routine operations off both U. S. coasts, the communicator said. Volume increases tremendously, however, during exercises, when a ship is deployed, and certainly during the tempo of operations the Seventh Fleet is now experiencing.

Traffic volume means Fleet broadcast traffic passed through U. S. naval communications stations to the ships in a given broadcast area. In addition to this traffic, there are a number of special privacy circuits for the exclusive use of commanders. Traffic passed on these circuits is made available only to those who are on the "need to know" list, and is not included

in routine traffic accounting totals.

In a recent cruise report, *Intrepid* noted that messages fall into two basic types, operational and administrative.

Operational messages deal with the ship's operating schedule and other related Fleet evolutions.

Administrative messages generally concern personnel transactions, supply requisitions, corrections to publications or directives, and press information that permits the ship's crew to keep informed of current events.

A large part of administrative traffic concerns supply. If a destroyer in the task force requests a spare part and the carrier cannot supply

It allows CIC, CATCC, and bridge personnel to speak directly to another ship, or to a pilot, or to an independent command. An air controlman uses it to give a pilot final landing instructions. The ship's C.O. or the carrier division commander use it to talk to another command thousands of miles away.

The difference between radio-telephone and radio-teletype (RATT) is the mode of emission used to transmit a message. An RATT message is typed for transmission on a keyboard that punches holes on a paper tape. Run through a transmitter/distributor (TD), the tape automatically keys the proper character for transmission on a pre-

circuits, but an RM has an additional requirement for proficiency in CW as well. CR Division personnel also perform minor maintenance to equipment, but "the Communications Department is vitally dependent on the Electronics Material Officer (EMO) in the Operations Department for communications maintenance support," Cdr. Bouslog pointed out. Electronics technicians (ET's) who work for the EMO are charged with major maintenance problems and the sophisticated repair of communications gear.

Repair can be a problem, because communications equipment seldom gets a break. About the



RADIOMAN aboard *USS Ticonderoga* tunes a receiver. The number varies from ship to ship, but CV's usually have about 55 radiomen.



WORKING in Main Comm aboard *Bon Homme Richard*, L. E. Gunderson (L) operates ship's radio-teletype gear as L. A. Lawson types.

it from its own bins, for instance, the carrier's supply officer has to get the replacement elsewhere.

"It really doesn't matter to the man who needs the part whether it comes from a bin in the carrier or a bin in Bayonne," Cdr. Bouslog said. "He has to have it, and the carrier has to get it. Communications is often a vital step in the process."

Intrepid noted that there are three general means of radio communications its personnel use to meet operational and administrative requirements, including radio-telephone, radio-teletype, and radio-telegraph.

The radio-telephone is actually a "family" of equipment designed to permit voice transmissions from ship to ship and from ship to shore.

selected radio frequency. Incoming messages pass through the radio receiver and are printed on a roll of paper set into the teletypewriter.

RATT is the most common means of recorded communications used today. It is convenient, readable, and becoming more reliable every day.

The third mode of emission a carrier uses is radio-telegraph, using Morse Code. Also called the interrupted continuous wave (CW), the radio-telegraph is the backbone of today's communications. "Through its use," Cdr. Bouslog noted, "the Navy can communicate to and from any place in the world."

CYN's assigned to the Communications Department are expected to operate both the voice and RATT

only time requirements lessen is in port in the continental U. S., when most carriers enjoy the luxury of a landline cable that takes the place of transmitters and receivers. Use of the cable permits some in-port maintenance to prepare for the ship's next at-sea period.

A carrier's CR Division is one of two in the Communications Department. Its CS Division has the signalmen who provide external communications conducted visually by semaphore, flashing light, yard-arm blinker, and flag hoist.

CS Division's most colorful communications are performed by flag hoist. A manual, ATP 1(A), Volume II, standardizes flag meanings so directions can be sent to maneuver an entire task group without radio transmissions being required.

Blinker lights permit ship-to-ship communications in both daylight and darkness with a minimum of worry about interception.

Semaphore is still used by SM's, especially during underway replenishment. It takes on greatest importance when AvGas or ammunition are being transferred, Cdr. Bouslog said. "The commanding officer wants a minimum of electrical current in use."

The number of spaces occupied by a Communications Department varies from carrier to carrier. Aboard the *Intrepid*, for instance, the department has 12, the standard number for an *Essex*-class carrier. A *Forrestal*-class carrier's Communications Department occupies a greater number of spaces.

Regardless of number, however, the CR Division's spaces are as diversely located as physically possible within the ship, primarily to minimize any possible effects of battle damage. There is another logic behind this separation. In the Navy's shore establishment and among other communications agencies, transmitting and receiving sites are usually located more than 20 or 30 miles apart. This is done in order to overcome problems caused by the tendency of transmitter radiation to interfere with the ability of receivers to pick up incoming signals. In an aircraft carrier's limited area, separation of the two units is equally advantageous. Equipment is tucked away in every corner of the ship that will provide reasonable access to an antenna.

Every carrier department has its headaches, and Communications is no exception. "The lack of trained career personnel is a carrier Communications Department's greatest single problem," Cdr. Bouslog said. "I recognize that this is by no means a problem limited to communications, but there are simply not enough RM's to operate the equipment or enough ET's to maintain it because the Navy, like all the services, has difficulty keeping these people on active duty.

"Working conditions are such that a typical shipboard RM or ET stands an eight-hour watch, then has only eight hours off before he goes back to work. Not only does



SEMAPHORE message is sent by R.S. Reddish from signal bridge of *Bon Homme Richard*.

he have to sleep during his off time, but he must attend to his personal necessities—such as standing in a chow line to eat—as well. When you boil it down to the basics, he is lucky if he can get more than five hours of sleep a day while the ship is underway.

"A man who is not getting enough sleep tends to make more mistakes than might be normally expected—and mistakes in this business can be deadly. The lack of trained personnel on board is a condition that is aggravated by the sophisticated equipment we've developed. One of the things the staffs of CNO and the Bureau of Ships are trying to do is to insure that a graduate electronics engineer isn't required to maintain and operate the equipment we buy."

This brings up the question of training. Policies vary from coast to coast. A communicator reporting to a Pacific Fleet command is now required to attend all necessary schools before he checks aboard the ship. The Atlantic Fleet, not having the same logistics problem, has no such requirement.

"The general rule aboard the *Wasp* was to send men to every possible school we could while we

were in port," Cdr. Bouslog said. "The limit is not on the number who are available for school, nor, surprisingly enough, on the number of seats available at the schools. The limit is actually determined by the length of a man's remaining obligated service."

A sophisticated course will seldom be offered, he added, unless the prospective student agrees to remain on active duty for at least a year after he completes it.

"The number of men possessing the educational and technical background and the requisite GCT to attend the more demanding schools is extremely limited," Cdr. Bouslog said. "Generally, a seaman fresh out of boot camp or Class 'A' School is in no position to undertake a course of instruction in the operation of a highly sophisticated transmitter. He should have some working experience before he goes to school—but by the time he gets the experience, there isn't enough time left in his enlistment to make it worthwhile for the Navy to educate him."

Another headache for those who run shipboard Communications Departments is that of establishing an equitable leave policy for assigned personnel.

A carrier's Communications Department operates 24 hours a day whether the ship is in port or at sea. Because of operational requirements, seldom are more than 10 per cent of the department's personnel able to take leave at one time—even in port. "It becomes a real challenge for the carrier people to try to give everybody a decent shake on leave over, say, a two-year deployment cycle," Cdr. Bouslog said.

"It is true that the lot of the men assigned to a carrier's Communications Department is in many ways no harder than that of men in other departments of the ship," Cdr. Bouslog said. "It has been my experience, though, that shipboard communicators often make their jobs more difficult by trying to maintain a standard of excellence nearly impossible under their working conditions. The word I like to use to describe them is one that has been used too often, but in their case it seems appropriate.

"It's 'dedication.'"