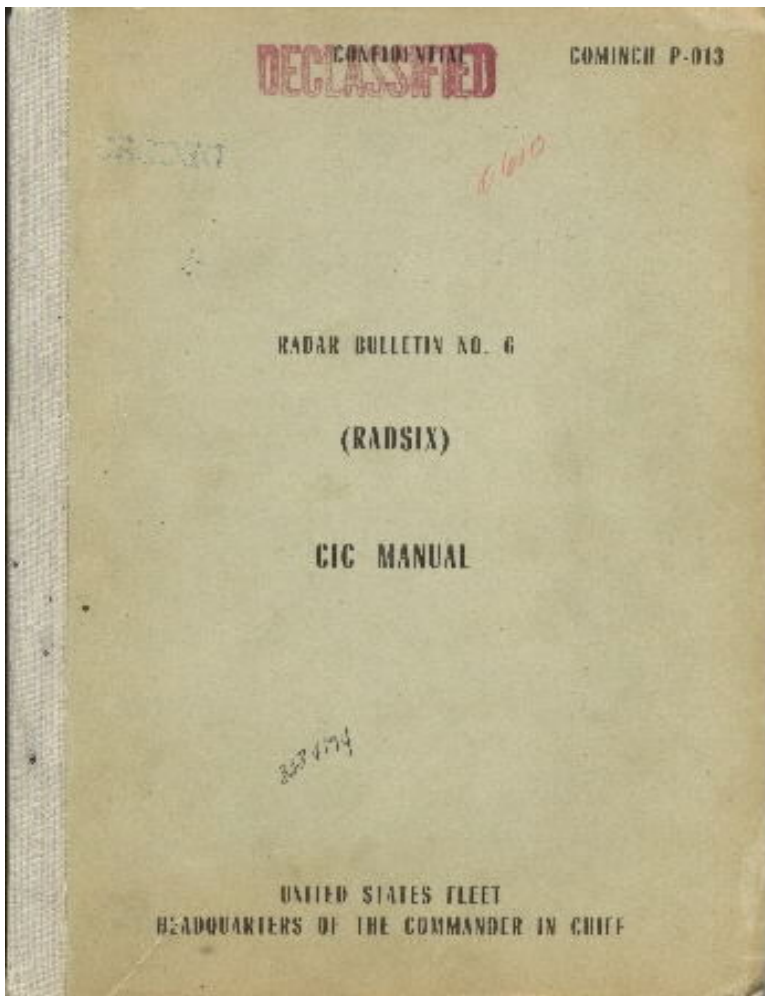


Return to [Reading Room List](#)  Return to [Navy Department Library](#)  [Naval Historical Center home page](#)



**DEPARTMENT OF THE NAVY -- NAVAL HISTORICAL CENTER  
805 KIDDER BREESE SE -- WASHINGTON NAVY YARD  
WASHINGTON DC 20374-5060**



COMINCH P-013

**RADAR BULLETIN NO. 6**

**(RADSIX)**

**CIC MANUAL**

UNITED STATES FLEET

HEADQUARTERS OF THE COMMANDER IN  
CHIEF

Image of cover.

**UNITED STATES FLEET  
HEADQUARTERS OF THE COMMANDER IN CHIEF  
NAVY DEPARTMENT  
WASHINGTON 25, D.C.**

**7 JULY 1945.**

## **LETTER OF PROMULGATION**

- 1) This publication, the CIC Manual, is issued for the use and guidance of the United States Fleet.
- 2) This publication is confidential, nonregistered, and shall be handled, stowed and transported as prescribed in Article 76, U.S. Navy Regulations, 1920. When no longer required for use, it shall be destroyed by burning, no report of destruction being necessary.
- 3) This document contains information affecting the national defense of the United States within the meaning of the Espionage Act, 50 U.S.C., 31 and 32, as amended. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.
- 4) While the classification of the publication is necessarily confidential, commanding officers are urged to make certain that the book is available to all CIC and radar personnel whose duties require access to the information contained therein.
- 5) This publication is under the cognizance of and is distributed by Commander in Chief, United States Fleet.

/signed/  
C.M. Cooke, Jr.,  
Chief of Staff.

--III--

---

## **DISTRIBUTION LIST FOR THE CIC MANUAL (RADSIX)**

### **Standard Navy Distribution List No. 28 (15 March 1945)**

- List 1** a (5), b (5) divs. (2), c (5), d (5) divs. (2), e (5), f (3), g (5), h (5), i (2), j (3), k-COTCLant Hdqtrs (500), COTCPac Hdqtrs (500), Commander Fleet Training Command, 7th Flt (50) only.
- List 2** c (2), d (2), f (2), g (2), h (2), n (2).
- List 3** a (6), b-1 (6), d (6), f (3), h (6), i (6), j (6), k (3), l (3), n (3), p (2), w (3), x (3), aa (3), ii (4), jj (4), rr (3), tt (2), uu (2).

### **Standard Navy Distribution List No. 31 (1 April 1945)**

- List 4** a (6), f (3), i (6), j (6), k (3), (3), ii (4), rr (3), uu (2).
- List 6** a (5), b (5).
- List 7** a-1 (2), c-1 (2), d-3 (6) Vero Beach, Fla. only, f (5), g (USNA only) (50), (Atten. Ordnance & Gunnery Dept.), h (110), l-1 New London, Conn. only (10).

**List 8** n-1 NTS, Radar Operators, N.O.B. Norfolk, Va. (50); NTSch (Radar) Mass. Institute of Technology, Boston, Mass. (10); NTSch (Pre-Radar) Bowdoin College, Brunswick, Maine (5); NTSch (Pre-Radar) Harvard University, Cambridge, Mass. (5); NTSch (Radar Ops) Fort Lauderdale, Fla. (50); NTSch (Tactical Radar) Hollywood, Fla. (150); NTS Princeton Univ. Princeton, N.J. (5); NTSch Air Combat Intelligence, Quonset Point, R.I. (5); NRTS St. Simons, Ga. (150); NTSch (Radar Ops) Point Loma, San Diego, Calif. (50); RMS, NRL, Anacostia Station, Wash., D.C. (2); FSS (Radar Op-Shipborne) NOB, Norfolk, Va. (50); n-9 USS WOLVERINE, FPO, Chicago, Ill. (5); USS SABLE, FPO, Chicago, Ill. (5); n-10, PacFlt Radar Center, Navy#91, FPO, San Fran., Calif. (300).

**List 10** mm (5).

**List 11** Chrm., Gen Board (1); BuAero (10); BuShips (10); BuOrd (10); BuPers (12); VCNO (10); USMC (2); USCG (10).

### Special Addressees.

Comdt. Army & Navy Staff College (2); U.S. Army Air Forces (1); U.S. Army Ground Forces (1); Adjutant General's Office (1); Op20F (1); Op20Z (1); Op33H (2); Op25 (4); sh. char. Board (1)

NOTE.--Numbers in parentheses indicate number of copies sent to each addressee.

--IV--

COMINCH P-013

## TABLE OF CONTENTS

100. [Foreword](#).

### Part I--INTRODUCTION

1000. Introduction.

- 1100. CIC and Associated spaces.
- 1200. Definitions of Positions by Functions.
- 1300. Definitions of Equipment by Functions.

### Part II--FUNCTIONS

2000. Functions of a CIC.

- 2001. Sketch showing the functions of a CIC.
- 2100. Collection.
- 2200. Display.
- 2300. Evaluation.
- 2400. Dissemination.
- 2500. Control Orders.

### Part III--INFORMATION FLOW

3000. Information Flow.

3100. Internal Sources.

3101. Sketch showing internal information flow.

3110. Radar.

3120. Sonar.

3130. Radio Direction Finders and Search Receivers.

3140. Lookouts.

3150. Flag.

3160. Control Stations.

3170. Operation Orders.

3180. Intelligence.

3190. Aerology.

3200. Interior Communications.

3210. Sound Powered Telephones.

3220. Voice Tubes.

3230 MC Circuits.

3300. External Sources.

3301. Sketch showing external information flow.

3310. Other ships.

3320. Shore Stations.

3330. Aircraft.

3400. Exterior Communications.

3410. Exterior Communications.

3420. Circuits Discipline.

3430. Security.

3440. Radar Duty Ships.

3450. Radar Information Channels.

3460. Assault Channels.

3470. Aircraft Channels.

3480. Radar Reporting Form.

--V--

---

**COMINCH P-013**

**Part IV--PROCEDURES AND OPERATIONS**

4000. Procedures and Operations.

4100. Procedures.

4110. Search and Detection.

4120. Intelligence.

4130. Display.

4140. Countermeasures.

- 4150. Training.
- 4160. Maintenance.
- 4200. Operations.
  - 4210. CIC and CONN.
  - 4220. CIC and Flag.
  - 4230. CIC and Aircraft Control.
  - 4240. CIC and Surface Craft Control.
  - 4250. CIC and Gun Control.
  - 4260. CIC and Shore Bombardment.
  - 4270. CIC and Torpedo.
  - 4280. CIC and Anti-Submarine Warfare.

## Part V--Type Organizations

### 5000. Type Organizations.

- 5100. AGC.
- 5200. RAGC.
- 5300. AKA-APA-APD.
- 5400. Battleships and Cruisers.
- 5500. Carriers.
- 5600. Destroyers.
- 5700. DE-CG Cutters-PF.

## Appendix

- List of Abbreviations.
- Bibliography.

--VI--

---

COMINCH P-013

## FOREWORD

**100.** The CIC Manual contains detailed information relating to the functioning of CIC in all types and embodies the best practices known to this headquarters at the time of publishing. As stated in paragraph 6010 of USF 10, the Manual is *not* doctrine and is published for information only. As pointed out the CIC Doctrine, it is advisable that the practices outlined herein be followed in order that the necessary coordination between ships of a task organization may be effected.

The principles as laid down for CIC in USF 10 are expected to remain applicable for considerable periods of time. However, with the introduction of new equipments and as new combat problems arise, detailed procedures and modifications to old procedures will be necessary. As they are worked out, appropriate fleet commanders should be informed in order that they may recommend changes to this Manual. It is the desire of the Commander in Chief, United States Fleet, that this Manual be kept up to date in order that all hands will have the best information available.

Reference herein to a publication by its short title shall be construed to mean the effective edition thereof.

## Part I. INTRODUCTION

### 1000. INTRODUCTION.

1100. As stated in USF 10, "Maximum combat efficiency of individual ships and task organizations can best be attained through full utilization of all available sources of combat intelligence. By the evaluation of all available information by trained personnel, such data can be quickly disseminated to the flag and commanding officers, to other control stations concerned over interior communication circuits, and to other ships and aircraft via exterior communication facilities." To carry out this principle, USF 10 further states that "a space designated as CIC shall be established in all combatant vessels (PF and larger) and in large amphibious vessels. In other craft adequate plotting facilities and communication circuits shall be established."

The space designated as CIC is defined by the Commander in Chief, United States Fleet (conf ltr to U.S. Fleet dated 7 March 1945) as follows:

"*Combat information center* is a space containing radar equipment, plotting devices and communications (internal and external) equipment manned by specifically trained personnel and charged with keeping the commanding officer and higher commands embarked informed of the location, identity, and movement of friendly and/or enemy aircraft and surface ships within the area. Other principal functions which may be assigned are: (1) Target indication, (2) control of aircraft in the area, both offensive and defensive, (3) control of small craft in the area, and (4) location of ship in close proximity to land (amphibious landings, shore bombardments, etc.)."

Two additional functions listed in USF 10 are:

1. Control of Radar Countermeasures.
2. Assisting in ASW operations.

Other spaces association with CIC are further defined by the Commander in Chief, United States Fleet as follows:

"*Auxiliary combat information center* is a space similar to CIC but smaller, containing fewer facilities, but designed to assume in an emergency the duties of CIC as space and facilities permit."

"*Radar room* is a space occupied by the radar control indicator units when installed in a separate space."

"*Radar transmitter room* is the space occupied by the radar transmitters when installed in a separate space."

"*Radar intercept room* is the space occupied by radar intercept receivers when installed in a separate space."

"*Radar jamming room* is the space occupied by radar jamming transmitters, with associated look-through receivers, when installed in a separate space."

1200. **Positions.** Major positions filled by officer personnel connected with CIC are defined by the Command in Chief, United States Fleet (conf ltr to U.S. Fleet dated 7 March 1945) as follows:

1201. "*Task force CIC officer.* A position filled by an officer who by his qualifications and experience is well versed in all matters pertaining to the operational use of CIC and its associated equipment. This officer is usually on the staff of the task force commander and acts as his advisor for matters pertaining to CIC functions."

--I--

---

### COMINCH P-013

1202. "*Task group (unit) CIC Officer.* A position filled by an officer with similar qualifications to 1201 above, who is assigned to act as an advisor to task group (unit) commander on CIC functions."
1203. "*Electronics officer.* A position filled by an officer technically qualified in electronics to act as an advisor to the task force (group) (unit) commander on the technical aspects of radio, radar, NANCY, sonar, countermeasures equipment and other associated electronic equipment."
1204. "*Evaluator.* A position filled by a tactically experienced officer capable of analyzing and evaluating combat information. This officer by his qualifications and experience is well versed in all matters, both air and surface, pertaining to the operational use of CIC and associated equipment."
1205. "*CIC Officer.* A position filled by an officer who by his training and experience is responsible for the functioning of the CIC. He is the division officer of the CIC organization and as such is responsible for the training and welding of the CIC team into an efficient whole. In carrier types the former title of this positions was the fighter director officer."
1206. "*Fighter director.* A position filled by an officer who is proficient in fighter direction. He is responsible for the coordination and control of aircraft assigned to his unit. This position was formerly called the intercept officer."
1207. "*CIC watch officer.* A position filled by an officer who is assigned to stand CIC watch during condition of readiness watches."
1208. "*Radar officer.* A position filled by an officer who is assigned to the duty of maintenance of all radar equipment. He usually functions, when not required for maintenance supervision, as coordinator of radar operation."

The following definitions are of other positions associated with the operation of CIC and filled by officer or enlisted personnel:

1209. "*Visual fighter director.* A position held by a fighter director officer in an exposed position topside who directs interceptions visually.
1210. "*Gunnery liaison officer.* A position held by an officer responsible for passing to the gunnery control stations all CIC information of pertinence and for coaching weapons onto targets. In large combatant ships there may be both a main battery gunnery liaison and an anti-aircraft

gunnery liaison officer.

1211. *Ship's information officer.* A position held by an officer who supplies filtered information which must be made available to shipboard stations, such as remote plots, over the ship's information circuit. This officer is often necessary with the complex carrier organization to relieve the evaluator of necessity for liaison with any stations other than command.
1212. *Radar control officer.* A position held by an officer (primarily on carrier) who controls own ship's radars as directed by CIC officer, controls air search radars of the force (group or unit) as directed by force (group or unit) combat information center officer. He filters radar information and passes it to other ships over the radar information channel. In training he instructs the summary plotters and the radar operators in their duties.
1213. *CIC communications officer.* A position held by an officer (usually on large combatant vessels) who has general supervision of exterior communications in CIC, including decoding, encoding, supervising radio recorders, stowage and maintenance of publications, communications plans, etc.
1214. *Geographic plotter(s).* A position held by an officer or enlisted man who maintains a geographic plot, whether on the DRT or on a chart, by dead reckoning own ships. There are usually two, one of which on larger ships may be an officer, in which case he will be known as the geographic plot officer.

--2--

---

### COMINCH P-013

1215. *Surface plotter(s).* A position held by an officer or enlisted man who maintains a surface plot from information obtained through radar, radio, or lookout. There are usually two or more on larger ships. If one is an officer he will be known as the surface plot officer.
1216. *Summary plotter(s).* A position held by an officer or enlisted man who maintains a summary plot from information obtained through radar, radio, or lookout. There are usually two or more on larger ships, one of which may be an officer, known as the summary plot officer.
1217. *Air plotters.* A position held by an officer or enlisted man who maintains an air plot from information obtained through radar, radio, or lookout. There are usually two or more on larger ships. If one is an officer, he will be known as the air plot officer.
1218. *Intercept plotter(s).* A position held by an enlisted man who plots specific raids on the intercept plot. He may, in addition, keep a dead reckoning track of own fighters.
1219. *DR plotter.* A position held by an enlisted man or officer who keeps a DR track of own fighters. (In small vessels the functions of DR plotter and intercept plotter may be performed by one man.)
1220. *Plotter-computer.* A position held by an enlisted man who determines indicated heading and air speed of target by applying wind direction and velocity and altitude to the plotted track of a target. This plotter is used primarily in night fighter direction.



1221. *Remote plotter*. A position held by an officer or enlisted man at a control station outside CIC who maintains a plot of filtered information from the ship's information circuit.
1222. *Surface recorder*. A position held by an enlisted man who keeps track of time, records all bearings and ranges from surface search radar, and aids plotters in displaying surface information.
1223. *Air recorder*. -- A position held by an enlisted man who keeps track of time, records all bearings and ranges from air search radar, and aids plotters in displaying air information.
1224. *Status board keeper(s)*. -- A position held by an enlisted man who maintains surface and/or air status boards. May be, in addition, a talker.
1225. *Radio recorder(s)*. A position held by an enlisted man who maintains a log of designated radio circuits, and/or operates recording devices.
1226. *Radar operator(s)*. A position held by an enlisted man who operates the radar equipment and reports bearing and ranges and other information derived therefrom over the appropriate JS circuit.

1300. **Definitions of Displays.**

1301. *Summary plot*. This is a display of the relative movement and positions of friendly and enemy units, *air and surface*. It may be kept on a polar plot, vertical or horizontal, or on a projection PPI. It affords--
- a. Comprehensive pictures of the tactical situation, both air and surface.
  - b. Means of identification.
  - c. Means for conversion plotting.
  - d. Means to insure that own ships are not endangered by ship's own fire.
  - e. Display of the approximate location of surrounding land masses.
  - f. A direct source of information for the gunnery liaison officer.

--3--

---

**COMINCH P-013**

1302. *Surface plot*. This is a display of the relative movement and position of friendly and enemy *surface* units. It may be kept on a polar plot, vertical or horizontal, or a projection PPI. It affords--
- a. A comprehensive picture of the surface tactical situation.
  - b. Means of identification.
  - c. Means of indicating danger of collision.
  - d. Means of indicating whether or not ships are in proper station.
  - e. Means for conversion plotting.
  - f. A direct source of information for the gunnery liaison officer.

1303. *Air plot*. This is a display of the relative movement and position of friendly and enemy

*aircraft*. It may be kept on a polar plot vertical or horizontal, or projection PPI. It affords--

- a. A comprehensive picture of the tactical situation in the air.
- b. Means of identification.
- c. Display of the approximate location of surrounding land masses.
- d. Direct source of information for the gunnery liaison officer.

1304. *Intercept plot*. A display of the relative movements of friendly and enemy aircraft for fighter direction purposes. It is usually kept on a horizontal polar plot.

1305. *Geographic plot*. This is a display of true movement. It may be kept on the dead reckoning tracer (DRT) or by dead reckoning own ship on a chart or specially prepared plotting sheet. Its principal uses are--

- a. Tracking surface targets for course and speed.
- b. Maintaining a navigational plot, i.e., maintaining continuous position of own ship relative to land.
- c. Shore bombardment.
- d. Plotting the geographical track of enemy or friendly planes for purposes of identification.

1306. The following are definitions of the equipment used in CIC upon which the various display may be kept.

- a. *The projection plan position indicator* (the VG (VG1 or VG2)). By means of an optical projection system, this equipment reproduces the radar pattern of a conventional PPI scope on a large flat horizontal surface. The plotting surface thus provided is 24 inches in diameter. Display is performed directly and instantaneously on a scale which facilitates rapid tactical calculations. The model VG is the right-hand unit and the model VG-1 is the left-hand unit for purposes of installation in CIC. The model VG-2 is the projection PPI combined with the DRT for compactness. The summary, surface, air, or intercept plots may be kept on this equipment.
- b. *Vertical plotting board, 60-inch, MK 4, Mod. 4*. The vertical plotting board is a 6-inch plastic (Lucite or Plexiglass) board edge lighted at bottom, for use in CIC on Carriers and AGC's. It has communication facilities similar to the HPT, MK 1 Mod. 1. The Mod. 4 vertical plotting board will have a 5-inch OSC dial in the center of the board. Plotting is done from the back or front of the board as required to provide a summary of combat information which is easily visible from all parts of the CIC.
- c. *Vertical plotting board, 36-inch, Mk 6 Mod. 2*. This plotting board is approximately 36 inches square and constructed of plastic. It is provided with edge illumination at the bottom of the board and with a hand operated 6-inch OSC dial in the center of the board.
- d. *Horizontal plotting table, 36-inch, MK 1 Mod. 1*. This horizontal plotting table is D-shaped and measures approximately 39 inches outside diameter.

sound powered telephone switch panels each with 20 toggle switches, three 110-volt utility plugs and tracks for mounting collapsible seats. The plotting surface is a 36-inch diameter Herculite glass top with a pencil finish on which No. 1 and 2 pencils write and erase with ease.

- e. *Plotting board synchro, 24-inch, MK 2 Mod. 3.* This is a plotting board for CIC, flag plot or chart house and radar plot in combatant ships where space requirements will not permit the installation of a horizontal plotting Table, MK 1 Mod. 1. This board is also used for visual fighter director stations. It contains an optical OSC projector with an 8-inch projected image and a 24-inch plotting surface of Herculite glass with a pencil finish the same as the horizontal plotting table, MK 1 Mod. 1. An alternate plotting surface of plastic with 20-inch rotatable center will be provided.
- f. *Plotting Board SXS, 24", MK 3 Mod. 2.* This is a plotting board for use in CIC, flag plot or chart house and radar plot on vessels which do not have synchro-gyro compass transmission, and will be installed in a chart desk or separately mounted. It is similar to the MK 2 Mod. 3 except a step-by-step motor and dial is used to provide an 8-inch shadow projection instead of a synchro optical OSC projection. The plotting surface finish is the same as the HPT, MK 1 Mod. 1.
- g. *The DRT (dead reckoning tracer).* This equipment mechanically indicates the true movement of own ship. A selection of several scales is provided for plotting purposes. Three sizes are now manufactured for the Navy to fit the requirements of the various type units: (Classes I, II, and III). The geographic plot is usually kept on this equipment.

1307. *Status boards.* These are boards upon which all pertinent, tactical, intelligence, and radar information is presented for ready visual reference by all CIC personnel. Unmarked edge-lighted plastic status boards are now furnished by the Bureau of Ships.
1308. *Disposition diagrams.* These are the various disposition plans issued in the operation orders, generally plotted on small maneuvering board sheets, and used for identification of friendly units when stations are changed.
1309. *Strategic Chart.* This is a small scale chart which displays the location of all units, friendly and enemy, over a large operating area, which is obtained from intelligence information.
1310. *Tactical chart.* This is a large scale chart of the immediate operating area, used to display information pertinent to a bombardment or amphibious operation.
1311. *RCM data board.* This is a board upon which data on signals being intercepted, such as bearing, frequency, pulse rate (PRF), pulse width (PW), condition of antenna rotation, and signal strength is displayed.

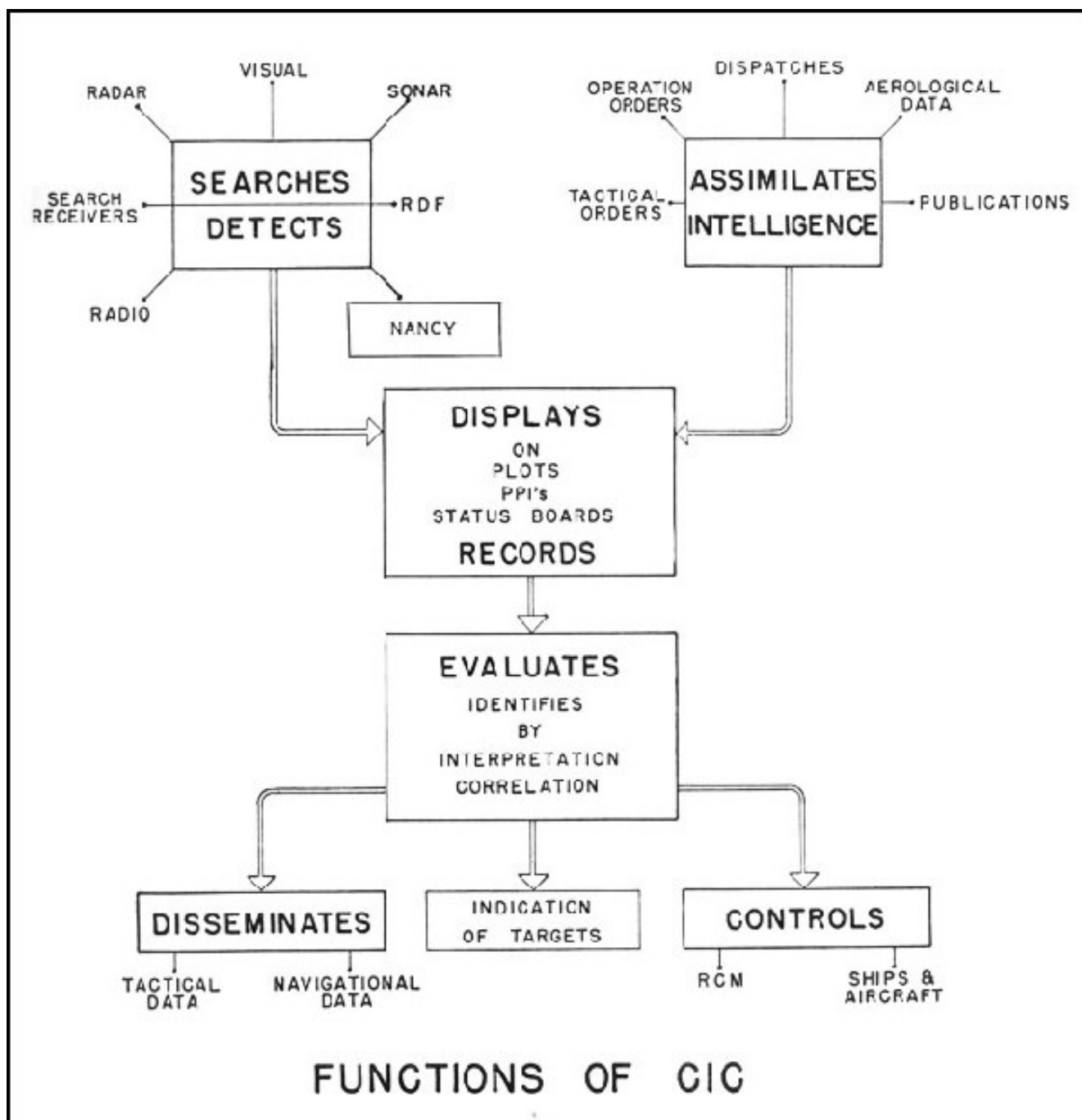
--5--

---

## Part II. FUNCTIONS OF A CIC

2000. **GENERAL.** CIC is the space aboard ship wherein is located the personnel and equipment for the collection, display, evaluation, and dissemination of all combat information and for the control, as delegated, of weapons, aircraft, other surface craft, and own ship. To accomplish the foregoing, knowledge of the identity of surrounding units is imperative.

2001. Sketch (showing the functions, schematically).



COMINCH P-013

2100. Collection of combat information is the initial function of CIC.

2110. To accomplish this, CIC must maintain adequate and efficient search and detection, utilizing the following agencies to their maximum effectiveness.

- a. Radars are the single most important agency in search and detection.

- b. Radio-intercept.
- c. Radio direction finder.
- d. Radar search receiver.
- e. Sonar is a detection agent whose information must be instantly available to CIC.
- f. Visual agencies such as optical range finder, lookouts, signals, fighting lights and NANCY equipment.

2120. Intelligence is derived from the following:

- a. Operational plans and orders.
- b. Navigational data.
- c. Weather information.
- d. Underwater sound conditions.
- e. Dispatches.
- f. Technical publications.
- g. Tactical publications.
- h. Intelligence reports.
- i. Recognition.

2200. Display of collected information is the second major function of CIC. A principal reason for the existence of CIC is that most information obtained in CIC is more readily utilized and comprehended when displayed. To this effect, CIC is equipped with all or some of the following, depending on the complexity of the installation:

- a. Horizontal, polar coordinate plotting boards.
- b. Vertical, polar coordinate plotting boards.
- c. A dead reckoning tracer (usually horizontally mounted).
- d. Projection PPIs (VG, VG-1, VG-2).
- e. Remote PPIs.
- f. Precision PPIs (VF).
- g. Strategic charts.
- h. Tactical charts.
- i. Status boards (air, surface, and weather information).
- j. Radar receiver indicators.

2210. With these facilities the track and identity of all contacts is determined, and such computations as may be necessary are performed.

2300. Evaluation is the third chronological function of CIC. Evaluation is the final weighing and taking into consideration of all related factors in order to clearly indicate the intended movement of the enemy units. Related to, but distinct from evaluation, is the interpretation of combat information. By interpretation is meant the routine computations and reports such as courses and speeds, approach and retirement, relation of ship's position to land and position of approaching enemy air attacks.

2400. Dissemination of the evaluated and interpreted information in rapid comprehensible form is the most difficult function of CIC. This function includes dissemination of early warning, solutions for maneuvers to be executed, navigational data, and indication of probable targets. Whereas CIC has graphic visual displays of all combat information the control stations are still largely dependent upon receiving information by voice communications.

2410. CIC must disseminate all pertinent combat information to: (1) Flag, (2) Conn, (3) weapon control stations, (4) air control stations, (5) other ships, (6) aircraft, and (7) shore stations, in such a manner that the *recipient understands the existent situation*.
2420. Plots, teleplotters, PPI's and accessory equipment are located in other stations to record and display evaluated information and raw data in order that the officers at those stations may have presented to them by the most efficient method the necessary information they require to carry out their assigned functions.
2500. When CIC has the best information and instantaneous action (control orders) are required, command should give such general directives as necessary in order that CIC may issue control orders to appropriate units of the ship. Such a situation is the night torpedo plane attack in which in addition to the normal functions of dissemination of information including target indication, CIC is in the best position to coach the proper fire control radars on threatening targets and check fire when another fleet unit is endangered by your own fire. This practice is made necessary because of the extremely short time between detection and attack.
2510. CIC is charged by USF 10 with the control of aircraft under various conditions. This is necessary because of the intricacies of the problem and the necessity for having all friendly aircraft in the air under control so that the detection of enemy planes may be immediate. In cases requiring plane interception, a lost minute may mean the difference between success and failure.

--9--

---

## Part III. INFORMATION FLOW

### 3000. INFORMATION FLOW

#### 3100. Internal Sources.

3101. Interior information flow ([sketch](#)).
3110. *Radar*. Radar is the most obvious source of information, but it must not be forgotten that the functions of CIC must continue when the radars are out of action. All other sources of information should be used.
3120. *Sonar*. CIC must be alert to aid in the development of sonar contacts using information derived from other sources. Use of sonar in navigation, or work other than A.S.W. should not be overlooked.
3130. *Radio direction finders and search receivers*. When intelligently used, RDF bearings and search receiver indications are of great value, and may provide the only source of information when land masses affect radar coverage or targets are not within range of radar detection.
3140. *Lookouts*. Close coordination between lookouts and CIC is mandatory for recognition and confirmation of air and surface contacts. Lookouts should be used as a habitual and automatic source of information.
3150. *Flag*. The flag should so advise CIC of pertinent developments and plans that CIC may become

thoroughly familiar with the objectives, methods of operation, and information desired by the flag.

3160. Control stations.

3161. *Conn.* It is the responsibility of Conn to inform CIC of maneuvering, tactical, and identification data; anticipated information should also be reported.

3162. *Weapon Control Station.* Close cooperation between CIC and control stations should be maintained. Those stations which have direct communication must inform CIC of the condition of readiness of the batteries, which targets are taken under fire and when targets are shifted, damaged or destroyed.

3163. *Air Control.* Close liaison should be maintained between air operations and CIC. Fly control and air plot will advise CIC of operations planned and tactical organizations of all flights.

3170. *Operations orders.* CIC should have a copy of pertinent orders.

3180. *Intelligence.*

3181. *General intelligence.* Monographs, bulletins, charts, and other publications prepared by ONI, air combat intelligence and various allied organizations should be utilized to the utmost.

3182. *Operational intelligence.* All dispatches, incoming and outgoing, containing operational intelligence must be immediately routed to CIC.

3190. *Aerology.* Complete and up-to-date aerological data should be furnished for interpretation and utilization with other information.

3200. **Interior Communications.** Sound-powered phones are the primary means of interior communication. Standard sound-powered telephone procedure should be used with all sound-powered phones.

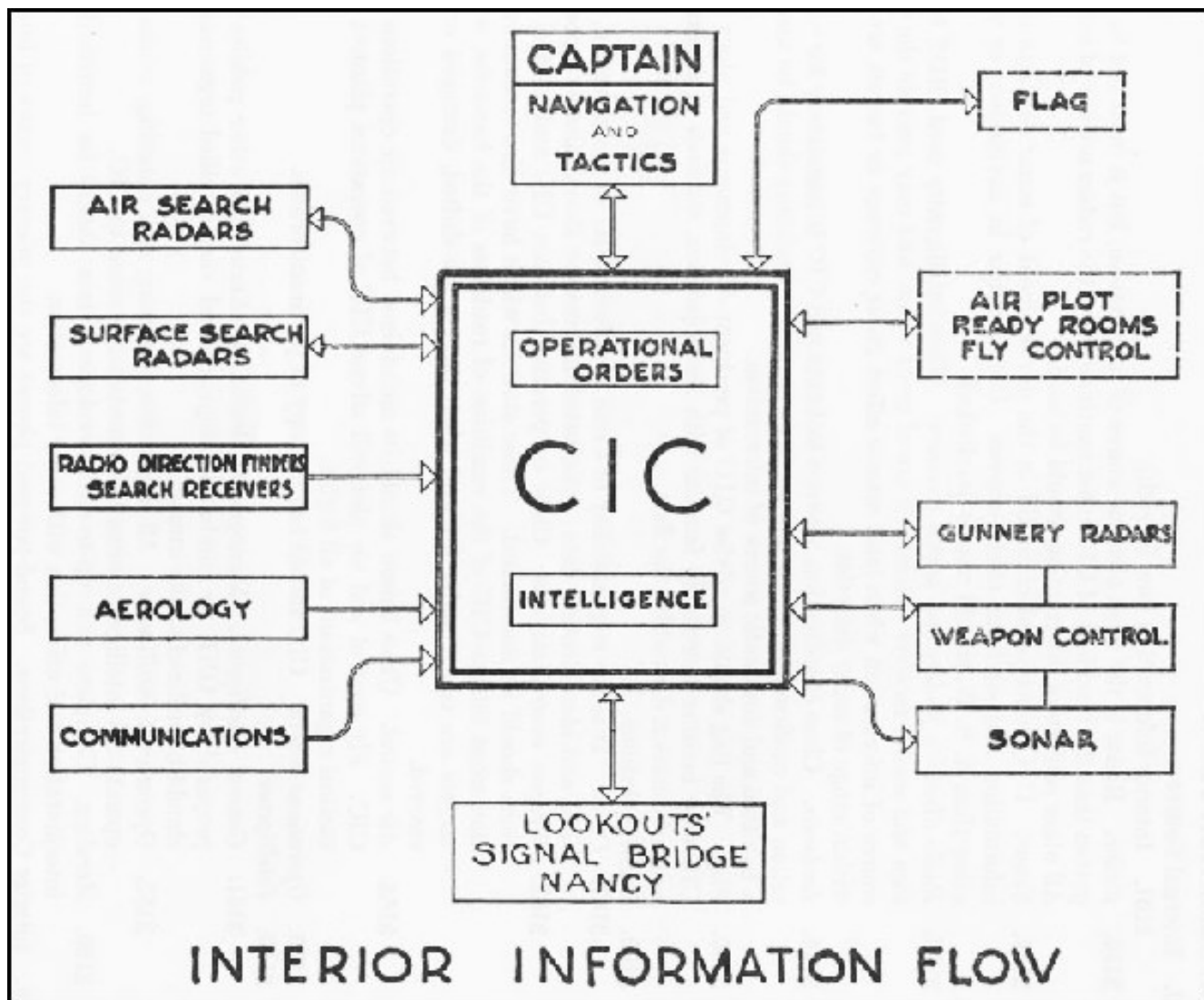
3210. *Sound-powered telephone procedure.* The following modified sound-powered procedure is recommended for use in reports from the radar operators to CIC:

- a. No initial call.

--11--

---

COMINCH P-013



Interior Information Flow

--12--

**COMINCH P-013**

b. Label only relative bearings. If not labeled they will be considered true.

*Example:* "Many Bogies--Bearing zero seven two--range two three five double oh."

3220. *MC circuits.*--The MC circuits should be used to parallel sound-powered communications under the following conditions:

- a. When it is desired to call attention to initial contacts, important information, and emergencies.
- b. When it is desired that all hands at a station be informed of special conditions.



c. When the captain or the flag desires to use them.

3221. The extensive use of MC circuits as a means of interior communication robs it of its value as an instrument to attract attention in emergencies, and to stress the importance of urgent information. In addition, the noise level in CIC is materially increased. Under certain conditions it not only tends to confuse, but is sometimes inaudible.

3222. Testing communications over the MC circuits is unnecessary and annoying to personnel. It should not be done unless a transmitting station fails to receive an acknowledgement and believes that communications are ruptured.

3230. *Voice tubes.*--The comments relative to the noise and confusion introduced by the MC circuits and to their inaudibility under certain conditions also applies to voice tubes. It should be, if possible, a strictly standby method of communication, with parallel sound-powered telephones as the primary means.

### 3300. **External Sources of Information.**

3301. *Exterior information flow* ([diagram](#)).

3310. *Other ships.*

3311. *Flag.* Information received from the flag should include tactical orders, navigation information, operational intelligence and radar control orders.

3312. *Bridge.* Information received from the bridges of other ships will consist largely of tactical and navigational information.

3313. *CIC.* Information received from CIC of other ships will be of two types:

- a. Tactical and navigational information consisting in large part of radar reports, and alerts against air, surface, and subsurface attack.
- b. Tactical information and orders pertaining to the launching, recovery, and control of aircraft and surface craft.

3320. *Shore stations.* Information obtained from shore stations will be of three principal types:

3321. Operational orders and intelligence reports.

3322. Tactical and navigational information, including radar reports.

3323. Tactical information and orders pertaining to the control of aircraft and surface craft.

3330. *Aircraft.* Information obtained from aircraft will be of three types.

3331. *Combat air patrol.* Tactical information arising largely from the interception of unidentified aircraft and investigation of unidentified surface craft.

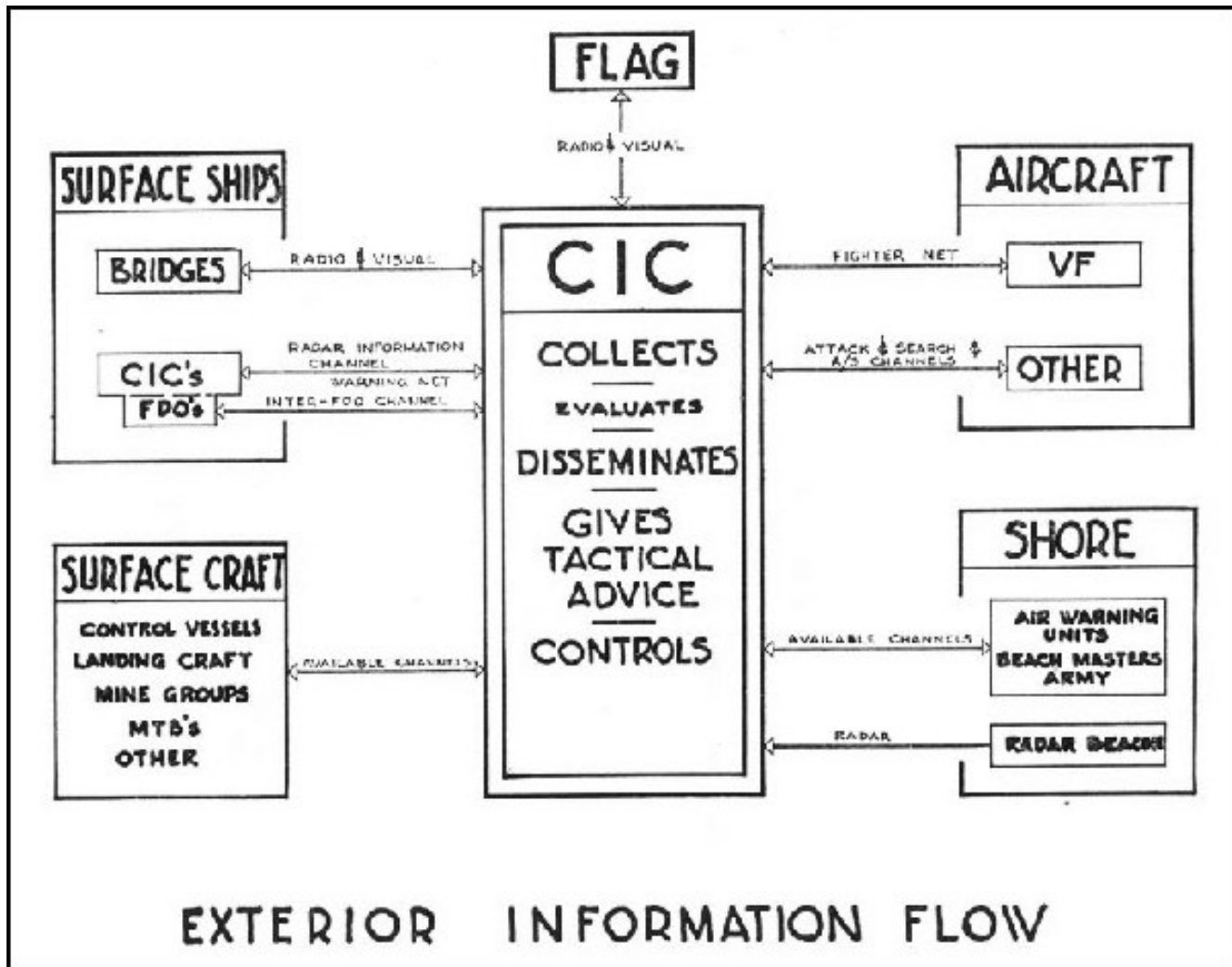
3332. *Patrol, search and attack planes.* Information regarding air, surface, and subsurface

contacts relating to these missions.

3333. *Antisubmarine patrol.* Information regarding air, surface, and subsurface contacts and relating to these missions.

--13--

COMINCH P-013



Exterior Information Flow

--14--

COMINCH P-013

3400. **Exterior Communications.**

3410. *Radio silence.*

3411. Conditions of radio silence are prescribed by the OTC. Use of all communication facilities will be in accordance with communication plans in effect.

3412. VHF radio channels are so essential for the efficient functioning of CIC that the benefits derived from their employment usually outweigh the loss of security. For this reason, radio silence on these frequencies is usually ordered only under extreme conditions. **CIC OFFICER PERSONNEL SHOULD KNOW EXACTLY UNDER WHAT CONDITIONS AND BY WHOSE AUTHORITY RADIO SILENCE CAN BE BROKEN.** Regardless of the condition of radio silence, all circuits should be set up for instant operation.

3420. *Circuit discipline.*

3421. Standard R/T procedure should be strictly adhered to. Avoid unnecessary transmissions. Make certain that each message sent is essential. A circuit saturated with traffic is useless.

3422. Clarity consistent with brevity is the yardstick for framing messages. Decide first what must be said, say it, and sign off the air. Intelligent use of "affirmative" and "negative" saves words and valuable time.

3430. *Security.*

3431. All frequencies can and probably will be monitored by the enemy. Be alert for deception. Proper use of authenticators will help to defeat deception. Report instantly any attempted deception and be sure to evaluate it. Valuable information may be gained if a little time is spent in analysis.

3440. *Radar duty ships.*--Task force (group, unit) CIC ships, fighter direction ships, radar guard ships, intercept and jamming ships and radar pickets will be assigned by the OTC in accordance with USF 10. Radar reporting procedure will be in accordance with that publication.

3450. *Radio channels used in CIC.*--The following is quoted from USF 10.

3451. "The *radar reporting channel* is used to disseminate radar information, and to control the function of the radar guardships, radar pickets, radar intercept ships, radar jamming ships and as required the fighter direction ships.

The following are to be complied with on this channel in controlling the functions of the radar guardships, pickets, intercept and jamming ships and as necessary the fighter direction ships.

1. Control and coordinate air and surface radar searches by all ships in the task force (group) (unit) to insure maximum effective coverage, and to provide for reliefs in event of casualties.
2. Report to the task force (group) (unit) commander over this channel the initial air or surface contacts.
3. Report to the task force (group) (unit) commander the determination of friendly character of air or surface contact by ship first determining that fact.
4. Reports of unidentified surface contact are made in plain language or encoded as required by existing instructions.

5. The estimated size of the contact shall be given in the initial report. In case of surface contact the best estimate of the number shall be given. In case of air contact the arbitrary designations one, few (2 to 10) or many (over 10) shall be used.
6. The task force (group) (unit) commander thru the force (group) (unit) CIC ships shall indicate whether to report the nearest or the central ship in a group of surface contacts.

--15--

---

### COMINCH P-013

7. Any ship in the force may be required to report an air or surface contact. The initial report shall include all available information: subsequent reports shall give the last plotted position of the contact; amplifying reports shall be made as new information becomes available.
  8. A radar guardship detecting a new air or surface contact while engaged in reporting another raid shall not, where possible, be required to report both at once. To promote over-all efficiency another guardship shall be directed to report the new contact by the coordinating ship."
3452. *Radar telling net.* Used for exchanging radar information of more than local interest between forces and/or land bases separated by distances too great to be covered by the radar reporting channel.
3453. The *interfighter direction channel.* Used for the dissemination of information concerning fighter direction and to control the functions of the fighter direction ships.
- a. For purposes of security and to abbreviate terminology used in disseminating fighter direction information the deck condition code is established. See article 6179, USF 10.
  - b. The force CIC ships, as ordered by the task force commander, will control the functions of fighter direction ships over the interfighter direction channel. Transmissions will be concerned with the following operations:
    1. Stationing and relieving of CAP.
    2. The assignment of fighter direction ships to control the interception of designated raids.
    3. The allocation of CAP to fighter direction ships for the interception of designated raids.
    4. Reinforcement of CAP as required by the tactical situation.

5. Reports concerning the flight deck condition and status of airborne aircraft from all carriers in the task group (unit) including returning air strikes.
6. The expeditious transfer of control of interceptions between fighter direction ships when information fails for the controlling ship.
7. The assignment of CAP to the control of radar picket ships acting as a fighter direction ship.

3454. Other nets and channels used in CIC. The task force maneuvering and primary warning net should be monitored by all CIC's in order that changes in course, speed and disposition, submarine contacts, commands from the OTC, and all information passing over this channel will [be] available immediately. Remote transmitting facilities are usually established in CIC. The OTC or task force (group, unit) CIC ship will utilize the task force maneuvering and primary warning net to alert the task force when enemy activity is encountered, and will use it to pass pertinent filtered combat information to all ships in the task force. They are responsible to pass via this net, pertinent information gathered from radar guardships, intercept and jamming ships, radar picket ships, or fighter direction ships.

A medium or high frequency channel should be used to pass information to ships or stations outside the range of VHF and as a standby for VHF and UHF.

3460. *Assault channels (amphibious).*

3461. There are a number of frequencies used in a landing operation. The three major circuits are designated as follows:

- a. *Assault group frequency.* Links the AGC with all attack group commanders and control vessels. Any word received from the individual ship, craft or

--16--

---

## COMINCH P-013

boat is relayed via the respective group commander over this circuit to the AGC.

- b. *Landing craft control frequency.* This frequency is used by group commanders and beachmasters in controlling the advance and beaching of landing ships and craft.
- c. *Ship-to-shore frequency.* This frequency is an Administrative Frequency between the control ship (AGC or RAGC) and the beach.

3470. *Aircraft channels.*

3471. *Fighter net.* The following information may be obtained from the fighter net.

- a. Air and surface contacts by combat air patrol.
- b. Weather reports.
- c. All reports necessary for fighter direction.

3472. *Search and attack frequencies.* The information which may be obtained from the search and attack frequencies is: (This circuit has been used as the stand-by fighter net.)

- a. Contact reports of air and surface units made by search planes.
- b. Reports from the air attack group.
- c. All reports necessary for the conduction of search and attack operations.

3473. *Antisubmarine frequencies.*

- a. Information will be obtained from aircraft regarding aircraft, surface units, and submarine units.

3480. *Form of radar reports.--*

3481. Part VI of USF 10 does not contain a radar reporting form. However, certain conditions relative to reporting contacts are set forth which should be strictly adhered to. A desirable radar reporting form is presented below and is in general conformance with existing communication instructions. The exact form to be used will be promulgated in instructions or operation orders issued by the fleet or force commanders.

- a. In making intership radar reports, identify air contacts as friendly or enemy or unidentified by use of the following vocabulary:
  - "Friendly"--for friendly air or surface contacts
  - "Bogey"--for unidentified air contacts
  - "Skunk"--for unidentified surface contacts
  - "Bandit"--for enemy air contacts
  - "Robber"--for enemy surface contacts.

3482. *Initial report.*

- a. Size of target--one, few (2 to 10), many (over 10). A more precise estimate can be made if feasible (Ex. 5 or 25).
- b. Identity of target--"Friendly," "Bogey," "Skunk," "Bandit," or "Robber."
- c. Bearing of target in degrees (true) from fleet center (OTC, guide, or designated ship) for surface targets. For air targets, use own position. When deployed around an island objective, bearings shall be converted to an established reference point.
- d. Distance in nautical miles from fleet center (OTC, guide or designated ship)

for surface targets. Distance in nautical miles from own position for air targets. When deployed around an island objective, bearings shall be converted to an established reference point.

- e. Additional pertinent information, if any, may be included if no delay is involved; for example, approximate altitude.
- f. Local zone time for above data.
- g. Authenticator (as required by existing instructions).
- h. Originator's call.

--17--

### COMINCH P-013

- i. "Over" or "Out."

*Example:*

"FEW BOGIES--TWO SEVEN FOUR--FIFTY SIX--ANGELS SEVEN--THIS IS TIGER--OVER."

NOTE.--When more than one tactical group is operating on same channel, the reports of the guardships of one group are liable to confuse the ships of another group. Therefore, under these conditions the reports should start as in standard R/T procedure.

*Example:*

"HELLO MONARCH, THIS IS TIGER--FOUR SKUNKS--THREE ONE ONE--TWENTY ONE--OVER."

#### 3483. *Amplifying Report.*

- a. Raid number or letter (letters indicate surface contact, numerals indicate air contact). Designation of raids should be according to USF 10.
- b. Size of target; one, few (2 to 10), many (over 10). A more precise indication of the size can be made if feasible.
- c. Identity of target: "Friendly," "Bogey," "Skunk," "Bandit," or "Robber."  
UNNECESSARY TO INCLUDE ONCE RAID HAS BEEN FIRMLY DESIGNATED EXCEPT TO INDICATE CHANGE OF IDENTITY.
- d. Bearing of target in degrees (true) from fleet center, (OTC, guide or designated ship) for surface targets. For air targets use own position. When deployed around an island objective, bearings shall be converted to an

established reference point.

- e. Distance in nautical miles from fleet center (OTC, guide, or designated ship) for surface targets. Distance in nautical miles from own position for air targets. When deployed around an island objective, bearings shall be converted to an established reference point.
- f. Course of target in degrees (true).
- g. Speed of target (knots).
- h. Altitude of target in thousands of feet using decimal points for hundreds of feet (if approximate use "low," "high," "very high").
- i. Local zone time for above data.
- j. Additional pertinent information, if any.
- k. Authenticator (as required by existing instructions).
- l. Originator's call.
- m. "Over" or "Out."

*Example:*

"RAID FOUR--THIRTY BANDITS--ONE FOUR TWO--SIXTY FIVE--  
COURSE TWO FOUR TWO--SPEED THREE THIRTY--ANGELS TEN  
POINT TWO--TIME ZERO EIGHT TWENTY FOUR--APPEAR TO BE  
BREAKING UP--THIS IS KING--OUT."

NOTE.--When more than one tactical group is operating within normal VHF range, the reports of the guardships of one group are liable to confuse the ships of another group. Therefore, under these conditions the report should start as in standard R/T procedure.

*Example:*

"HELLO MONARCH THIS IS TIGER--RAID BAKER TWO--FOUR  
SKUNKS--THREE ONE FOUR--FIFTEEN--COURSE TWO SEVEN  
TWO--SPEED THIRTY ONE--TIME TWENTY THREE THIRTY TWO--  
BELIEVE THEM TO BE CARGO VESSELS SIGHTED YESTERDAY BY  
WANABA PATROL--OUT."

"HELLO MONARCH THIS IS TIGER--RAID BAKER TWO--THREE  
ONE TWO--FOUR--OUT."



- i. USF 10 states that it is the responsibility of the task force (group or unit) CIC ship to designate raids. Initial reports will therefore be without raid designations. USF 10 further states: "For designating raids, air or surface: When a raid splits, the components shall be designated as illustrated in the diagram in [figure 1](#). Numbers are assigned to air raids and letters to surface raids. Splits from an air raid shall be assigned letter subdesignations and splits from a surface raid shall be assigned number subdesignations."

*Example:*

Radar Guardship:

"HELLO MONARCH THIS IS TIGER--MANY BOGIES--TWO FOUR SEVEN--SEVENTY FIVE--OVER."

Task Group CIC Ship:

"HELLO TEAM THIS IS MONARCH-BOGIES BEARING TWO FOUR SEVEN DESIGNATED RAID TWO--OUT."

3484. If identity of raid changes, Radar Guardships should report as follows:

"HELLO MONARCH THIS IS TIGER--RAID FOUR--FRIENDLY--OVER."

"HELLO MONARCH THIS IS MUZZLE--RAID ABLE--BELIEVED ROBBERS--OVER."

3485. Words "bearing" and "range" may be used if desired. Words "course," "speed," "angles," and "time" should always be used.
3486. Items should always be reported in sequence. Items not determined or not changing may be omitted. No indication of omission is necessary.
3487. Bearing and distance of surface target may be reported as from any ship in emergency providing location is reported.

*Example:*

"HELLO MONARCH THIS IS KING--ONE SKUNK--TWO SEVEN ZERO--TWO--FROM TIGER--OVER."

3488. *Voice procedure.*--The following forms prescribed in Annex "B" of CentCom TWO shall be used:

"Bearing 185°" shall be spoken "bearing *one--eight--five*," not one eighty-five.

"Distance 44 miles" shall be spoken "distance *forty-four*," not four four; with the

distinction that for close in surface contacts 4<sup>1</sup>/<sub>2</sub> miles shall be spoken "four point five."

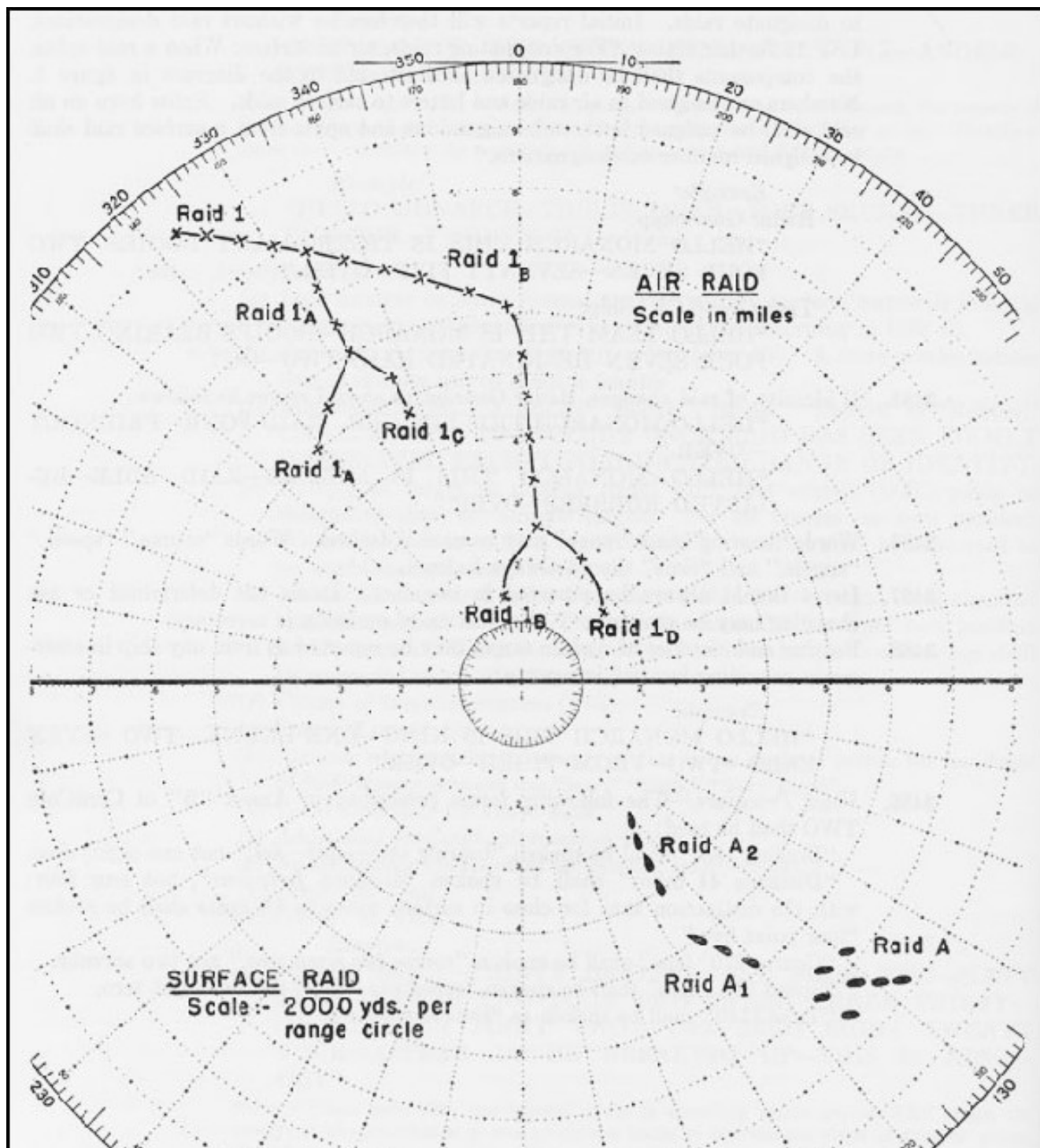
"Course 270° true shall be spoken "course *two seven zero*," not two seventy.

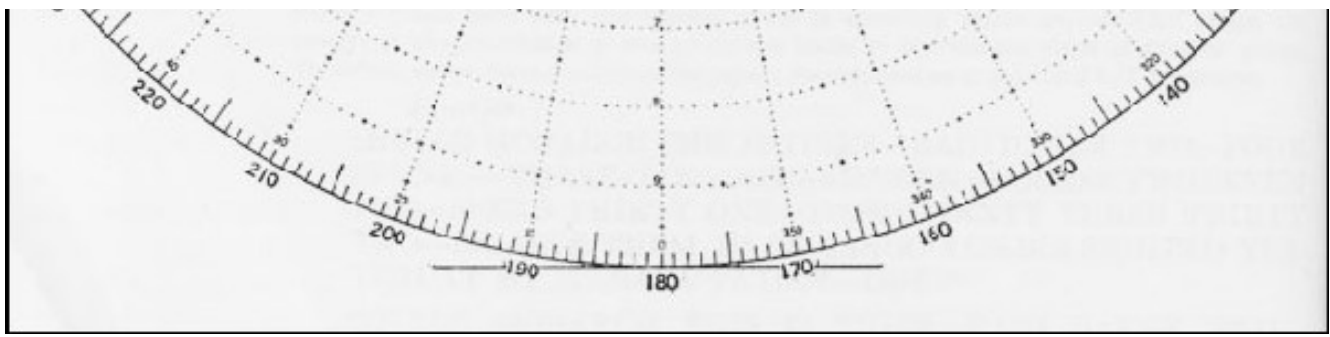
"Speed 180 knots" shall be spoken "speed *one eighty*" not one eight zero.

"Time 1140" shall be spoken as "time *eleven-forty*."

--19--

COMINCH P-013





--20--

## Part IV. PROCEDURES AND OPERATIONS.

### 4000. Procedures and Operations

#### 4100. Procedures.

##### 4110. *Search and detection.*

##### 4111. *Radar:*

- a. Early detection of the enemy is such a vital factor in the success of any action that the need requires no elaboration. Early detection provides a means and a counter for the "surprise" element which, down through history, has so often proved decisive. With respect to radar search and detection, there are two governing factors: First, the search must be as extensive as possible, and must reach out to over the greatest area, contemplating maximum performance of detection equipment. Three hundred sixty degree search should be maintained at all times and should not be subjugated to tracking. Second, the limits of dependable search must be known in order that plans and decisions can be based on sound fact rather than on insecure premise.
- a. Adequate matériel performance is the first step towards attaining this high degree of search efficiency. The instruments should be adjusted and tuned to insure their operation at full effectiveness. To achieve this condition, daily, weekly, monthly, and quarterly check-off lists, should be established. While Radar Maintenance Bulletins and Installation Plans have excellent maintenance information they do not replace an established routine which is designed to prevent and anticipate trouble before it has a chance of hindering operation.
- a. Familiarity with equipment is mandatory of all radar operators and CIC officers. This requires not only experience but also a good deal of theoretical knowledge. They should know the beam width, lobe characteristics, range and bearing accuracy, maximum and minimum dependable ranges, requirements for target discrimination of their own radar, and

the capabilities and limitations of radar in general. RADONE A, "The Capabilities and Limitations of Shipborne Radar" has been prepared to inform personnel on these matters. Personnel concerned with interpreting information from radar should be thoroughly conversant with this publication. *They should be able to tell whether or not their equipment is operating at optimum.* The outside factors governing their performance must be known and appreciated, for instance, the probability of periscope detection; the proximity of land, and the existing atmospheric conditions. The CIC watch officer should know and consider such conditions and should at all times keep the command informed of the dependable limits of the searches.

- a. The alertness of the radar operators is a vital factor in insuring that the enemy will be detected in time to employ the full fighting power of the ships against him. The responsibility for the alertness of the operators rests upon the CIC watch officer. He should (1) rotate operators at least very half hour in order to relieve eye strain and fatigue, (2) imbue them with the spirit that theirs is a job of grave responsibility and that the safety of the entire ship may lie in their hands, (3) remedy conditions which cause

--21--

### COMINCH P-013

monotony by giving them different jobs to be accomplished during their Condition Watches.

- e. Supervision of the search must be intelligent and in accordance with the requirements of the OTC, the ship's responsibility, and the type doctrines. The CIC watch officer should interpret these and insure that each operator is made to understand his part in the search. The primary function of search must never be forgotten while tracking one or more targets.
  - e. Positions of all ships in company should be kept on a polar plot. Radar operators should memorize this and be able at any time to identify, but name, any ship on the PPI scope. Any noticeable changes of position of any ship in company should be reported immediately and be closely tracked in order that its identity shall not be lost. Rough tracks of all ships in company should also be maintained at all times in order to facilitate immediate realization of the presence of new contacts.
  - e. All new radar contacts, air or surface, should be reported and tracked as soon as located. This is necessary in order to prevent the loss of valuable time in getting an initial solution on targets and an early interception of air contacts.
4112. *Visual.* Much information may be gained and recognition may often be established by visual means. The lookouts should be informed of all contacts so that they may assist in recognition. Get confirmation from them whenever possible. They should be in the habit of advising CIC immediately of everything they see, not only for confirmation, but as a habitual source of information so that CIC will continue to function smoothly even if the radar breaks down.
4112. *Sonar.* Sound equipment is of prime importance in the detection and tracking of

submarines. It is also a valuable aid in piloting.

4112. *Radio direction finders and search receivers.* It may well be that the first indication of the enemy is obtained by search receivers or radio direction finders. The primary means of detection of radio controlled glider bombs is the search receiver. Close coordination with these instruments must be maintained.

4210. *Intelligence.* (A [bibliography](#) of publications is in the appendix.) In order to keep abreast of current operations, fleet doctrine, and technical advancement in equipment, CIC should keep on hand a large amount of intelligence information. Proper organization of this material will facilitate its use. Such organization includes:

4121. Strategic charts on the bulkhead which display information concerning movement reports, contact and amplifying reports, the location of enemy bases and air fields, including notes on facilities, approximate air and submarine patrol areas.

4121. Tactical charts which assemble and display the information pertinent to a bombardment or amphibious operation, including fire support areas, landing beaches, gun emplacements, grid system in use, transport area, own and enemy mine fields and possible navigational landmarks for radar navigation.

4121. Extracted information from the technical and tactical publications placed in folders available for instantaneous use.

4130. *Display.* The following is a brief discussion of the various methods of display utilized by CIC.

4131. Plan position indicator: These are instantaneous displays; they show the situation NOW. The PPI carries to control stations a partial display of the radar picture by means other than words. It is a partial display because a PPI can be cut into one radar set at a time only. These displays have

--22--

---

**COMINCH P-013**

proved of particular value to officers at control stations. The PPI has the disadvantage of showing only the present, a disadvantage which can be overcome in part by plotting on the scope, with pen or grease pencil, retaining a limited amount of the past. This saving of the picture also helps the intermittent observer by reorienting him when he returns to the scope. The PPI shows a relative motion picture. This must be fully appreciated at all times.

4132. Precision PPI (VF): The VF has several advantages in display. First, an accurate range and bearing can be obtained from the instrument. Second, any sector can be expanded for minute observation. In using the VF, personnel should keep in mind the small distortion inherent in the presentation of the "B" scope. The advantages of this type of presentation are that nearby targets are spread out on the "B" scope, and the coordinates are particularly easy to read.
4132. Projection PPI (VG, VG-1, VG-2): In the projection PPI, the image from a 3-inch PPI is optically expanded onto a horizontal plotting surface; it thus has the advantage of removing the necessity of relaying data from the radar to the plotter. Three plotting surfaces are supplied with each instrument. One is unmarked transparent glass, another is unmarked frosted glass, the third is frosted glass with polar coordinate markings. Tracing paper may be used with any of these types. Because of the long persistence of this type of PPI, it is impractical to switch radar inputs or change scale, unless several minutes of use can be sacrificed. Therefore, it will normally be used as either surface or air display. By plotting information from radars not connected at the moment with the VG, both air and surface contacts can be displayed on the VG surface. Due to the wide beam pattern of air search radars and long persistence of the projection PPI, this unit is not very satisfactory for use in interceptions. The projection PPI's do not in many respects serve as a PPI. They should be thought of more in terms of plotting facilities.
4132. Plotting: Neat, legible, accurate, and rapid plotting is essential to the display of information. The standard plotting symbols and plotting procedure set forth in RADFOUR and RADFIVE should be used on all plots.
4132. The teleplotter is a means of reproducing the displays in CIC at remote stations. The receiver unit of the teleplotter reproduces at one-half scale the plot at the transmitter.

4140. *Radar Countermeasures.*

Officers standing watch in CIC should be thoroughly acquainted with the basic fleet radar countermeasures doctrine as enunciated in USF 10.

In accordance with this doctrine, the term "radar countermeasures" (RCM) includes radar interception, radar jamming, and radar deception. RCM does not include communication countermeasures nor does it include antijamming (A/J) equipment or techniques.

Antijamming (A/J) is considered to be part of the equipment to which it is attached; hence, A/J equipment and techniques are covered in RADTHREE, The Radar Operator's Manual.

As stated in USF 10, "All radar countermeasures information shall be communicated promptly to CIC where it can be quickly evaluated and disseminated to the flag, commanding officers, and control stations over internal communication circuits, and to other ships and aircraft as necessary via external communication facilities."

The responsible CIC personnel should be fully cognizant of the capabilities and limitations of RCM and should so train and organize their team that the utmost use of all RCM information can be made.

All personnel in CIC should be thoroughly familiar with RADSEVEN, The Radar Countermeasures Manual, RADELEVEN, The Shipborne Radar Countermeasures Operator's Manual, and other periodic fleet publications on RCM.

4150. *Training.*

Shore based training received by radar and CIC personnel before reporting to their ship can be divided into two general categories: basic, under the cognizance of BuPers, and team training under the fleet operational training commands.

CIC watch officers receive individual basic training in the tactical employment of radar and in combat information center organization and operation. Most of these officers receive, as a part of their basic training, instruction in the control of aircraft. All CIC watch officers will receive training in aircraft control within the near future. Upon completion of basic training, specialty designators "R", "X" or "N" are appended to the CIC watch officer's reserve officer classification, to denote the qualification attained by his basic training (as authorized by Cominch Conf Fleet Letter Serial 0663 of 7 March 1945).

Radar operators receive basic training which covers the general operational characteristics of all radar and radar countermeasures equipment. Following a relatively brief generalized training period, radarmen are trained specifically on the type of search radar equipment furnished the ship to which they are assigned. Upon graduation as seamen (RdM) a notation is made in the service jacket of each graduate regarding the specific type of equipment for which he has been trained. Such notations should be taken into consideration when assigning seamen (RdM) to duties aboard ship.

Following basic training, CIC watch officers and radarmen going to new construction are formed into CIC teams and are given operational or "team" training covering all types of problems which confront a CIC in an operating ship, before reporting to their ship. The purpose of such training is to mold the CIC team into as well an integrated unit as is possible preceding shakedown training.

Maintenance officers and enlisted personnel receive only basic training before reporting to their ship. Both the radio technicians and the radio specialist officers receive *technical* instruction in the maintenance of all Navy electronic gear. The training for officers and men differs only in the level at which each is pitched, and in both cases it is *aimed at preparing the individual for technical maintenance duties rather than for watch standing, either deck or CIC*. Since neither the radio specialist nor the radio technician is meant to be a watch stander, neither receive operational training with the CIC team.

Radio specialist officers are specifically designated by the letter "T" following their reserve officer classification in accordance with the Cominch Fleet Letter mentioned above.

Refresher training is available to operating ship personnel at navy yards, Fleet schools and

also within the basic training program. Commanding officers should arrange for such training for their personnel by contacting fleet administrative officers, operational training command or type command representatives for specific information.

Experience at sea in combat areas is necessary for CIC personnel, including those who have completed a course of training at shore based schools. The suggestions below are given as a guide for the conduct of shipboard training:

--24--

---

## COMINCH P-013

### 4151. *Intraship drills.*

- a. Supervised plotting drills.
- b. Target indication drills.
- c. Casualty drills.
- d. Rotation of CIC watch duties.
- e. Operation of emergency equipment.
- a. Radar operating drills.
- b. Coordination with lookouts.
- c. Competitive operation.

### 4151. *Instruction.*

- a. Slides and movies.
- b. Radio telephone procedure.
- c. Navy training course.
- d. Use of testing equipment.
- e. Effecting simple repairs and adjustments.
- f. Capabilities and limitations of radar.
- g. Capabilities and limitations of IFF.
- h. Elementary radar theory.
- i. Radar countermeasures.



- j. Miscellaneous reading. (Radio bulletins, records, instruction books, CIC bulletins and CIC magazine.)

4152. *Intership.*

- a. Task force radar and intercept drills.
- b. Fighter direction exercises.

4153. Attention is invited to current directives for shore training facilities.

4154. The type commanders have instituted a program for forward area training, which includes instruction in CIC operation. In addition, underway assistants are being trained who will travel from ship to ship, to assist the commanding officer in the solution of CIC problems.

4160. *Maintenance of radar equipment*

4161. A program of preventative maintenance is necessary to avoid failures of radar equipment at crucial moments. Systematic inspection should be made to insure that equipment remains at maximum efficiency all the time, including:

- a. Regular adjustment, cleaning, and lubrication of all radar equipment.
- b. Timely replacement of weakened or erratic components.

4162. Separate maintenance personnel should be included in the CIC organization. Part-time duties and dual responsibilities inevitably results in poor performance.

4163. The following procedure is recommended in order to obtain an efficient radar maintenance crew:

- a. Constant supervision by competent maintenance officers.
- b. Weed out personnel who are unfit or disinterested in this work.
- c. Require the regular use and study of instruction books, radar technical publications, and bulletins.
- d. Encourage initiative in maintenance work.
- e. Send maintenance personnel to established schools for training and refresher courses.
- f. Make full use of engineering service available at yards and bases.

## 4200. Operations.

4210. **CIC and conn.**--One of the major reasons for not obtaining the full advantage of CIC is the lack of understanding on the part of deck watch officers of the capabilities of radar and the information to be obtained from CIC. It is equally true that the CIC watch officers lack understanding of the requirements of the deck watch officers. To improve the existing situation it is imperative that CIC watch officers and deck watch officers be rotated in order to maintain this mutual understanding. Advantage should be taken of opportunities to conn the ship from CIC.

### 4211. *Tactics.*

- a. Responsibility: It should be the responsibility of the CIC watch officer to keep the command informed at all times as to the tactical situation without inquiry from the bridge. Whenever a contact is made, even a doubtful one, command should be notified. The reliability of the contact should be established by tracking, by careful consideration of the technical factors, or by visual means.
- a. Station keeping: For normal station keeping requirements a PPI on the bridge will supply all necessary information. When this instrument is not available or when greater accuracy is required, the CIC should supply the desired data: ranges and bearings on guide and other ships, summarize existing conditions, and evaluate comment thereon. At no time should the search radar be monopolized for the use of station keeping to the detriment of its primary function of search. Appreciable changes in relative positions of own or other ships should be reported to command without waiting for inquiry.
- a. Maneuvering: For tactical maneuvering, CIC should be able to locate own ship with respect to others, friendly or hostile, and to predict future location of own or other ships by inspection of the plot. It should inform command of own ship's proper position in relation to own forces or most advantageous position with respect to enemy forces and then determine courses and speeds to reach these positions. It is here that the use of the maneuvering board, surface plot, status board, and strategical and tactical charts are of inestimable value. With its rapid, up-to-the-minute display, CIC has a complete picture of the tactical situation. This picture is presented to the captain, in whole or in part, as his needs require.
- a. Estimate of the situation: Information assembled and displayed in CIC presents a complete picture of the tactical situation which must be passed continually to command. The difficulty of transplanting a picture from CIC to the mind of the conning officer using words as a medium can be lessened by continual drills and by judicious use of tactical phraseology and auxiliary plots.

Command should have on the bridge visual aids such as the PPI or remote plots which help in absorbing the situation that CIC is presenting.

The teleplotter will be an aid in disseminating information. There are four major aspects of the situation, the air status, surface status, subsurface status, and the radar status.

1. Air status: CIC should advise command of size, altitude, and condition of friendly combat air patrol, of the efficiency of aircraft search. All information concerning the presence of hostile aircraft, its size, speed, course, altitude, probability of attack, and estimated time of arrival must reach command

--26--

---

### COMINCH P-013

immediately. When friendly aircraft are available for fighter direction by own ship or other ships, command must be kept advised of action taken, progress of interception and contact reports by intercepting fighters.

2. Surface status: Beside navigational and maneuvering information CIC should endeavor to present information on identity, position, composition, course, speeds, disposition, and probably intention of all surface contacts.
  2. Subsurface status: CIC should keep command informed of all developments in sonar contacts and should be prepared to assist in the regaining of contact. This includes information from intelligence, other ships and aircraft, as well as own ship.
  2. Radar status: It should be the responsibility of CIC to inform all control stations of any special conditions or handicaps which are imposed upon the operation of the equipment itself. If landmasses interfere with the detection of aircraft or the land contours are such as to permit a ship to hide close to the shore line, it is important that the ship be fully informed. Radar failures must be reported to command, with an estimate of the time required for repairs. A report will be made when the equipment is in commission.
- e. Communications: Communications with other units is a definite portion of the ship-control problem. CIC can aid command in this matter by taking over routine control of the voice radio circuits particularly where they are complicated by codes and ciphers or by lengthy and detailed messages. Logs of voice radio circuits should be kept in CIC. This in no way is intended to relieve the communication service of its proper responsibilities.

**To reduce excess noise, and the attendant confusion, it is highly desirable that an earphone watch be maintained on those circuits which are to be monitored in CIC.**

4212. *Navigation.*

- a. Responsibility: The CIC watch officer does not relieve the OOD or the navigator of the responsibilities assigned him by Navy Regulations. The CIC watch officer, however, may be assigned applicable responsibilities for the safe navigation of the ship under circumstances where the best available information is in CIC.
  
- a. Piloting: The intelligent use of various instruments in CIC is distinctly helpful in piloting. Radars supply ranges and bearings on navigational reference points. The DRT is of assistance, not only by use of the tracking table but also by the use of course component solver and the latitude and longitude computer. CIC should maintain its own navigational plot of the ship's positions from radar fixes combined with dead reckoning. A duplicate set of navigational charts should be kept in CIC if those of the navigator are not available at all times. These charts should be carefully studied in advance in order to ascertain which points will be most likely picked up by radar. Ships having sonar equipment should make full utilization of it as an aid in navigation. The rolling reverberation of shoal water should be differentiated from the sharper return of a steep reef. Presence of mine fields and approach of a torpedo can often be detected by sonar. The fathometer, to a limited extent, has similar uses in navigation. In obtaining

--27--

---

**COMINCH P-013**

navigational fixes, the use of contour templates or the system of minimum ranges is distinctly helpful. Because the range from a search radar is more accurate than the bearing, the intersection of simultaneous range arcs should be used as a fix in preference to the intersection of bearing lines.

- c. Radar contour method of piloting:
  - 1. Navigation through the employment of radar ranges and bearings is subject to any one or all of the following errors.
    - a. Uncertainty as to the point of land ranged on, except when clearly defined.

- a. Height of the terrain, producing ranges from a source behind the shoreline.
  - a. Width of the radar beam, causing errors in target bearings.
  - a. Gyro error.
  - a. Any bearing error in radar alignment.
1. Errors *a* through *c* are virtually eliminated and errors *d* and *e* are entirely eliminated through the employment of the radar contour method of piloting. This method consists essentially of constructing a land contour on a template on the basis of radar ranges, and fitting the constructed contour into the charted shore line contour. Experience has shown that good fixes can usually be obtained in less than a minute, which time compares very favorably with other methods. The accuracy of these fixes has been consistently superior to that of other methods.

1. Preparation of the chart and templates.

At a convenient position on the chart, a radar range scale is marked off in yards to the scale of the chart. For navigational purposes 2,000 yards to the mile is satisfactory, although 2,027 yards to the mile is strictly correct. If used in conjunction with gunnery, the latter scale should be employed. The template itself should be made of transparent plastic about 16 by 20 inches. A hole is drilled in the center just large enough for a thumb tack to fit snugly. From this point radial lines are inscribed in either 5° or 10° steps for 220°.

1. Method of use.

The center of the template is tacked to the zero point of the radar range scale inscribed on the chart. On "mark" the radar operator starts calling only ranges at 5° steps from one end to the other of the prearranged sector. These ranges are marked on the corresponding template bearings, or recorded and later transferred to the template. The plotted points then are joined to form the land contour, and this is fitted to the chart.

An example of the method: Radar operator informs CIC he can obtain ranges between 088° and 152° true. CIC watch officer marks the template from 090° to 150° and requests ranges in 5° steps. Radar operator transmits "A" scope ranges to the plotter starting at 090° and each 5° step until 150° is reached. As the antenna is momentarily steadied on each successive bearing, the assistant calls "mark" and the

radar operator reads the range to the closest hundred yards. If any

steps of the sector are out of range, "no range" is called, in order to maintain the rapid continuity of ranges. The result is a reproduction of the PPI scope contour on the template to the scale of the chart, which can be fitted to the chart by observation, the center of the template marking the ship's position at the middle time of ranging. The template will not fit the exact beachline, as radar ranges are affected by the contour of the land. Approximate positions should be readily apparent when within 20 miles of the shore, with an error of only 200 yards when 8 miles off shore. Accuracy increases with sharper coastal indentation and larger scale charts. The air search radar cannot be used for the method.

5. Use in shore bombardment.

In well charted areas this method will prove of value in conducting shore bombardments utilizing indirect fire, and also for navigating the ship to the initial firing point.

5. Limitations.

This method of navigating depends on knowledge of the contour of the coast being ranged upon. With inaccurate charts, such as are sometimes found in remote Pacific areas, the value of this method is limited.

- d. Navigation at sea: A close estimate of the ship's position is maintained at all times through the course component solver and the longitude and latitude computer. The DRT should be reset periodically to conform to fixes obtained by the navigator from celestial sights. The radar is of great value in making a landfall.

A section on piloting with the VF and VPR is in preparation and will be forwarded for inclusion in this section.

4220. *CIC and the flag.*

4221. *CIC.* The flag bears much the same relationship to the force as does the captain to a specific ship. Consequently the CIC of a flagship has the added responsibility of supplying the flag with all navigational, tactical, and maneuvering data as well as the air, surface, sub-surface, and radar status, evaluated and presented in terms of the whole force rather than in terms of the ship alone. The need for this broader conception frequently results in a Staff officer being stationed in CIC in a role similar to that of the ship's Evaluator to complement the regular flow of information to the remote plots. CIC should be organized so that information furnished to flag plot will be complete enough to obviate the necessity of flag personnel interrupting CIC's usual functions. To obtain the greatest benefit from CIC, it is necessary that flag plot furnish all pertinent information to CIC.

4230. *CIC and aircraft control.*

4231. The details of the control of aircraft are covered in RAD EIGHT, Aircraft Control Manual.
4231. The fighter direction doctrine is set forth in USF 10.
4231. The operation of CIC in connection with Aircraft Control may be divided into three classifications.
- a. The control and coordination of the information flow and the operations of other ships. This information will not only include positional and descriptive data, but also such tactical data as conditions of fighter readiness, conditions of flight decks, progress, completion and results

--29--

---

**COMINCH P-013**

of interceptions. The operations referred to include the control of search radars, the control of the information flow, the assignment of raids for interception and the allotment of fighters and radio channels to this end.

- b. The exercise of fighter direction itself.
  - b. The control of aircraft other than in fighter direction as in homing lost aircraft, directing own attack group to target, hunter killer control in A.S.W., investigation of long range surface contacts beyond visibility distance, and controlling own gunnery observation and spotting planes.
4234. Fundamentally fighter direction is the control of fighters on basis of radar or visual information to enable them to intercept hostile aircraft. It entails the destruction of hostile reconnaissance aircraft before they can sight your own forces and send in reports, and the dispersion and destruction of attacking aircraft before they can inflict damage.
4234. Friendly aircraft are controlled by means of voice radio by the fighter director officer (using standard R/T procedure and fighter director vocabulary). In order to perform his duties well, the F.D.O. must have all CIC information at his command. This information is primarily obtained from the air search and altitude determining radars. Other information such as weather and navigational data, intelligence and lookout reports, and information concerning the status of own aircraft including the amount of fuel, ammunition, and oxygen remaining, is essential to the fighter director's work. He must also be familiar with the characteristics and performance of planes, and the full details of the strategic and tactical situation.
4234. Not only carriers, but all ships equipped with a combat information center must be able to perform Fighter Direction duties and other aspects of aircraft control at any time, in the following cases:

- a. Control of shore based or carrier based fighters in defense of convoys and task forces.
- a. Control of shore or carrier based fighters in coordination with Army and Marine air warning units, particularly in initial stages of amphibious operations when their radar and communications are not yet fully established on the beach.
- a. Interception of snoopers from a picket position some distance from the main force before the enemy can spot his target.
- a. Control of fighters in event of casualties to carriers.
- a. Control of air strike group in torpedo, bombing, mining, and intruder strafing missions.
- a. Searches and patrols.
- a. Antisubmarine warfare, frequently involving cooperation with surface craft.
- a. Spotting.
- a. Illumination of targets.
- a. Laying of smoke screens.
- a. Homing of lost planes and recovery of survivors.
- a. Controlling radar countermeasure planes.

4240. ***CIC and control of surface craft.***--The fundamental requirements in the positioning or control of small craft by CIC are a determination of their relative and navigational positions, a knowledge of their limitations and abilities and their radar

--30--

---

**COMINCH P-013**

characteristics. A communication procedure is promulgated prior to the operation. Examples of this type of control which may be encountered are:

- a. Acting as a guide for landing craft.
- a. Directing landing craft to specified beaches.
- a. Maintaining large convoys in order.



- a. Stationing control vessels or pickets boats in amphibious operations.
- a. Aiding small minelaying craft in laying minefields and plotting navigational position of field.
- a. Directing PT boats in a low visibility attack.
- a. Directing crash boats to their objectives.
- a. Directing small craft engaged in laying smoke screens.
- a. Directing other surface units in an ASW creeping attack.

4241. *Boat wave tracking.*--In an amphibious operation the waves of assault boats must be carefully tracked and all interested stations kept informed of their progress toward the beach. RAD 9, The Tactical Use of Radar in Small Vessels should be referred in connection with the control of landing craft. Boat wave tracking is a function of the CIC. It is possible to determine from a good plot:

- a. Course of boats in to beach or line of departure and whether or not their course will take them to the proper location.
- a. Speed of waves and whether or not they can make the line of departure or beach on time.
- a. Position of marker, control, or support vessels. (This latter function may be most important.)

--31--

---

## COMINCH P-013

4250. *CIC and gun control.*--The assistance rendered by CIC in the radar control of gunfire is particularly important. The capabilities and limitations of the equipment in use must be thoroughly understood in order to intelligently render this assistance. Personnel in the directors should be acquainted with the results obtained from CIC, the methods by which derived, and the channels by which disseminated. Correspondingly, CIC personnel should be familiar with the fire control and director systems.

There are several ways in which CIC can be of assistance in the control of radar gunfire.

4251. *Designation of targets.* The designation of targets is a prerogative of Command. By target designation is meant the selection by Command of the target, within or approaching gun range, that is to be taken under fire by that particular ship. Another function, completely separate from target designation, is target indication.

4251. *Target indication.*

- a. By target indication is meant the indication to Command and gun control stations of the target available. When considering a task force (group) (unit) it is the indication to Command of the targets approaching the area of gun fire of the unit as a whole. Target indication includes all the information necessary for proper designation, including the presence, identity, location, size, number, course and speed and estimation of probable intention. In addition, CIC must include evaluated factors which are necessary in order that command has the adequate information for proper designation of a target.
- a. In order to perform its function of target indication, CIC must be thoroughly acquainted with the fire distribution doctrine. The relative importance of various types of targets must be recognized. When task force cruising instructions, or other directives contain a positive statement as to the range at which it is desired to open fire on specific targets, CIC can be instructed to inform command and gun control stations that the target is at that range.
- a. Initial reports from CIC should be followed with the statement that the director is matching up. Before a target approaches the range of gunfire, the information from the director radars should be made available to CIC in order that they may have all sources of information.
- a. It is the responsibility of CIC to inform command and gun control stations of friendly units which are in or approaching own ships line of fire.
- a. Target indication involves the transmission of range, bearing, and position angle (if applicable) to directors. Target indication is accomplished by several methods; the sound powered phone at present is the primary means. Other aids are remote plots, and watch pointer synchro system with inputs from radars, the precision PPI, or hand transmitters. The bearing and range tendency of the target should always be include in phone reports; i.e., "moving left," "moving right," "closing fast," or "opening slowly."
- a. In many ships, it is necessary to use relative bearings in designating azimuth. However, new equipment is being provided which will permit the designating personnel to use true bearing. The Mk 10 Bearing Indicator when provided in directors permits rapid conversion from true bearing to relative or vice versa. CIC personnel must know which system is in use aboard their own ship, and be guided accordingly.

--32--

---

**COMINCH P-013**

- g. Rapid target indication in range is necessary in coaching fire control radars onto invisible targets. This is particularly true with air targets, and in cases where the target pip is small. To expedite getting the director in full radar

control when there are two or more targets on the same bearing, immediate and accurate range indication is essential, as the pointer will be unable to match in elevation until the range operator has the pip in his notch. A continuous flow of range data, with minimum time lag, is necessary for rapid matching. The range tendency should also be reported; i.e., "target closing fast." If targets are close together in range amplifying remarks such as "nearest target," clarify the picture to the fire control radar operator.

- g. Target indication in elevation is a complex problem. Most CIC's have not been equipped with the means for determining elevation directly but by calibrating the air search radar for fade zones approximate altitude can be determined, from which position angle may be converted. If desired, position angles may be drawn on fade charts. The installation of SP/SM radars in larger combatant units provides CIC with the means for accurately determining elevation angle for fire control purposes. Reports from planes, ships, or shore units may often contain an estimate of altitude. In matching up to track air targets at close range, any approximation of position angle is of marked assistance.

4253. *Target tracking.* Fire control computers were designed to furnish rapid solutions on high speed targets. Speed and accuracy are lessened when the target's relative speed is low. In such situations, CIC can assist plot by furnishing an initial solution of target course and speed, and information of the targets maneuvering. CIC can detect a change in the targets course usually before it is apparent to plot. CIC and Gunnery Plot must cooperate closely in the solution of any problem.

4253. *Radar spotting.* Spotting with search radars has not been altogether successful, despite the success reported by some ships. However, CIC can furnish range spots on surface targets at medium ranges, and should be prepared to do so in event of failure to fire control radar.

In spotting for surface gunnery, the "B" scope of the VF with SG input can be used to advantage. Spotting for range can be accomplished by visual estimation (using electronic range lines or ink scales) or the moving spot can be utilized, and the difference in the ranges of the target and splash calculated from the range counter.

4253. *Night air defense.* A major problem of CIC has been defense against night air attacks. Cooperation between CIC, fire control radars and gunnery control stations is of the utmost importance. During night air attacks the responsibility of insuring that own ships are not fired on is in large measure placed in CIC.

4253. *Specific procedures used aboard large vessels (BB, CB, CA, CL).* The following set up is suggested for use during night air attacks:

- a. Personnel:  
Station the air defense officer in CIC (wearing 5JP) and provide him with two AA gunnery liaison officers "wearing 41JS and 42JS respectively). The air defense officer indicates targets and divides up the battery as appropriate. The gunnery liaison officers coach their respective directors on to the indicated targets.

## a. Tracking:

--33--

**COMINCH P-013**

If the main battery radar can pick up the torpedo planes, have the AA directors match the main battery director through sky plot. The "B" scope of the main battery radar is excellent for tracking low flying aircraft and distinguishing them from destroyers in the screen. Deflection spotting is possible, but difficult and may not be accurate. For this function, the radar search is sacrificed, therefore, the primary burden of spotting must remain with the gunnery organization.

4257. *Target indication with the precision PPI.*

The "B" scope of the VF, utilizing SG radar input, provides an accurate and quick means for indicating surface targets to directors and other control stations.

Against low flying planes, (position angle below  $6^\circ$ ) within 20,000 yards, the VF with SG input is a fast and flexible means of putting directors on threatening targets.

Against high flying planes the VF with SC or SK input is used.

The speed of planes is too great to attempt tracking them on the "B" scope. Tracking of air targets is best accomplished on the VF PPI by centering the cursor on the target and centering the intensity modulated sector over the target.

Where the pip is too weak to be read through this brightened sector, the sector can be placed on the near or far side, of the pip, and 2,000 yards compensation made.

4257. *PD panel.*

PD panels are installed in CICs to provide flexibility in the selection of stations to which target indication data is to be transmitted, and in selecting the transmitting agent.

4257. *AA coordination plan.*

An AA coordination plan is used by various task groups. The purpose of this plan is to "assist in the detection of close in bogeys, shifting of contacts from search to fire control radars, and the early engagement of enemy planes by concentrated gunfire while guarding against further undetected attacks."

This plan varies from group to group, but in general provides for the following:

- a. Sector assignments for fire control radar search and for distribution of AA fire in event of multiple targets.
- a. A close-in radar search using fire control radars in assigned sectors.
- a. A voice radio circuit for the dissemination and exchange of AA gunnery

information.

- a. An AA coordinator stationed in the flagship stationed in CIC.

A close liaison must be maintained between CIC and AA control stations of individual ships in order to utilize all available information.

--34--

---

## COMINCH P-013

4260. ***CIC and shore bombardment.*** In amphibious operations, it is the mission of certain Naval groups to replace the landing force artillery in supporting the assaulting troops by fire on shore targets. Current fleet doctrine and publications will be complied with in carrying out specific shore bombardment missions. During fire support missions, CIC must, as always, keep the Command advised of the entire situation at all times. CIC does not exercise control unless specifically authorized to do so.

4261. Gunfire against shore targets is the same as firing against a surface target with zero speed, except as noted below:

- a. The geographical position of the ship should be accurately and continuously fixed, since this determines the range and bearing to the target. In determining the ship's position by radar, the principles covered in Section 4212 are applicable.
- a. Radar Beacons. Radar beacons may be made available at designated points ashore where shore bombardment is to be carried out over flat terrain which is questionably mapped, charted, or photographed.
  - 1. A radar beacon, accurately located at a navigational point known to a ship, enables this ship to determine its own geographical location.
  - 1. If neither shore fire control party nor the ship knows their own geographical location, the target should be designated by a true bearing and range from the beacon. Bearing designation should be obtained from a magnetic compass by the shore fire control party.
  - 1. Radar beacons may be used with search or fire control radar. The bearing is very accurate. An initial correction in range should be applied. This inaccuracy is caused by the time delay in triggering the beacon.
- a. The elevation of the target above sea level should be taken into consideration.
- a. Reciprocal of the set of the current should be fed into the computer as the target course, and the drift as target speed.

- a. The pitometer log is inaccurate at low speeds, so own ship's speed fed to the computer should be carefully checked and set correctly by hand when at low speeds.
- a. During Call Fire, ship's gunfire is directed by the spotter for the shore fire control party. To prevent endangering own troops, ships should:
  - 1. Commence and close firing on order of shore control fire party.
  - 1. Apply exactly all spots received from spotter.

#### 4261. Fixing the Ship's Position.

- a. A grid chart of the objective should be prepared on tracing cloth or other translucent material and placed on the DRT in CIC. The chart should display shore outlines, elevation, contours, target locations, navigational dangers, prominent landmarks, radar targets, position of other forces and the track the ship desires to follow. Scale should be 1,000 or 2,000 yards to the inch.
- a. CIC should determine the ship's position and keep an accurate track of the ship by the best available means--optical, radar or DRT fixes. This can be obtained by the following means:
  - 1. Radar bearing and range on a navigational object.
  - 1. Simultaneous bearings with a pelorus or other optical instrument.

--35--

---

#### COMINCH P-013

- 3. Combination of radar ranges and optical bearings.
- 3. Several radar ranges on navigational objects.
- 3. Contour method of radar bearings and ranges. (See section on navigation.)
- 3. Use of virtual PPI reflectoscope. (VPR)
- c. If practical, the DRT should be reset to correspond to the actual position of the ship. This will usually be necessary after a change of course or speed. CIC should determine the set and drift of the current from the track, and furnish this information to command and gunnery control stations.

4263. The following procedure is recommended for prearranged indirect fires when a point

of aim is available:

- a. Locate target on chart.
- a. Position the ship and keep a track of the ship on the chart.
- a. Recommend courses and speeds to conn the ship through the initial firing point steadied on the firing course and speed.
- a. Compensate for dead time by one of the following methods:
  - 1. Advance each fix the distance expected to be made good along the track during dead time and measure data from the advanced position; or
  - 1. Lay off from the target the distance expected to be made good during dead time on a bearing which is the *reciprocal* of own course, and measure all data from this point. (An arbitrary value should be chosen for dead time which will give the plotter sufficient time to plot the fix, compute data, and pass data to gunnery plot or guns.)
- a. Furnish gunnery control and plot with the initial computer set-up: (bearing, range and elevation to point of aim). The following method is recommended for furnishing this data:
  - 1. Give time "mark" when navigation data is taken by radar or optics.
  - 1. Pass data to CIC, record, and plot fix, labeling it with time.
  - 1. Compensate for dead time.
  - 1. Determine as required by gunnery plot the predicated bearing, range and elevation to target, for the advanced time.
  - 1. Pass data to gunnery plot.
  - 1. Give "mark" upon the expiration of dead time (at which time the data should be correct).
- a. Pass to gunnery plot following additional data:
  - 1. Set and drift of the current.
  - 1. Corrected ship's speed if pitometer is inaccurate.
  - 1. Spots (if available only in CIC).

a. Check computer solution of bearing and range against the CIC's plotted solution throughout the firing.

a. Do not let the bombardment interfere with effective radar search.

4263. The following procedure is recommended for prearranged indirect fires when an area is to be covered with no point of aim available:

a. Locate target on chart.

a. Select a centralized point of aim in the area to be covered.

a. Draws in the desired firing course and select the commence-firing point and mark it on the track.

a. From this point, mark off the ship's advance along the firing course at one minute intervals.

--36--

---

### COMINCH P-013

e. From these points, draw lines to the selected point of aim and indicate the bearing and range.

e. Recommend courses and speeds to conn the ship through the initial firing point steadied on the firing course and speed.

e. Obtain from the gunnery department a table of arbitrary ranges and deflection spots to cover the target area with the allowed ammunition.

e. Follow section 4273, (e), (f), (g), and (h).

4265. In direct control of gunfire, CIC's function is limited to assistance in locating the target.

a. When gunnery control spots a target, CIC should check to insure that it is on the enemy side of the lines and report this to gunnery control. Normally permission should be obtained from the shore fire control party to take such targets under fire.

a. CIC should give gunnery control and plot the elevation of the target if known.

a. When targets are assigned by shore fire control party, CIC should inform gunnery control and plot of the range, bearing and elevation, and coach the director on.



4265. The following additional procedure is recommended for call fire by indirect control, if communications with the shore fire control party are controlled from CIC:
- a. Locate target assigned by shore fire control party on chart.
  - a. Furnish gunnery control and plot with bearing, range and elevation of the target.
  - a. Check computer solution against CIC's plotted solution.
  - a. By using "time-of-flight" clock, inform shore fire control party of "salvo" and "splash."
  - a. Relay spots received from shore fire control party to gunnery control and plot.
  - a. Quickly plot spots received and recommend "cease firing" if it appears that next "salvo" might hit own troops.
  - a. Keep an up-to-the-minute plot of our forward lines on the chart.

4265. When no rangekeeper is available, the following procedure is recommended:

- a. Choose an aiming point adjacent to the target which can be available to the guns or gun directors.
- a. Measure the effect of the aiming point from target in mils, instead of the bearing of the target.
- a. Pass range and deflection directly to the guns, or to a gunnery control station which add spots and other corrections.
- a. After opening fire, guns may be controlled entirely by spotting or CIC may take over the function of a rangekeeper by continuing to calculate the basic range and deflection for the addition of spots.

4265. The following general procedure is recommended for illumination:

- a. Plot the target to be illuminated.
- a. Furnish control and plot with range, bearing and elevation.
- a. Relay to control any orders and spots received from shore fire control party.

4265. The type doctrine and procedure for naval gunfire support in landing operations must be understood by all officer personnel connected in any way with the control of gunfire in such missions. During fire support missions, CIC must, as always, keep the commanding officer advised of the entire situation at all times.

**COMINCH P-013**

4270. *CIC and torpedo fire.* On the smaller combatant ships the most potent weapon for use against surface targets is the torpedo. Under conditions of reduced visibility the CIC furnishes essential information for the control of torpedo fire. It will normally be advisable to withhold gunfire until the torpedoes have had time to cross the target's track. This will exploit the element of surprise. The problems arising in torpedo fire fall into two categories:

- a. The torpedo attack, which deals with positioning the attack units for torpedo fire.
- a. The torpedo control, which deals with directing a relatively slow-speed weapon of limited range (i.e., the torpedo), to intercept a surface target.

4271. *Procedure for CIC and torpedo fire.*

- a. Doctrine for conducting torpedo attack is contained in current tactical instructions and doctrines. CIC can assist command in the problem of torpedo attack as follows:
  1. CIC should inform command of the general tactical situation and recommend attack maneuvers best suited to the existing situation, and based on current doctrine.
  1. When command has designated the firing position, CIC should solve the approach course for the attack speed to be used.
  1. CIC should recommend the selection of targets according to effective fire distribution doctrine.
  1. CIC should advise command when own and enemy effective torpedo range zones are approached in terms of time and range.
  1. CIC should inform command when own ship is in line of fire of own forces and recommend possible maneuvers to avoid own force's line of fire.
  1. Prior to arrival at firing position, CIC should advise command of approximate base torpedo course and firing course to that command can alter course in order to unmask the torpedo batteries using minimum gyro angle.
  1. When making the attack, the relative movement problem should be set up on a maneuvering board so that the approach course can be corrected and base torpedo course can be quickly determined in case

premature fire is required.

1. Upon completion of fire, CIC should inform command of the best retirement course so as to avoid interference with other units, clear the area in the shortest time, and regain station in disposition.
- a. Doctrine for torpedo control is contained in current tactical instructions and doctrine. CIC can assist command and torpedo control as follows:
1. CIC should advise command and torpedo control when approaching effective range zones for own torpedoes by use of the torpedo effective range device and the DRT, or by use of effective range tables. Command makes the final decision for a change in the speed setting of the torpedoes.
  1. CIC should inform command and torpedo control of size of target, if possible, in order to use correct depth setting.
  1. CIC is responsible for the determination of the course and speed of the target and the comparison of CIC's plotted solution with computer solution. CIC should keep command

--38--

---

### COMINCH P-013

and torpedo control informed of the latest and best estimate of course and speed.

4. CIC should solve frequently the base torpedo course on a maneuvering board or DRT and check its solution with torpedo control. CIC's solution can be used in event of failure of torpedo director.
4. CIC should transmit to torpedo control the necessary corrections and offsets when firing torpedoes with gyro angles.
4. CIC should frequently advise command and torpedo control of bearing and range of the target. The bearing is most important if visual aim is impossible.
4. CIC should be prepared to assume torpedo control and direct the laying of the tubes and the firing of the torpedoes in event of failure of torpedo director.

#### 4272. *Communications.*

To best utilize the information available from all radars and to solve the numerous problems involved in torpedo fire, there should be close coordination between command, CIC, torpedo control, main battery control, and Plot. The following

communication set-up is suggested as the best means of accomplishing the task.

1. Communication between interested stations is provided by the JW and the JU sound powered circuits.

JW -- *Evaluator's circuit:*

Evaluator in CIC  
Captain's talker at Conn  
Torpedo officer at torpedo director  
Control officer in main battery director  
Computer range operator in plot  
Gunnery plotting room officer

JU -- *Torpedo control circuit:*

Assistant evaluator in CIC  
Selector switch operator at torpedo control  
Tube trainers on torpedo tubes  
Depth charge racks and throwers  
Torpedo director trainers

4272. Information flow via JW circuit--evaluator's circuit

a. From CIC

1. General tactical situation.
1. Recommended approach courses, attack maneuvers, and retirement.
1. Target indication.
1. Target's course and speed.
1. Frequent reports on present bearing and range of target.
1. The source from which torpedo director should obtain the bearing of the target.
1. Report on own ship's approaching effective torpedo range zones and recommended torpedo speeds.

a. From command:

1. Target designation.
1. Number of torpedoes to be fired and the side from which it is intended to fire.

**COMINCH P-013**

3. Advance information on maneuvers that own ship intends to make to uncover the torpedo battery.
3. Order to change the speed and depth settings on torpedoes.
3. "Standby"--when ship has steadied on firing course.
3. Order to fire, "Fire when ready."

## c. From torpedo control:

1. "Torpedoes ready"--this should be given as soon as the first complete director set-up is made and after each order to change speed, depth, or gyro settings is completed.
1. "Base torpedo course" at intervals to enable the evaluator to make a general check during the approach, and compare CIC's solution obtained from assistant evaluator. After "Torpedoes away" base torpedo course is plotted on DRT.
1. "Torpedoes away" when the first torpedo is fired so that CIC can clock time of torpedo run and figure when the main battery can open fire--the torpedoes having had a chance to cross the target's track. "Torpedoes away" may also be used as a standby order for the gun battery to open fire.

## c. From other stations:

1. Determination by CIC whether gun battery director is tracking designated target with fire control radar. If so, fire control radar bearings of the target should be used by the torpedo director, with surface search radar bearings used to check possible errors.
1. Computer's solution of target's course and speed for comparison with CIC's solution.

## 4274. Information flow via JU circuit--torpedo control circuit.

## a. From CIC:

1. True bearing, course and speed of target to selector switch operator, who should repeat it aloud, so that the torpedo control officer may check the director trainer.

1. Bearing indication to the bearing indicator on the torpedo director from the surface search radar, precision PPI, or the fire control radar, if gun and torpedo target are identical. If the surface search radar is used, the sweep should be stopped on the target, and the bearing read off continuously over the JU circuit at the order "Standby". The advent of the precision PPI and improved target designation system will obviate the undesirable necessity of stopping the surface search radar sweep.
1. Any additional information torpedo control requests from CIC, such as correction for turning circle for large gyro angle offset. Torpedo control must be set up and ready to fire throughout the approach. Tube mounts should keep CIC and torpedo control informed continuously of gyro angle being used.
1. Latitude correction.
1. Transmission of target angles, target speed, torpedo speed and relative tube train to the torpedo mounts by the assistant evaluator, in order to control the firing in event of torpedo director casualties.

--40--

---

## COMINCH P-013

### b. From torpedo control:

1. The laying and firing orders to the tubes.

#### 4275. *General.*

- a. The interior communication arrangement described above gives the torpedo control officer all the information he needs to direct torpedo firing and leaves the JU circuit clear except for target bearings and tube orders. Since the firing orders go over the JU circuit, tube mount crews will not anticipate the command to fire.
- a. The assistant evaluator should have available the current tables on effective torpedo range, correction for turning circle offset, time of torpedo run, maneuvering board, angle solver, torpedo speed tables, and effective torpedo range solver. Although the angle solver may never be used in combat, ships should be proficient in its use in the event of a casualty to torpedo director.
- a. "Standby" should not be ordered more than 10 seconds before the order to "Fire when ready."
- a. Bearings read from radar bearing indicator at torpedo director are relative regardless of radar in use. Bearings transmitted over sound powered

telephones are true and should be checked on outer (own ship's) course dial of director.

- a. It must be emphasized that visual bearings are better than radar bearings. If the target becomes visible, visual bearings should be used by the director trainer, who should frequently try his telescope to see if this is possible.

--41--

## COMINCH P-013

### 4280. *CIC and antisubmarine warfare.*

Close coordination should be maintained between CIC, command, and sonar in antisubmarine operations. CIC should be the source of much information in this type of attack, but the most important and useful function is that of aiding the command and sonar in regaining contact once the original contact has been lost. Other important functions of CIC in antisubmarine operations are:

- a. Determining course, speed, and maneuvers of the submarine.
- a. Acting as check on correct attack course and dropping time for depth charge attack.
- a. Controlling coordinated antisubmarine attacks.
- a. Controlling cooperating aircraft in antisubmarine attacks and patrols.
- a. Detecting submarines making surfaced attack.
- a. Launching, monitoring, and recovering effective sonobuoy pattern.

### 4281. *Procedure upon sonar contact.*

- a. On contact:
  1. Shift to 200 or 500 yards per inch scale and start DRT immediately. Plotting should be started without delay.
  1. Check to be certain that contact is not friendly ship or wake. Check navigational chart for reefs, wrecks, or other obstructions.
- a. During approach and attack:
  1. Track target informing command of course and speed.
  1. While the sonar equipment is the primary source of information for

conning the attack, the DRT plot may frequently be the first to reveal a maneuver of the target. Inform the command of indicated maneuvers.

1. In the event of range recorder casualty, be prepared to advise command from DRT plot of courses to steer and dropping time.
1. Track submarine by using center bearings. If necessary use leading "cut-ons" or split right and left "cut-ons."
1. Attempt to determine depth of submarine buy use of the fathometer when over submarine.

a. Regaining contact:

1. The use of the DRT is the best method of regaining sonar contact. Advise command of courses to steer to regain contact according to current doctrine and instructions.
1. Recommend sonar search arcs (in true bearings). Use circles of possible submarine position for each minute to estimate these search arcs.
1. Various types of retiring search planes can be controlled best from the DRT plot. Use current doctrine.
1. Control other antisubmarine ships in the area for a coordinated search.

a. Coordinated attacks:

1. As assisting ship, send own sonar information to attacking ship.
1. As attacking ship, apply assisting ship's sonar information to own plot.
1. During creeping attack on a submarine known to be deep, the assisting ship's CIC controls the attacking ship.

--42--

---

**COMINCH P-013**

4282. *Radar detection of submarines.*

- a. If radar contact is made, check for radar deception. Prepare to attack by ramming, torpedoes, gunfire, or ahead-thrown weapons as desired. A polar plot reveals instantly if ship is on a collision course, and small changes of course can be easily estimated.



- a. The speed of normal automatic rotation of antenna on the surface search radar is too great for dependable periscope detection. In waters where submarine attack is probable, the surface search radar antenna should be trained slowly by hand through 360° at short intervals. The degree of operator alertness required for periscope detection is greater than that required for any other type of search.
- a. Check with sonar gear all possible periscope pips when within sonar range and inform command and lookouts. Operators should be cautioned that periscope exposure will be intermittent, and that it is necessary to report even the briefest of pips.

4282. *Coordination of radar and sonar.*

- a. With radar detection of surfaced submarines possible up to 20,000 yards, coordination of CIC and sonar is vital.
- a. Report and commence plot on first contact. If contact disappears during approach, recommend search plan and sonar search arcs to make sonar search.
- a. During approach designate target bearing to gun control and torpedo directors.

4282. *Aircraft cooperation.*

- a. Aircraft may be employed in antisubmarine warfare in the following ways:
  - 1. Aircraft delivering attack on submarine under control of CIC.
  - 1. Both aircraft and surface craft delivering the attack under the control of the CIC.
  - 1. Aircraft carrying out planned antisubmarine searches and patrols under control of CIC.
- a. These attacks and searches will be made in accordance with appropriate, current doctrines.

--43--

---

Click here to continue with [Part V--Type Organizations](#) and the appendix.

---

12 October 2005

Return to [Reading Room List](#)  Return to [Navy Department Library](#)  [Naval Historical Center home page](#)



DEPARTMENT OF THE NAVY -- NAVAL HISTORICAL CENTER  
805 KIDDER BREESE SE -- WASHINGTON NAVY YARD  
WASHINGTON DC 20374-5060

## Radar Bulletin No. 6, (RADSIX), CIC Manual (page 2)

### Part V. TYPE ORGANIZATIONS

5000.

The following chapters discuss the organizations of a combat information center for specific classes or types of ships. For uniformity the material will be considered in its relation to parts I through IV. Where details are discussed in earlier sections they will be referred to only in the manner (if any) in which they differ from the general details of the earlier sections. Definitions will conform to part I. Each type organization will be discussed under the following headings:

Introduction:

Basic functions of the command on the type of ship being considered:

Functions, duties, and responsibilities of CIC.

General functions with reference to parts II, III, and IV of RAD SIX.

Special duties and responsibilities in type of ship being considered, which are not covered by earlier sections.

Administrative organization of CIC, (Pending decision).

Diagram of CIC (and auxiliary CIC, where applicable) (Showing equipment, design, and stations of personnel involved).

Communications of CIC:

Diagram of S/P communications and other intraship communications (MCs, voice tubes, etc.)

Equipment used for intership radio communications.

Operational organization of CIC:

Diagram of battle bills and condition watches.

Detailed duties.

The watch bills are necessarily presented as a composite of the types and are furnished only as a guide.

Communication diagrams show circuit outlets, authorized for the CIC of the type.

**5100. The CIC in an Amphibious Command Headquarters Ship (AGC).**

5101. The AGC type of ship has been designed for serving as the flagship of the amphibious force commander. An amphibious operation may involve hundreds of ships and landing craft of all types. The elements of a typical amphibious force are shown in the accompanying diagram ([fig. 1](#)).

5110. *Functions, duties, and responsibilities of CIC.*

5111. The combat information center in an AGC shall be organized to perform the general functions listed in parts II, III, and IV of this publication.

5112. Essentially the duties and responsibilities of CIC in an AGC are similar to those of any other ship. However, all data must be evaluated and processed in terms of the whole force in addition to data in terms of the single ship because of the presence of a flag aboard. It frequently is the responsibility of CIC on an AGC to coordinate the functioning of other CICs in the force. Aboard an AGC, the personnel in joint operations room, flag plot, and the staff duty officer rely on CIC for much information.

5120. *Administrative organization of CIC.* (Pending decision.)

5130. *Diagram of CIC* ([fig. 2](#)).

5140. *Communications in CIC.*

5141. Diagram of sound power and other intraship communications (table 1). The purpose of the accompanying diagram is to show *those circuits* which, are *commonly used* by each individual, *not* the number *available*.

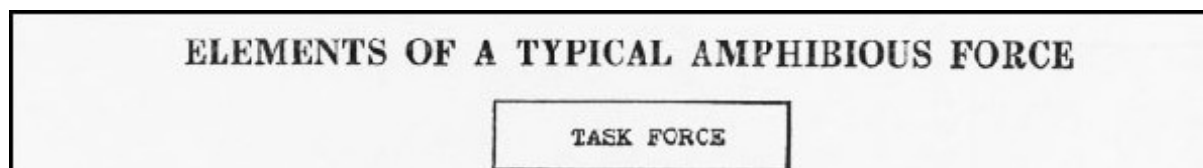
TABLE 1.--AGC--Communication Diagram

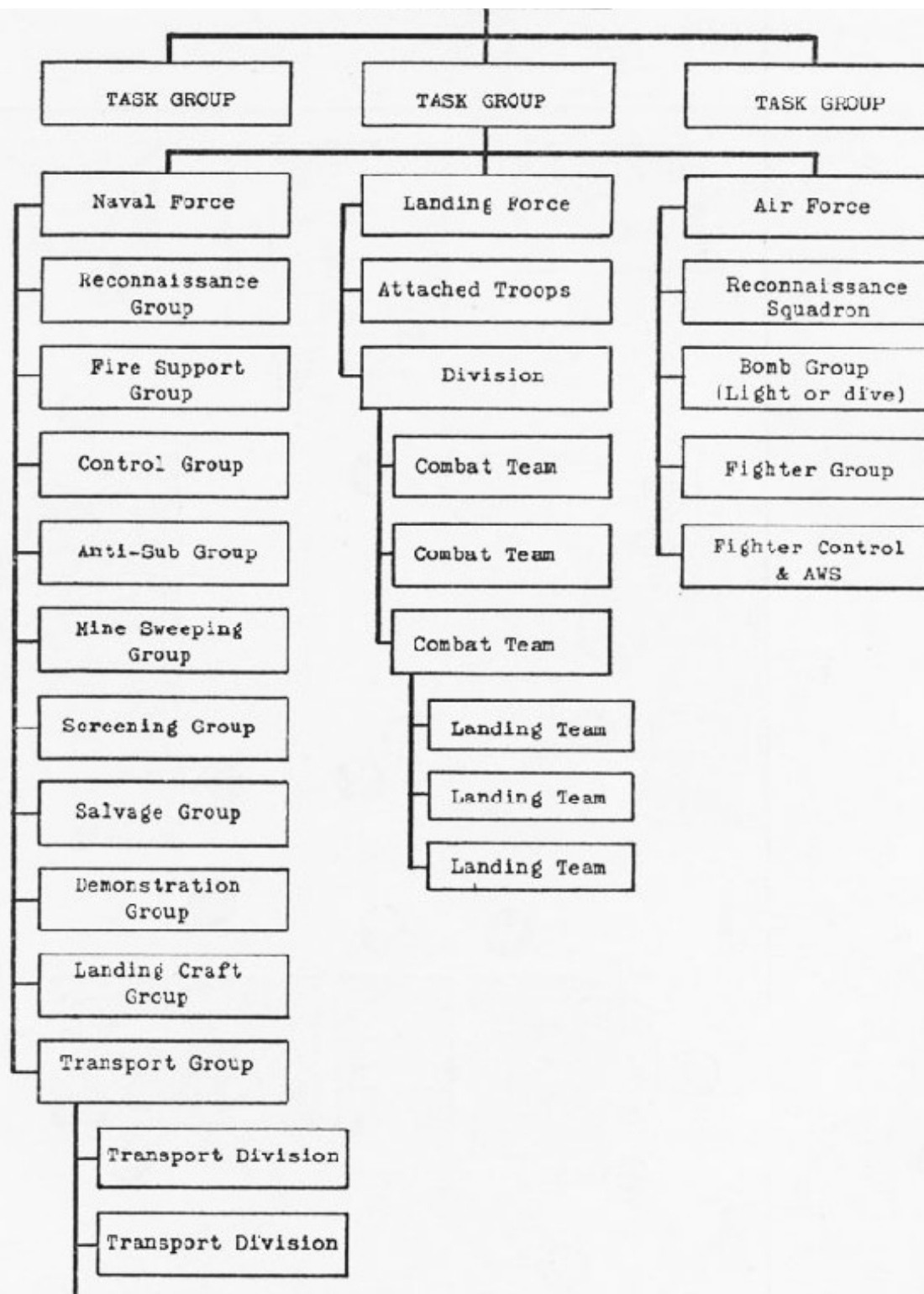
	JA	1,2,3,4,6, JF	JL JC	1JP	1JS	21JS	22JS	23JS	24JS	81JS	1JV	1, 4JW	JX	49JY	X6J	21, 22, 24MC	VHF & UHF
Evaluator	■	■			■					■			■			■	■
CIC officer	■	■			■					■			■			■	■
Fighter director										■			■			■	■
Assistant fighter director													■			■	■
Radar control officer					■	■	■	■	■				■				■
Geographic plot officer						■	■	■	■	■							

Assistant geographic plotter						■	■	■	■	■							
Geographic recorder						■	■	■	■	■							
Summary plotters						■	■	■	■								
Intercept plotters						■	■	■	■								
DR plotter			■			■	■	■	■								■
Surface plotter						■	■	■	■								
Assistant surface plotter						■	■	■	■								
Surface status board keeper																	
Air status board keeper																	■
Gunnery liaison officer				■							■		■				
Radar supervisor						■	■	■	■	■						■	
SG operator and stand-by						■	■	■	■							■	
SK operator and stand-by						■	■	■	■							■	
SP operator and stand-bys						■	■	■	■							■	
Precision PPI operator						■	■	■	■							■	
Radio recorders <sup>1</sup>													■				■
JA talker	■																
JL talker			■														
JF talker		■															
Flag liaison officer		■															■

<sup>1</sup>. Additional radio recorders supplied as the occasion demands.

ELEMENTS OF A TYPICAL AMPHIBIOUS FORCE





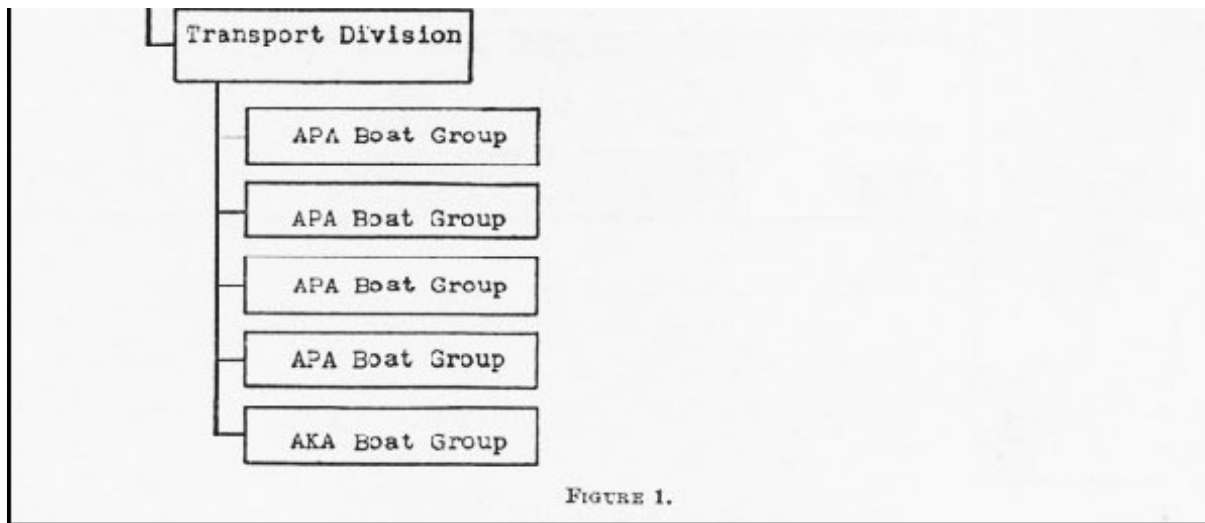
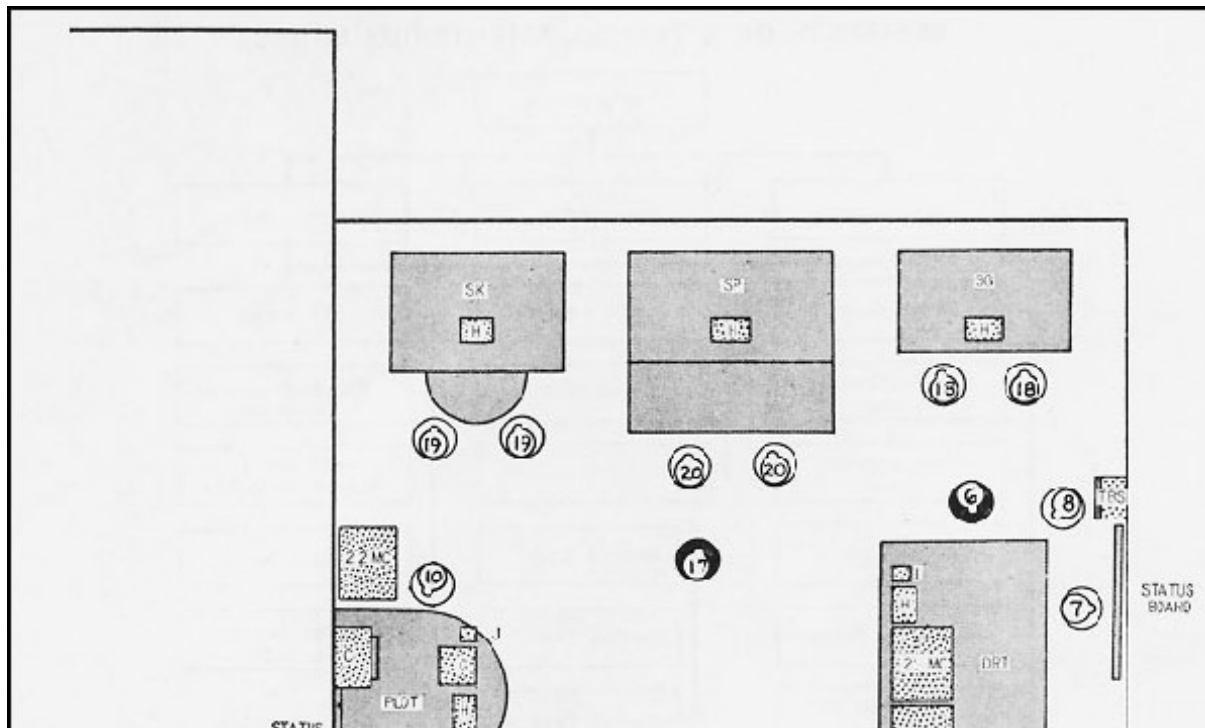


Figure 1.

--47--

COMINCH P-013



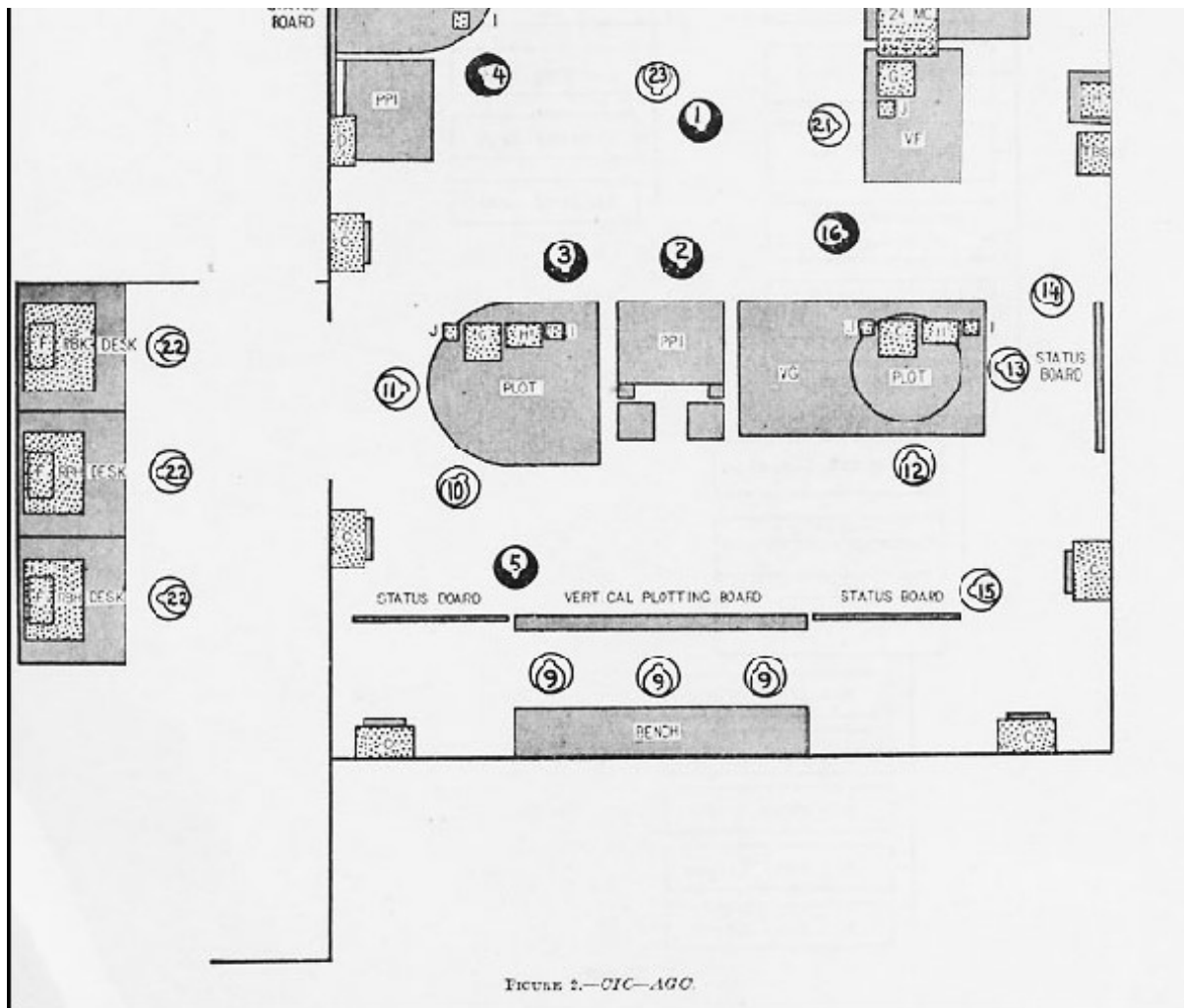


Figure 2.--CIC--AGC.

--48--

COMINCH P-013

CIC--AGC

PERSONNEL LEGEND

EQUIPMENT LEGEND

1. Evaluator.
2. CIC officer.
3. Fighter director.
4. Assistant fighter director.
5. Radar control officer.
6. Geographic plot officer.
7. Assistant geographic plotter.
8. Geographic recorder.
9. Summary plotters.
10. Intercept plotters.
11. DR plotters.
12. Surface plotter.
13. Assistant surface plotter.
14. Surface status board keeper.
15. Air status board keeper.
16. Gunnery liaison officer.
17. Radar supervisor.
18. SG operator and standby.
19. SK operator and standby.
20. SP operators and standbys.
21. Precision PPI operator.
22. Radio recorders.
23. JA talker.
24. JL talker.

- C. Radiophone unit and speaker amplifier.
- D. Wind direction and velocity indicator.
- F. Speaker.
- G. Radiophone selector switch
- H. Sound-powered selector switch
- I. Sound-powered handset
- J. Radiophone handset.

--49--

### COMINCH P-013

5142. *Equipment used for intership radio communications.* The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous channels.

Equipment	Frequency	Examples of use
2 remote control transmitters and speakers.	VHF	Maneuvering and emergency warning.
4 transmitters and receivers.	VHF	Fighter net, inter-CIC and support aircraft direction.
4 10-channel transmitters with 2 10-channel receivers.	VHF	Aircraft control force (group) CIC circuit.
2 radio telephone units (R, P, U.) (transmit and receive).	VHF, HF	Fighter net, CIC circuit and local air warning.
3 radio receivers.	HF, VHF	General purpose.



5150. *Operational organization of CIC.* Officers and men having their battle stations in CIC or assigned as watch officers should be carefully trained at a CIC training center.

5151. Diagram of battle bill and condition watches ([table 2](#)).

5152. *Duties and Stations of CIC Personnel.*

a. Evaluator:

1. The evaluator should be an experienced officer charged with the general responsibility for operation of the CIC at general quarters. This normally requires that the executive officer or navigator act as evaluator and have the CIC as his battle station.

--50--

COMINCH P-013

TABLE 2.--AGC-CIC Watch Bill

Station	Condition I		Condition I A			
	Officers	Men	Officers	Men	Officers	Men
Evaluator	1		1			
CIC officer	1				1	
Fighter director	1		1			
Assistant fighter director	1				1	
Radar control officer	1		1		1	
Geographic plot officer	1		1		1	
Assistant geographic plotter		1				
Geographic recorder		1				
Summary plotters		3		3		3
Intercept plotters		2		1		1
DR plotter		1		1		1
Surface plotter		1		1		1
Assistant surface plotter		1				
Surface status board keeper		1		1		1

Air status board keeper		1		1		1
Gunnery liaison officer <sup>1</sup>	1		1		1	
Radar supervisor	1					
SG operator and standby <sup>2</sup>		2		2		2
SK operator and standby		2		2		2
SP operators and standbys		4		4		4
Precision PPI operator		1		1		1
Radio recorders <sup>3</sup>		3		3		3
JA talker		1		1		1
JL talker		1		1		1
JF talker (if flag embarked)		1		1		1
Flag liaison officer (if flag embarked)	1		1			1

Station	Condition II and III	
	Officers	Men
CIC watch officer	1	
Radar control officer	1	
Geographic plotter		1
Surface plotter		1
Summary plotters		2
Intercept plotter		1
SG operator and standby <sup>2</sup>		2
SK operator and standby		2
SP operator and standby		4
JA talker		1

<sup>1</sup> Officers supplied by other divisions if necessary.

<sup>2</sup> Omit in those vessels with SG indicators installed outside of CIC. Target designation switchboard manned by one of the talkers.

<sup>3</sup> Additional radio recorders supplied as the occasion demands. During condition III, duties of personnel should be combined as complement requires.

**COMINCH P-013**

2. The evaluator's station should have a selector switch to the principal sound power circuits with call-up buttons to local air (joint ops), staff watch officer's shelter, pilot house, intelligence office, joint operations control, and war command room.
- b. CIC officer:
1. The CIC officer should be an experienced officer, qualified in all phases of CIC work. He is responsible for the training and administration of the combat information center. He should be qualified to take over the evaluator's position at general quarters when that officer is required elsewhere.
  2. The CIC officer's station should have a selector switch to the same sound power circuits as the evaluator. In addition, his station should have a voice radio selector switch connected with the principal transceivers and transmitters. The MC circuits and ship's service telephone should be convenient for his use.
  3. The CIC officer normally should not stand condition watches but will be on call at any time.
- c. Fighter director officer:
1. The fighter director will be directed by the evaluator or CIC officer to take over the responsibility for interception of a specific raid threatening our forces. He should alternate with the CIC officer during extended general quarters (Condition I A) and act as evaluator during the absence of both the CIC officer and the evaluator.
  2. The fighter director station should have a voice distribution system utilizing all VHF channels used for aircraft control and inter-CIC reporting.
  3. The fighter director normally should not stand condition watches but will be on call at any time in event enemy aircraft threaten our forces.
- d. Assistant fighter director officer:
1. The assistant fighter director should be an officer qualified to conduct the interception of enemy aircraft. He should supervise the intercept plot and handle visual fighter direction if the necessity arises.
- e. Summary plotters and the radar control officer:
1. The summary plotters will man the vertical plotting board. The men will plot radar, radio, and lookout information on the back of the transparent plot, and the radar control officer may filter this information when necessary. The radar control officer should see that all air information is available and assist the evaluator.

2. Sound-powered radar circuits are available to the summary plotters. The radar control officer should have a radio phone selector switch and the necessary sound powered outlets available.

f. Geographic plotters:

1. The geographic plot officer is a CIC watch officer who supervises the plotting on the DRT and the surface plot as well as the solution of surface tactical problems. He should see

--52--

---

**COMINCH P-013**

that all information is readily available and assist the evaluator in every way possible. An enlisted man assists him.

g. Gunnery liaison officer:

1. The gunnery liaison officer should be an officer from the gunnery department who should stand watch in CIC at general quarters. He should be responsible for passing to gunnery control all information required. The lookout talker may assist the gunnery liaison officer.
2. The gunnery liaison officer's station should include sound-powered telephone selector switch with radar, gunnery, and command circuits.

h. Surface plotter:

1. The surface plotter may be an enlisted man who keeps the surface plot up-to-date under the direction of the geographic plot officer.

i. Intercept plotters and DR plotters:

1. The intercept plotters should be enlisted men who will plot the track of enemy raids and DR plotters should dead reckon friendly fighters sent to intercept. They are under the supervision of the assistant fighter director.

j. Status board keepers:

1. The status board keepers will be enlisted men who will handle the surface and air status boards respectively. The geographic plot officer should supervise recording on the surface status boards and the assistant fighter director should supervise the keeping of the air status boards.
2. The surface status board keeper should have the low angle search radar circuits available. The air status board keeper should have an outlet from the VHF equipment used for the fighter net.

k. Lookout talker:

1. The lookout talker should man the JL (or JC) sound power circuit and relay lookout and gunnery reports to CIC. He may plot air and surface contacts on the summary plot.

l. Radar operators:

1. The two radar operators are desirable at each radar during general quarters permitting continuous operation with one man on the set for 30 minutes and then resting 30 minutes while the other takes over. During condition watches the radar operators should rotate duty with the enlisted talkers and plotters.

5153. During condition II and III watches there should be two officers stationed in the CIC. The CIC watch officer in charge should act as evaluator and coordinate the functions of the CIC. The assistant CIC watch officer will aid him in all respects, act as radar control officer when necessary, supervise plotting, and provide the solution of tactical problems.

5160. *Joint operations room.*

A thorough knowledge of facilities and operation of the joint operations room is necessary for CIC personnel, if they are to be of maximum value.

5161. This room is usually located on the main deck, amidships, forward of the ship's wardroom and just aft of the CIC. Here the staff officers of the Army (Marines), Navy and air forces of either service coordinate the employment.

--53--

---

**COMINCH P-013**

in detail of the forces participating and maintain and evaluate the complete picture of the battle situation.

5200. *The CIC in a Relief Headquarters Command Ship (RAGC).*

5201. A RAGC is a vessel designed for serving as the relief flagship of the amphibious force commander. It will usually be an APA with modifications to accommodate a flag.

5210. *Functions, duties and responsibilities of CIC.*

5211. The general functions of CIC are the same as those listed in parts II, III, and IV of this publication.

5212. The duties and responsibilities of CIC on a RAGC are similar to those of any other ship. When a flag is aboard, the work in CIC should be closely coordinated with the work of the staff which will depend upon CIC for much information.

5220. *Administrative organization of CIC.* (Pending decision.)

5230. *Diagram of CIC (omitted).*

5240. *Communications in CIC.*

5241. *Diagram of sound power and other intraship communications (omitted).*

5242. Equipment used for intership communications in or adjacent to CIC. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous channels.

Equipment	Frequency	Examples of use
2 remote control transmitters and speakers.	VHF	Maneuvering and emergency warning.
2 transmitters and receivers,	VHF	Inter-CIC and aircraft control.
1 10-channel transmitter with 2 10-channel receivers.	VHF	Aircraft control, force (group) CIC circuit.
2 radio telephone units (RPU) (transmit and receive).	HF	Aircraft control, secondary CIC circuit and local air warning.
3 radio receivers.	HF, VHF	General purpose.

5250. *Operational organization of CIC.*

5251. Battle bill and condition watches ([table 3](#)).

5252. Duties and stations of CIC personnel: Similar to those of personnel on a AGC (see par. 5152).

5253. During condition II and III watches there should be one officer stationed in CIC who should act as evaluator and coordinate the functions of CIC He will supervise the work of the enlisted men on watch.

TABLE 3.--RAGC-CIC Watch Bill

Station	Condition I		Condition I A			
	Officers	Men	Officers	Men	Officers	Men
Evaluator	1		1			

CIC officer	1			1	
Fighter director	1		1		
Assistant fighter director	1			1	
Radar control officer	1		1	1	
Geographic plotter		1		1	1
Geographic recorder		1			
Summary plotters		3		2	2
Intercept plotters		2		1	1
DR plotter		1		1	1
Surface plotter		1			
Status board keeper		1			
Gunnery liaison officer <sup>1</sup>	1		1	1	
SG operator and standby		2		1	1
SK operator and standby		2		1	1
Radio recorders <sup>2</sup>		3		2	2
JA talker		1		1	1
JL talker		1		1	1
JF talker (if flag embarked)		1		1	1
Flag liaison officer (if flag embarked)	1		1		1

Station	Condition II and III	
	Officers	Men
CIC watch officer	1	
Geographic plotter		1
Summary plotters		2
Intercept plotter		1
SG operator and standby		1
SK operator and standby		1
JA talker		1
JL talker		1

<sup>1</sup> Officers supplied by other divisions if necessary.

<sup>2</sup> Additional radio recorders supplied as the occasion demands. During condition III, duties of personnel should be combined as complement requires. Target designation switchboard manned by one of the talkers.

--55--

COMINCH P-013

**5300. The CIC in an Attack Transport, Attack Cargo Ship and Destroyer Transport (APA, AKA, APD).**

5301. These vessels are designed as troop transports and cargo ships to be used during amphibious operations.

5310. *Functions, duties, and responsibilities of CIC.*

5311. The combat information centers on an APA, AKA, or APD should be organized to perform the functions listed in parts II, III, and IV of this publication.

5312. Special duties and responsibilities:

a. Essentially the duties and responsibilities of CIC on these vessels are similar to those of any other type of ship. If the vessel acts as a group or division flagship the staff will rely on CIC for much information, and the work in CIC should be closely coordinated with that of the staff.

b. Boat wave tracking:

The function of boat wave tracking is performed by these types of vessels. In an amphibious operation the waves of assault boats must be carefully tracked by the parent ship and all interested stations kept informed of their progress toward the beach. It is possible to obtain from a good plot:

1. Course of boats to the beach or line of departure; whether they will reach the correct location.
2. Speed of waves; whether they will arrive at destination on time.
3. Position of marker, control, and support vessels.

5320. *The administrative organization of CIC.* (Pending decision.)

5330. *Diagram of CIC* ([fig. 3](#)).

5340. *Communications of CIC.*

5341. Diagram of sound power and other intraship communications (table 4).



TABLE 4.--APA, AKA--Communication Diagram

	JA <sup>1</sup>	JL <sup>1</sup>	1, 2JP	21JS	22JS	51JS <sup>2</sup>	1JV	1JW	JX	X6J	21MC	VHF & HF
Evaluator	■					■	■		■		■	■
CIC officer	■		■			■	■	■	■		■	■
Geographic plotter				■	■							
Air plotter		■		■	■							
Surface (or summary) plotters				■	■							
Air search radar operator				■	■					■		
Surface search radar operator				■	■					■		
Radio recorder/operator									■			■
JA talker	■											
JL talker <sup>1</sup>		■										

<sup>1</sup> Combined on some vessels, in which event No. JL talker necessary.

<sup>2</sup> IF radio direction finder fitted.

5342. Equipment used for intership radio communications. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker

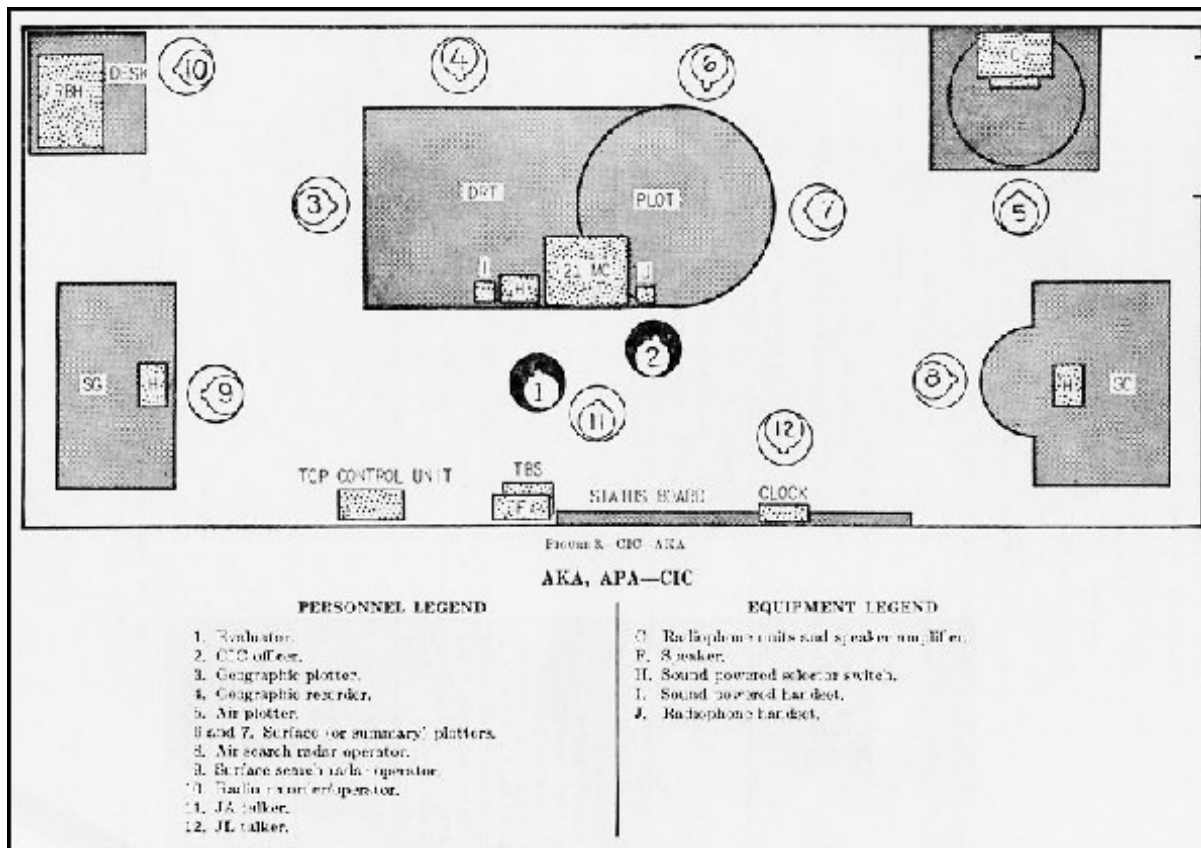


Figure 3. CIC--AKA, APA, APD

COMINCH P-013

amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous channels.

Equipment	Frequency	Examples of use	APA	AKA	APD
Remote control transmitter and speaker.	VHF	Maneuvering and emergency warning.	1	1	1
Remote control transmitter and speaker.	VHF	Aircraft control.	1	1	1
10-channel transmitters with 2 10-channel receivers.	VHF	Boat wave control.	1	1	1
Radio receiver.	HF	General.	1	1	1

5350. *Operational organization of CIC.*

5351. Battle bill and condition watches (TABLE 5).

5352. Duties and stations of CIC personnel similar to those on AGC and RAGC.

TABLE 5.--*APA-AKA-APD: Watch Bill*

Station	Condition I		Condition I A			
	Officers	Men	Officers	Men	Officers	Men
Evaluator	1		1			
CIC officer	1				1	
Geographic plotter		1		1		1
Geographic recorder		1				
Air plotter		1		1		1
Surface (or summary) plotters		2		1		1
Air search radar operator		1		1		1
Surface search radar operator		1		1		1
Radio recorder/operator <sup>1</sup>		1				
JA talker		1				
JL talker		1		1		1
Station	Condition II and III					
	Officers		Men			
CIC watch officer	1					
Geographic plotter			1			
Air plotter			1			
Surface search radar operator			1			
Air search radar operator			1			

<sup>1</sup> Additional radio recorders supplied as the occasion demands. During Condition III, duties of personnel should be combined as complement requires.

## 5400. **The CIC on a Battleship and Cruiser (BB, CB, CA, CL).**

5401. The functions of battleships and cruisers are essentially similar. Their main batteries of heavy, long-range guns are their chief reasons for being. These types of ships will be used mainly in surface actions and bombardments. They have also proved useful as an anti-aircraft screen for carrier units.

5410. *Functions, duties, and responsibilities of CIC.* The CIC is an agency for the collection of combat and tactical information by every possible means. Collected information is plotted, recorded, kept on file to facilitate its evaluation and dissemination to interested stations. Parts II, III, and IV of this publication deal with these general functions of CIC in detail.

5412. Special duties and responsibilities:

The following functions will be performed by CIC. The order of importance is dependent upon the tactical situation.

- a. Air search and warning.
- b. Surface search and warning.
- c. Recognition and identification.
- d. Target indication.
- e. Tracking.
- f. Plotting.
- g. Navigation.
- h. Control of aircraft.

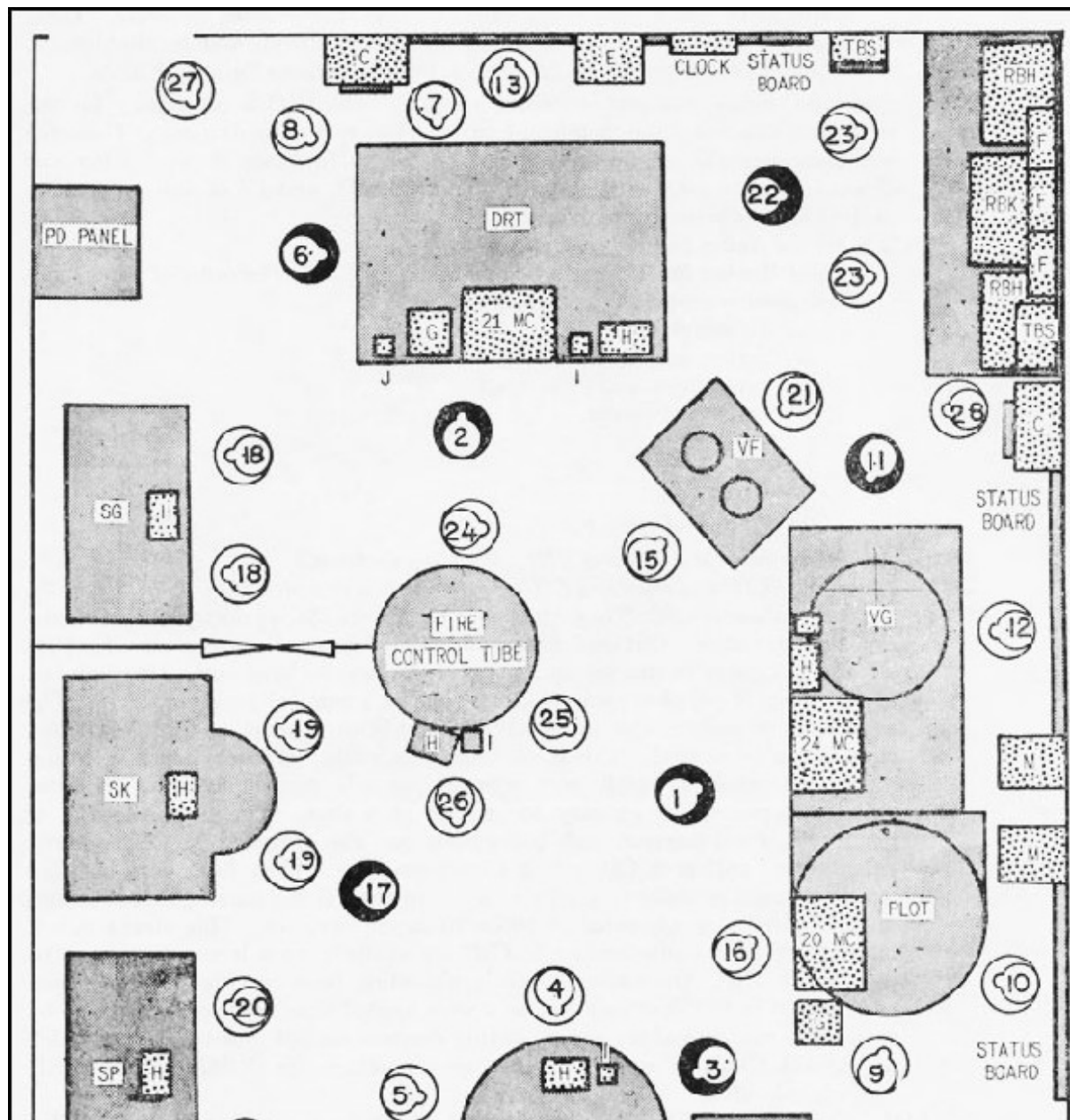
5420. *Administrative organization of CIC.* (Pending decision.)

5430. *Diagram of CIC and auxiliary CIC, charthouse and flag plot, (figs. 4, 5, 6 and 7).*

5440. *Communications in CIC.* The sound power phones are CIC's primary system of interior communication. Outlets for a large number of circuits have been placed in CIC. To give flexibility to this system, many of the circuits have outlets through one of two types of switches--the selector switch or a panel of toggle switches. The advantage of each is also its disadvantage. With a panel of toggle switches, circuits can be crossed. This is sometimes desirable. It leads, however, to unintentional crossing, which may seriously impede communications. Selector switches permit being on only one circuit at a time. The single, double, or quadruple sound-powered jack-box outlets are also installed in CIC. Many circuits have outlets in CIC which are seldom used. These have been installed for the unusual situations. CIC's today have most of the sound-powered outlets in CIC wired through panel of 10 or 20 toggle switches. This means that a majority of the circuits leading to CIC are available to a large number of the personnel in CIC. Operationally this is misleading, because with a few exceptions each person in CIC has only one or a very limited number of circuits which he uses. The purposes of the accompanying diagram are not to show circuits which are AVAILABLE to each person but circuits which are COMMONLY USED by each individual.

5441. Diagram of S/P Communications and other intraship communications. (See [table 6.](#))

COMINCH P-013



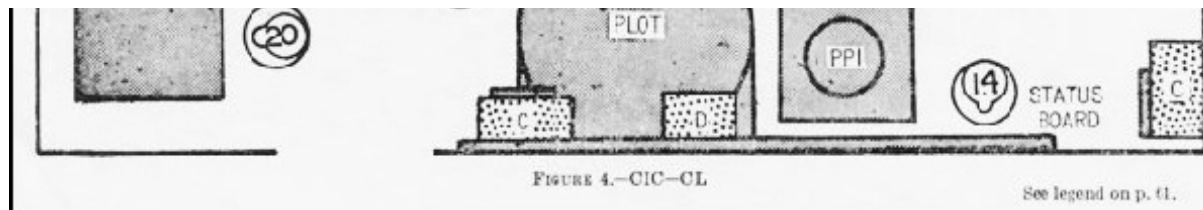


FIGURE 4.--CIC-CL

See legend on [page 61](#).

--60--

COMINCH P-013

**PERSONNEL LEGEND**

1. Evaluator.
2. CIC officer.
3. Fighter director.
4. DR plotter.
5. Intercept plotter.
6. Geographic plot officer.
7. Geographic plotter.
8. Geographic recorder.
9. Air plotter.
10. Assistant air plotter.
11. Surface plot officer.
12. Surface plotter.
13. Surface status board keeper.
14. Air status board keeper.
15. MB gunnery liaison officer.
16. AA gunnery liaison officer.
17. Radar supervisor.
18. Surface search operation and standby.
19. Air search radar and standby.
20. SP operators.
21. Precision PPI operator.
22. Communication officer.
23. Radio recorder/operator.
24. JS talker.
25. JA talker.
26. JL talker.
27. JW talker.

**CIC--CL**

**EQUIPMENT LEGEND**

- C. Radiophone unit and speaker amplifier.
- D. Wind direction and velocity indicator.
- E. Pitometer.
- F. Speaker.
- G. Radiophone selector switch.
- H. Sound powered selector switch.
- M. Remote range and bearing indicator.

### BB, CA, CB, CL--AUXILIARY CIC AND CHART HOUSE

#### PERSONNEL LEGEND

1. OinC auxiliary CIC.
2. Geographic plotter.
3. Assistant geographic plotter.
4. Geographic recorder.
5. Surface plotter.
6. Assistant surface plotter.
7. SG radar operator.
8. Standby SG operator.
9. VF operator.
10. Radio recorder.<sup>1</sup>
11. JA talker.
12. JL talker.
13. JC talker and status board keeper.
14. 5JP talker.
15. JS talker.

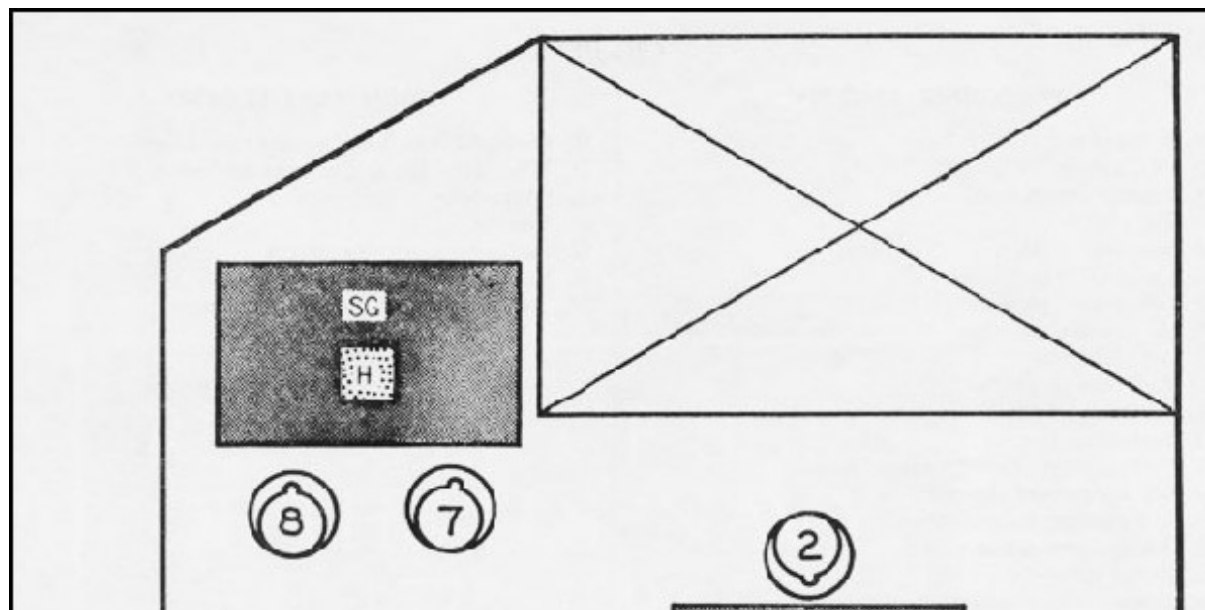
#### EQUIPMENT LEGEND

- C. Radiophone unit and speaker. Amplifier.
- H. Sound powered selector switch.
- I. Sound powered handset.
- J. Radiotelephone handset.

---

<sup>1</sup>Mans JX circuit if necessary.

COMINCH P-013





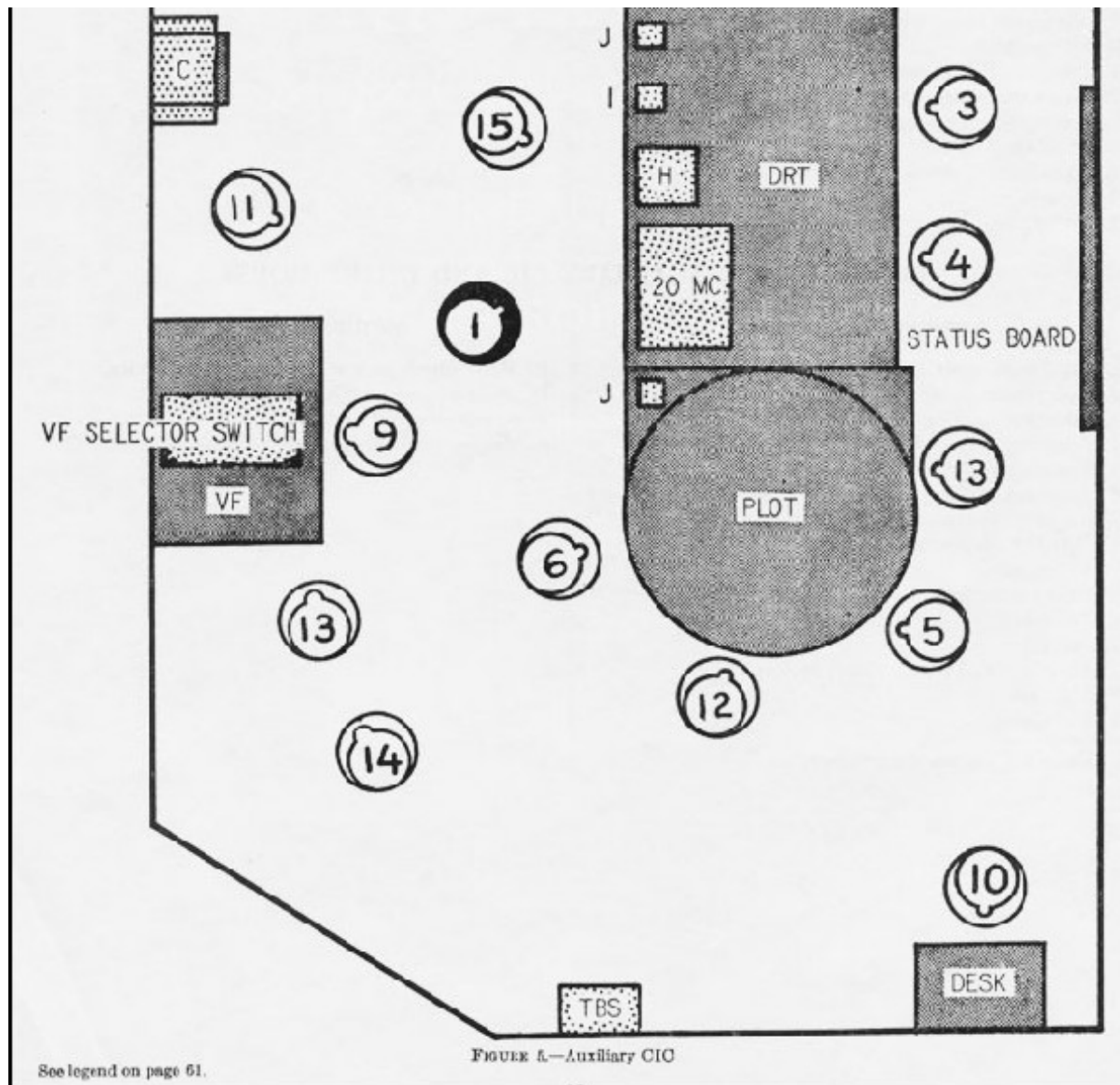


FIGURE 5.--Auxiliary CIC

See legend on [page 61](#).



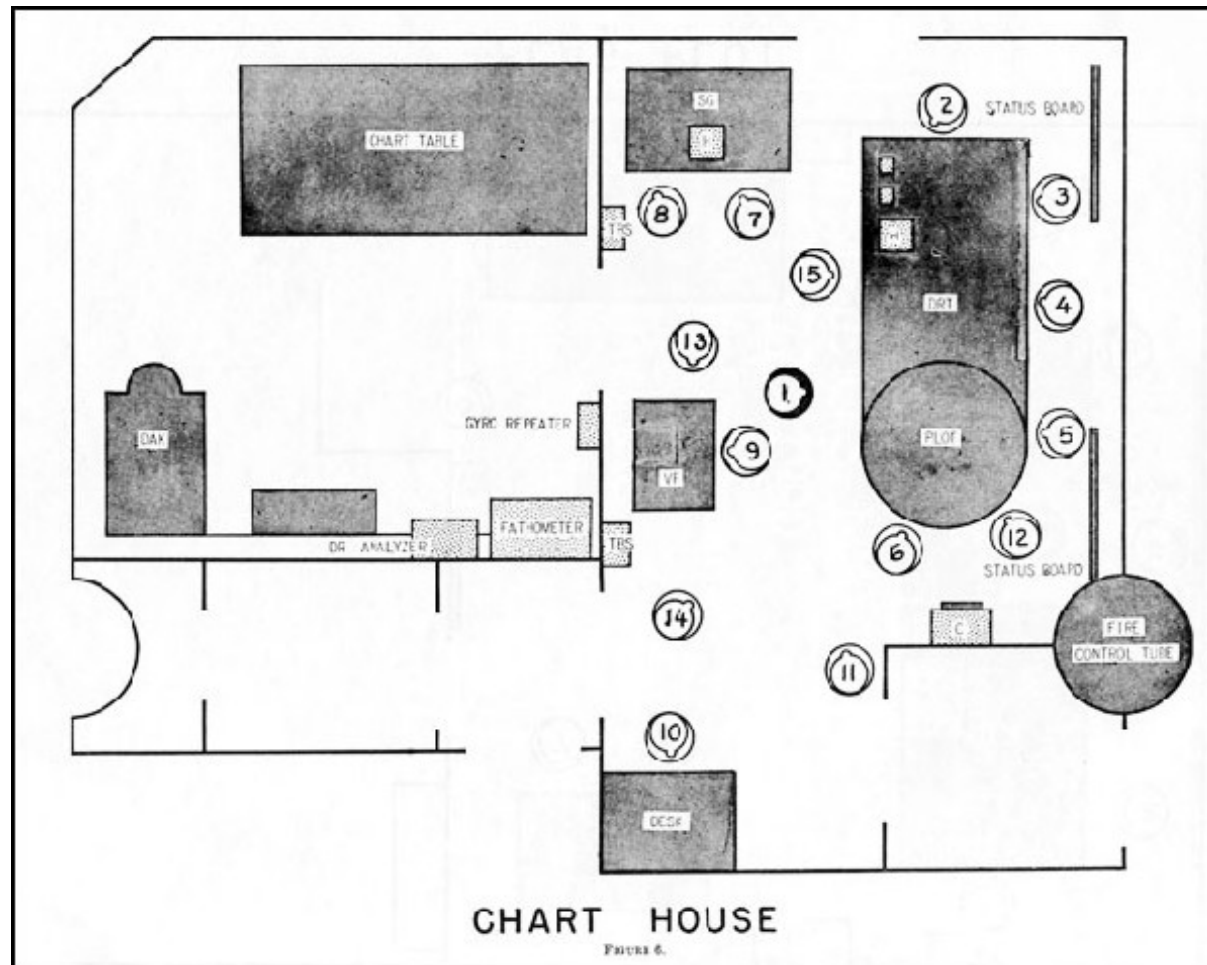


FIGURE 6.--CHART HOUSE

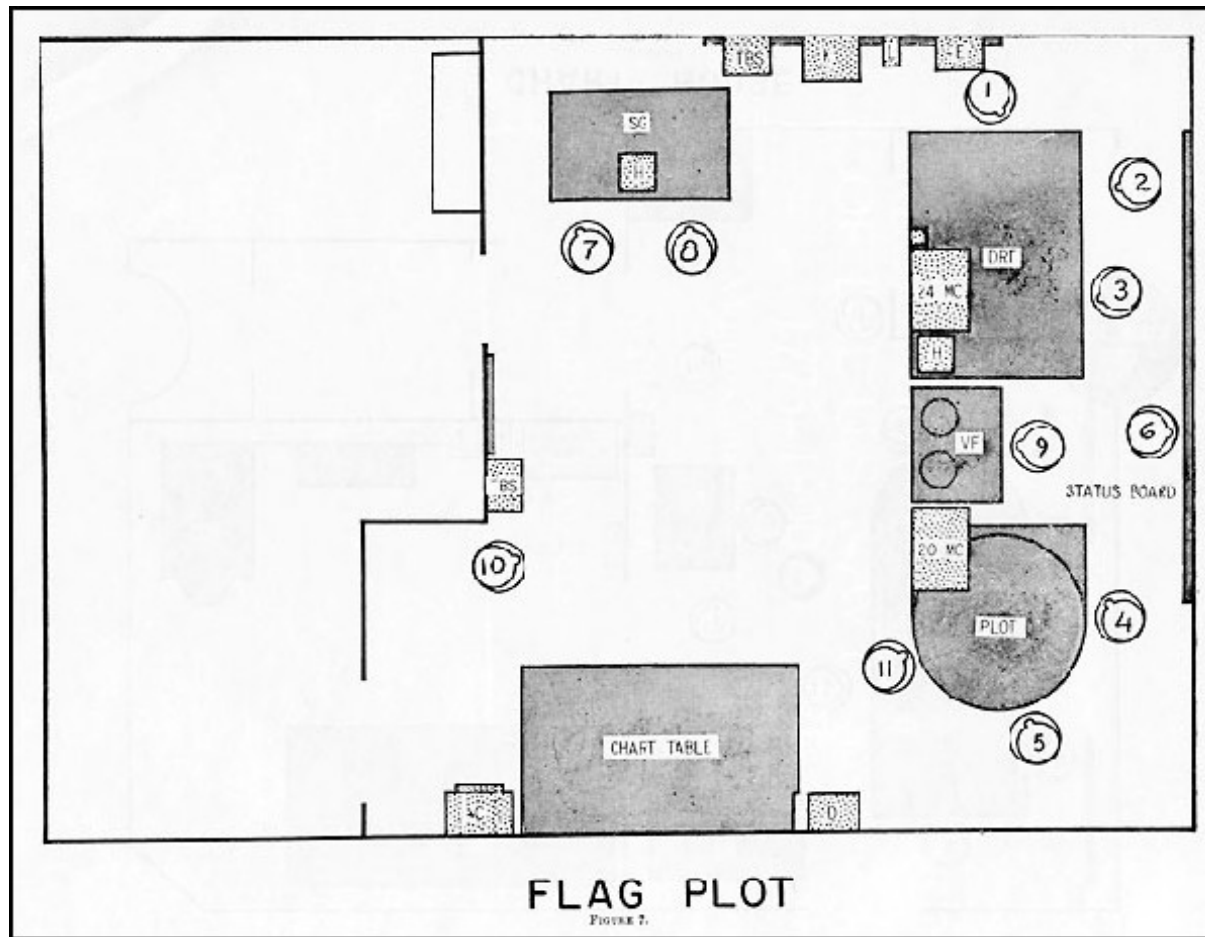


FIGURE 7.--FLAG PLOT

--64--

COMINCH P-013

BB, CB, CA, CL--FLAG PLOT

PERSONNEL LEGEND

EQUIPMENT LEGEND

1. Geographic plotter.
2. Assistant geographic plotter.
3. Geographic recorder.
4. Surface (or summary) plotter.
5. Assistant surface (or summary) plotter.
6. Status board keeper.
7. Surface search radar operator.
8. Standby surface search radar operator.
9. Precision PPI operator.
10. JF talker.
11. JS talker.

- C. Radiophone unit and speaker amplifier.
- D. Wind direction and velocity indicator.
- E. Pitometer.
- H. Sound-powered selector switch.
- I. Sound-powered handset.
- K. Remote bearing indicator.
- L. Remote range indicator.

COMINCH P-013

TABLE 6--BB, CB, CA, CL-Communication Diagram

	JA	JB 1, 2,	JC	JF	JL	JP 1, 2, 3, <sup>1</sup> 4, <sup>1</sup> 5,	JS 1	JS 21	JS 22	JS 23	JS 24	JS 25	JS 31 JS, 32	JS 41 JS, 42, 43, <sup>1</sup> 44 <sup>1</sup>	JS 71	JS 81	JS 1, 5JV	JW 1, 2, 3, 4, 5, 6, 7, <sup>1</sup> 8, <sup>1</sup>	JX 49 JY (4)	2JZ	XJA	X1JV	X1JW X2JW, X5JW, X6JW, X7JW, <sup>1</sup> X8JW <sup>1</sup>	XJX	X6J	MC 20, 21, 22, 24	VHF & HF	
Evaluator																												
CIC officer	■			■			■								■	■											■	■
Fighter director	■			■			■								■	■											■	■
Intercept plotter								■	■	■	■				■	■												■
DR plotter								■	■	■	■																	■
Geographic plot officer								■	■	■	■		■			■											■	
Assistant geographic plotter								■	■	■	■		■			■												
Geographic recorder								■	■	■	■		■			■												
Air plotter								■	■	■	■																	



JF talker (if flag embarked)																								
Flag liaison officer (if flag embarked)																								

<sup>1</sup> BB only.

**COMINCH P-013**

5442. Equipment used for intership radio communications. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment therefore would be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote Radio Phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving multitudinous channels.

<b>Radio</b>	<b>Frequency</b>	<b>Examples of use</b>
2 remote control transmitter-receiver units.	VHF	Primary warning and maneuvering.
2 transmitter and receiver units.	VHF	Aircraft control, Inter CIC circuit.
3 10-channel transmitter-receiver sets. <sup>1</sup>	VHF	Aircraft control, Force (Group) CIC circuit.
4 radio telephone units (R/P.U.) transmit and receive.	VHF, HF	Aircraft control, CIC circuit and local air warning, spotting circuit.
3 radio receivers.	VHF, HF	General purpose.

<sup>1</sup> (3 for BB, 2 for CA, CL)

5450. *Operational organization of CIC.* The standard organization of battleship and cruiser CIC's should provide for manning stations at general quarters and during condition watches. Due to currently existing differences in the arrangements of CIC equipment in ships of the fleet even of the same type, variations from the standard bill may be found.

5451. Battle Bill and Condition Watches of Auxiliary CIC (Chart House) and Flag Plot (tables [7](#), [8](#) and [9](#).)

**COMINCH P-013**

TABLE 7.--BB, CB, CA, CL--Watch Bill

<b>Station</b>	<b>Condition I</b>
----------------	--------------------

	<b>Officers</b>	<b>Men</b>
Evaluator	1	
CIC officer	1	
Fighter director	1	
Intercept plotter		1
D.R. plotter		1
Geographic plot officer	1	
Assistant geographic plotter		1
Geographic recorder		1
Air plotter		1
Assistant air plotter		1
Surface (or summary) plotter	1	
Assistant surface (or summary) plotter		1
Surface status board keeper		1
Air status board keeper		1
MB gunnery liaison officer <sup>3</sup>	1	
AA battery gunnery liaison officer <sup>3</sup>	1	
Radar supervisor	1	
S.G. operator and standby <sup>2</sup>		2
SK operator and standby		2
SP operators and standbys		4
Precision PPI operator		1
Radar switchboard operator <sup>4</sup>		1
Communications officer <sup>3</sup>	1	
Radio recorders/operators <sup>5</sup>		2
JS talker		1
JA talker		1
JL talker		1
JV talker		1
JW talker		1
JF talker (if flag embarked)		1
Flag liaison officer (if flag embarked)	1	
	<b>Condition II and III</b>	

	Officers	Men
CIC watch officer	1	
CIC watch officer	1	
Geographic plotter		1
Geographic recorder		1 <sup>1</sup>
Surface (or summary) plotter		1
Assistant surface (or summary) plotter		1 <sup>1</sup>
Air plotter		1
Assistant air plotter		1 <sup>1</sup>
SG operator and standby <sup>2</sup>		2
SK operator and standby		2
SP operator and standby		4
Precision PPI operator		1
Radar switchboard operator <sup>4</sup>		1
Radio recorder <sup>5</sup>		1 <sup>1</sup>
JS talker		1
JL talker		1

<sup>1</sup>BB only.

<sup>2</sup> Omit in those vessels with SG indicators installed only in Auxiliary CIC. Target designation switchboard manned by one of the talkers.

<sup>3</sup> Officers supplied by other divisions if necessary.

<sup>4</sup> Usually located outside of CIC.

<sup>5</sup> Additional radio recorders supplied as the occasion demands. During condition III, duties of personnel should be combined as complement requires.

COMINCH P-013

TABLE 8.--BB, CB, CA, CL: Auxiliary CIC (Chart House) Watch Bill

Station	Condition I	
	Officers	Men
OinC auxiliary CIC	1	

Geographic plotter		1
Assistant geographic plotter		1
Geographic recorder		1
Surface plotter		1
Assistant surface plotter		1
SG radar operator		1
Stand-by SG radar operator		1
VF operator		1
Radio recorder		1
JA talker		1
JL talker		1
JC talker and status board keeper		1
5JP Talker		1
JS Talker		1
	<b>Condition II and III</b>	
	<b>Officers</b>	<b>Men</b>
Surface plotter		1
SG radar operator		1
Stand-by SG radar operator		1
JS talker		1

Auxiliary CIC will not normally be manned during condition III except, in those vessels where the SP radar has replaced 1 of the 2 authorized SGs and the indicator of the remaining SG is located in auxiliary CIC.

COMINCH P-013

TABLE 9.--BB, CB, CA, CL: Flag Plot Watch Bill

Station	Condition I	
	Officers <sup>1</sup>	Men
Geographic plotter		1
Assistant geographic plotter		1
Geographic recorder		1
Surface (or summary) plotter		1



Assistant surface (or summary) plotter		1
Status board keeper		1
Surface search radar operator		1
Stand-by surface search radar operator		1
Precision PPI operator		1
JF talker		1
JS talker		1
	<b>Conditions II &amp; III</b>	
	<b>Officers<sup>1</sup></b>	<b>Men</b>
Surface (or summary) plotter		1
Surface search radar operator		1
Stand-by surface search radar operator		1
JF talker		1
JS talker		1

<sup>1</sup>Officers as assigned by Flag.

5452. Detailed duties.

a. Evaluator:

1. Require that immediate reports be made to him of pertinent information received from all sources, including radar, radio, internal communications systems, lookouts, and visual signals.
2. Require that CIC personnel coordinate their efforts to display and filter this information.
3. Furnish timely, properly evaluated, accurate information to the command and control stations, and be prepared to recommend a course of action based on evaluated information.
4. Consult directly with command via sound-power hand sets, MC circuits, or voice tubes.
5. Be thoroughly familiar with the capabilities and limitations of all radar and RCM equipment.
6. Assist command in conning the ship with regard to avoiding collision or grounding.

b. CIC officer:

1. Be thoroughly familiar with the duties and responsibilities of the evaluator, and be prepared to assume these duties in the absence of the evaluator.

**COMINCH P-013**

2. Maintain a check on operating methods to insure maximum effective search consistent with the prescribed condition of radar silence.
3. Keep operators informed of expected sectors of contact with friendly or enemy units.
4. Receive and correlate information from lookouts, radio and flag signals.
5. Check on radar contacts reported as side lobes, ionized clouds, land, double echoes, interference, and countermeasures.
6. Insure that main and secondary battery fire control radars, directors, and automatic weapons are coached on to designated targets.
7. Insure that all personnel concerned are informed of the designations give to the various raids.
8. Insure rapid dissemination of information to control stations.
9. Select surface contacts to be tracked, with particular attention to those nearest or most dangerous.
10. Keep command and the control stations informed of the progress of interception problems.
11. Assist the navigator when operating near land by selecting suitable landmarks for radar fixes.
12. Assist the evaluator in the performance of control functions delegated to CIC.
13. Utilize the VF (precision PPI) for analyzing radar contacts.
14. Be ready to render assistance in furnishing maneuvering and tactical data.

**c. Fighter director:**

1. Protect his ship or force against air attacks by effective use of the fighters assigned to his control.
2. Control communications with combat air patrol, and if necessary, the inter FD channel with force (group) CIC officer and ship's CIC officer of other units.
3. Control the operation of the air search radar.

4. Be prepared to direct planes engaged in antisubmarine patrol, and perform that function when ordered.
5. Know the responsibilities of force (group, unit) and ship C.I.C. as laid down in USF 10.
6. When not handling fighter direction, coordinate air plotting and the dissemination of air information as directed by the evaluator.

d. Intercept plotter:

1. Maintain close communications with the air search radar.
2. Plot contacts with neatness, accuracy, and speed, in accordance with standard plotting procedure.
3. Enter amplifying information along track of target.
4. Keep plotting board clear of unnecessary detail.
5. Supervise other air plotters.
6. Record number of friendly planes in the air with their search sectors.

e. DR plotter:

1. Keep a DR plot of own fighters.
2. Wear headset connected to fighter net channel.

--71--

---

**COMINCH P-013**

3. Know thoroughly the technique of DR as prescribed in the Air Plotting Manual. (RADFOUR)

f. Geographic plotter:

1. Maintain a continuous plot on the DRT of own and enemy ships to determine their course and speed and any changes therein.
2. Check scale setting of DRT frequently.
3. Supply bearings and ranges course and speed for initial rangekeeper solution to gunnery liaison officer if requested.

4. Provide ranges and time interval to initial firing point when requested.
5. Correct DRT bug during bombardment for set and drift determined by navigational fixes.
6. Keep the evaluator informed of all important data.

g. Assistant geographic plotter:

1. Works with the geographic plotter as a teammate to speed the plotting.
2. Label plots, determine courses and speeds, etc.
3. May be designated to operate the teleplotter. However, an additional man may be necessary for this.

h. Air plotter:

1. Plot all air contacts with proper labels including raid designations, courses and speeds, composition, angles, etc.
2. Provide such information as possible of sun, force and direction of wind, etc.
3. Keep a plot of the tactical air situation, including sector of probable enemy approach, bearing and distance of own and enemy bases, and own planes in the air.
4. Keep the evaluator and AA gunnery liaison officer informed of all important data or change occurring in the plot.
5. Check with surface search radar for spotting low flying aircraft.

i. Assistant air plotter:

The assistant air plotter should assist the air plotter in maintaining a continuous plot of all air targets reported by the air search radar, lookouts, or radio.

j. The surface (or summary) plotter:

It is often desirable that he be an officer. He will be the surface plotter if a surface plot display is being kept on the plotting board he is manning, (i.e. all surface and air units, friendly and enemy). He should:

1. Keep a continuous track of all surface contacts (or all surface and air contacts), to keep the cognizant personnel in CIC informed of the identity of any surface radar contact (if summary plotter, any surface or air contact) in question.
2. Aid the gunnery liaison officers in preventing the fire of own ship from endangering friendly ships.
3. Maintain a relative plot of own disposition.
4. Indicate location and disposition of friendly ships, pickets, and stragglers.

**COMINCH P-013**

5. Maintain maneuvering board plot of own ship's course and speed, and be prepared to furnish tactical data.
  6. Provide ranges and bearings of sound contacts by escorts, in relation to self and to fleet center.
  7. Plot such data as rain clouds, land, wind speed, and direction.
  8. Plot reports from radar operators and lookouts.
  9. Coordinate lookout information, radio information, and radar information for identification and composition.
- k. Assistant surface (or summary) plotter:
1. Assists the surface (or summary) plotter in the execution of his duties as outlined above.
- l. Recorders--geographic: surface (or summary). The geographic and surface (or summary) recorders should keep an accurate record of radar ranges and bearings. use of VG (projection PPI) with tracking paper may obviate the necessity of having recorders. If proper plotting procedure is used, the tracing paper on the VG will preserve the record. This together with equipment for photographing the PPI will aid in keeping a record of the action.
- Tracing paper on the DRT may give sufficient information to reconstruct an action; however, the geographic plotter is often in need of a reference if he misses a range or bearing. If the raid time, bearing and radar range data is presented conveniently for all concerned on the surface status board, it will not be necessary to have a surface recorder as such. When this, due to the physical limitations of CIC's, is not applicable, it is necessary to provide a recorder for either the geographic plotter or both geographic plotter and surface (or summary) plotter.
- m. Surface status board keeper. The surface status board keeper should be under the supervision of either the surface (summary) plot officer or the geographic plot officer. He should:
1. Maintain an up-to-date record of the tactical data on the board.
  2. Record data on surface raids, if board is designed to include such data.
- n. Air status board keeper. The air status board keeper should be under the supervision of the fighter director officer. He should:
1. Maintain an up-to-date record of all intercept information.

2. Keep posted such information as condition of weather, clouds, states of sea, time of sun and moon rise and set, current, drift, force of wind, etc.
  3. Record information on physical condition of fighter planes, ranges and bearings of enemy planes and force, losses, status of own carriers and patrols.
- o. M.B. (main battery) gunnery liaison officer. M.B. gunnery liaison officer shall by observation of the surface search radars, the geographic plot, the VF, the surface or summary plot:
1. Keep the evaluator and gun control stations informed of the surface gunnery situation.
  2. Analyze all contacts by checking IFF indications, lookouts reports, and the known location of own ships and land masses.
  3. Inform the AA liaison officer of any air targets appearing on surface radar scope.

--73--

---

**COMINCH P-013**

4. Check CIC's computation of courses and speeds of targets being tracked against M.B. plot computer-solution.
  5. Coach directors on target as ordered.
  6. Check director train and range indicators to insure they are on designated targets.
  7. Warn evaluator and gun control stations when own ships are in danger of own firing.
  8. During shore bombardment (indirect fire), give advanced range, bearing, and elevation of the target.
- p. Antiaircraft (secondary battery) gunnery liaison officer.
1. Keep the evaluator and air defense officer informed of the developments in the air situation.
  2. Make every effort to determine the character of contacts by checking for IFF, approach bearings, altitudes, course, speed, identification by lookouts, and location of own air patrols.
  3. Coach AA fire control directors on to designated targets employing target designators or the appropriate telephone circuits.
  4. Insure that directors are on designated targets by checking target range and bearing indicators located in CIC.

5. During low visibility torpedo attacks insure that AA guns do not fire on bearings which endanger other ships of the screen.
6. Follow the same procedure for the secondary as MB gunnery liaison officer does for the main battery when the secondary battery is firing on surface targets.

q. Surface and air search operators:

1. Maintain an alert search on the prescribed range scale, with the antenna rotating at the prescribed rate.
2. Report all contacts, amplifying initial reports as additional information becomes available.
3. Report all unusual or doubtful indications, and be able to recognize double echoes, side lobes, ionized clouds, second trip echoes, wake signals, interference jamming, window, land echoes, aircraft, and surface craft.
4. Check all contacts for IFF, when ordered, and identify the code.
5. Know disposition of ships in company.

r. Communications officer:

1. Supervise the watch on all radio circuits and inform the evaluator of all pertinent incoming messages.
2. Encodes and transmits messages as directed by evaluator (e.g., contact and amplifying reports).
3. Decodes messages received, notifying personnel concerned.
4. Be familiar with and have access to standard tactical instructions and the current operations and communications plans.

s. Radio recorders:

1. Should be proficient in keeping receivers tuned.
2. When desirable, they will be used for recording designated radio circuits which CIC is monitoring. If mechanical recorders are provided, they will operate these.

- t. Telephone talkers. Talkers must be carefully trained in proper S/P maintenance and procedure, in accordance "CominCh's Telephone Talkers Manual."
- u. Flag liaison officer. The flag liaison officer, if assigned, should observe all scopes, plots, and status boards, and consult with the evaluator, and provide the flag officer with all evaluated information needed.
- v. Officer in charge of auxiliary CIC. The officer in charge of CIC should be a qualified CIC watch officer and preferably a radar officer. He should:
  - 1. Supervise the operation and maintenance of radars and plots in auxiliary CIC.
  - 2. Provide assistance to CIC when needed.
  - 3. Be prepared to assume the most urgent functions of CIC in the event of damage to the main installations.
- w. Recognition officers. The recognition officer is an officer who has specialized in recognition training. He should be qualified in the operation of CIC and the mechanics of aircraft control and fighter direction. He should:
  - 1. Supervise the performance of the battle lookouts.
  - 2. Perform visual fighter direction when ordered.

5453. Condition watch organization. (See 5451).

- a. During condition of readiness watches, CIC shall be prepared to perform the same functions as during General Quarters, but with reduced personnel.
- b. The CIC watch officer shall perform the duties of the evaluator during condition watches. In addition he should:
  - 1. Perform the duties of CIC communications officer.
  - 2. Qualify as a radar operator.
  - 3. Conduct systematic training of condition watches personnel to perfect radar operation, and plotting techniques, as well as team training in the performance of all functions of CIC.
  - 4. Brief the relieving watch before relinquishing the watch.



**5500. The CIC on a Carrier (CV, CVB, CVL, CVE).**

5501. The aircraft carrier (CV, CVB, CVL, CVE) is designed for use as an operating base for aircraft which may be controlled offensively, and/or defensively by own carrier or by other control stations.

5510. *Functions, duties, and responsibilities of CIC.*

5511. The combat information center should be organized to perform the following functions. (Their order of importance is not determined by the order of listing, but varies with the tactical situation.)

- a. Air search and warning.
- b. Surface search and warning.
- c. Aircraft control.
- d. Recognition and identification.
- e. Plotting and tracking.
- f. Gunnery.
- g. Navigation.

These functions have been discussed in detail in parts II, III, and IV of this publication.

5512. In addition to the above general functions, the combat information center on carrier type ships, should be so designed as to perform the following special functions:

- a. Maintenance of complete records of all friendly air-borne aircraft (including mission, time of departure, and return of all strike groups).
- b. Communication with all air-borne aircraft.
- c. Control and coordination of all defensive fighter planes of a task group or task force.
- d. Control of, and assisting, all pilot-rescue planes or ships.

5520. *Administrative organization of CIC.* (Pending decision)

5530. *Diagram of CIC and air plot* (figs. [8](#), [9](#), and [10](#)).

5540. *Communications in CIC.*

5541. Intraship communications ([table 10](#)).

COMINCH P-013

TABLE 10--CV, CIC, and Air Pilot Communication Diagram

	JA	JF	1JG	2JC	X1 JG	JL	1, 2, 5 JP	1JS	21 JS	22 JS	23 JS	24 JS	25 JS	41 JS, 42 JS	71 JS	81 JS	1, 5JV	JX	49 JY	XJA	X1 JV	XJX	19, 20, 21, 22, 24 MC	VHF & HF
Evaluator	■	■						■							■	■		■					■	■
CIC officer	■	■	■	■				■							■	■		■					■	■
Fighter director															■	■		■					■	■
Assistant fighter director															■			■					■	■
Radar control officer								■	■	■	■	■	■		■			■						■
Geographic plotter									■	■	■	■	■			■								
Geographic recorder									■	■	■	■	■			■								
Summary plotters									■	■	■	■	■											
Intercept plotters									■	■	■	■	■											
DR plotter						■			■	■	■	■	■											
Surface plotter									■	■	■	■	■											
Assistant surface plotter									■	■	■	■	■											
Status board keeper			■	■																				■
Gunnery liaison officer							■											■						
Ship's information officer	■							■																
Radar supervisor									■	■	■	■	■		■								■	
Maintenance man									■	■	■	■	■										■	
SG operator and standby									■	■	■	■	■										■	
SK operator and standby									■	■	■	■	■										■	
SP/S.M. operators and standbys									■	■	■	■	■										■	

Precision PPI operator										■	■	■	■	■							■			
Radar switchboard operator														■								■		
Radio recorder/operator																								■
JA talker	■																							
JL talker								■																
JX talker																								
JF talker (if flag embarked)																								
Flag liaison officer (if flag embarked)																								■

5542. Intership communications. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous H.F. channels.

Equipment	Frequency	Examples of use
2 remote control transmitter-receivers	VHF	Maneuvering and emergency warning.
4 transmitters and receivers	VHF	Inter CIC, force (group) CIC circuit.
4 10-channel transmitter receivers <sup>1</sup>	VHF	Fighter net, aircraft control, force (group) CIC circuit.
8 radio telephone units (RPU) transmit and receive <sup>2</sup>	VHF, HF	Search and attack local air warning.
3 receivers	VHF, HF	General purpose.

<sup>1</sup> 2 for CVL, CVE.

<sup>2</sup> 6 for CVL, CVE

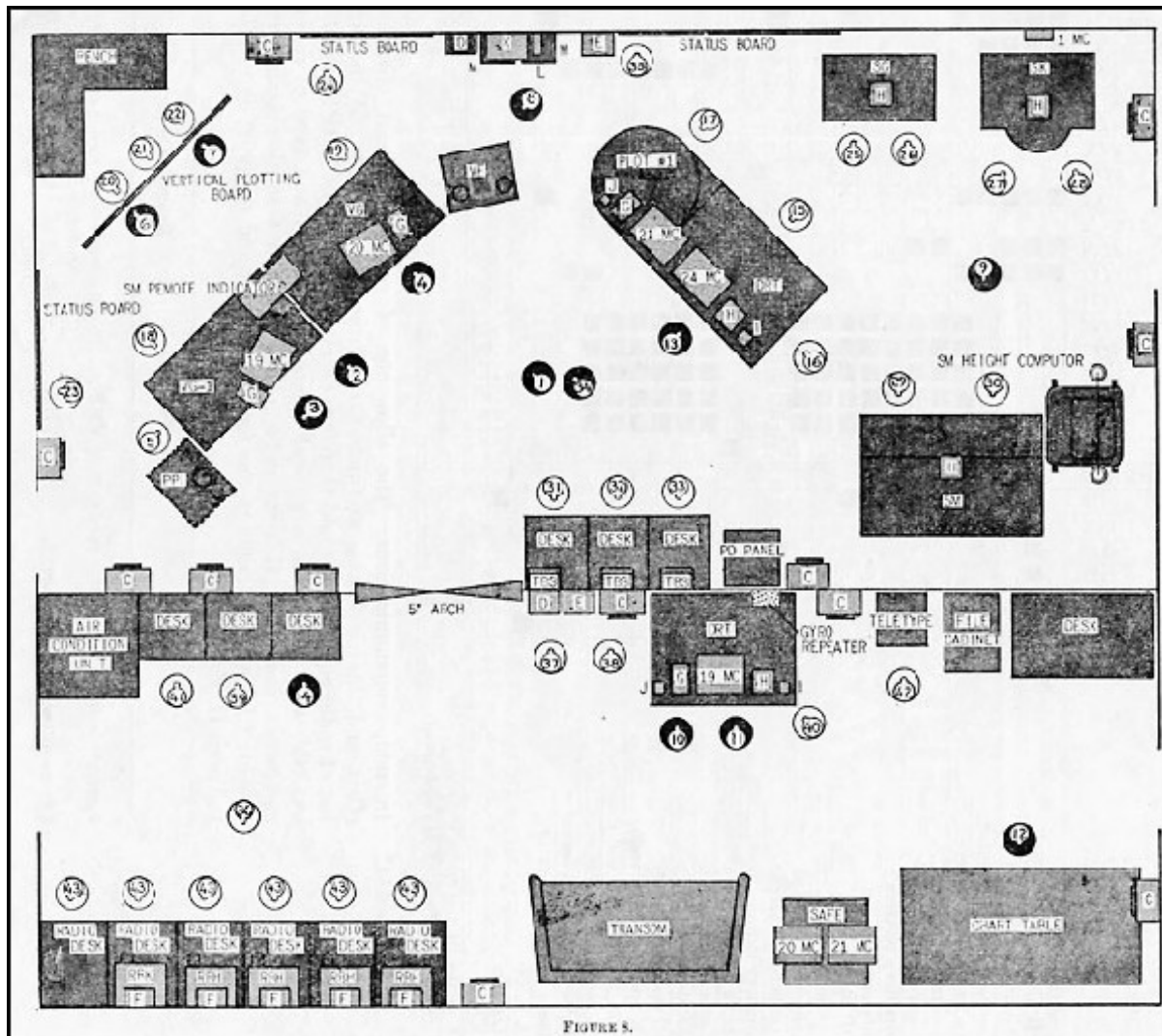


FIGURE 8.  
Figure 8.

--78--

COMINCH P-013

**PERSONNEL LEGEND**

1. Evaluator.
2. CIC officer.
3. Fighter director.

**CV CIC**

**EQUIPMENT LEGEND**

- A. Radiophone unit.
- B. Speaker amplifier.
- C. Radiophone unit and speaker amplifier.

4. Assistant fighter director.
5. D.R. plotter.
6. Ship's information officer.
7. Radar control officer.
8. Gunnery liaison officer.
9. Radar supervisor.
10. Air operations officer (air plot officer).
11. Assistant air operations officer (assistant air plot officer).
12. Assistant air operations officer (assistant air plot officer).
13. Geographic plot officer.
14. ACI officer.
15. Geographic plotter.
16. Surface recorder.
17. Surface plotter.
18. Intercept plotter (at VG).
19. Intercept plotter or surface plotter (at VG).
20. Summary plotter.
21. Summary plotter.
22. Summary plotter.
23. Status board keepers.
24. Status board keeper.
25. SG operator.
26. SG operator.
27. SK operator.
28. SK operator.
29. SM/SP operator.
30. SM/SP operator.
31. Radio operator/recorder.
32. Radio operator/recorder.
33. Radio operator/recorder.
34. JA talker.
35. JL talker.
36. JX talker.
37. 1JG talker.
38. 2JG talker.
39. Yeoman.

- D. Wind direction and velocity indicator.
- E. Pitometer.
- F. Speaker.
- G. Radiophone selector switch.
- H. Sound-powered selector switch.
- I. Sound-powered handset.
- J. Radiophone handset.
- K. Remote bearing indicator.
- L. Remote range indicator.
- M. Remote range and bearing indicator.

- 40. Messenger.
- 41. Aerology.
- 42. Teletype operator.
- 43. Radio operator/recorder.

COMINCH P-013

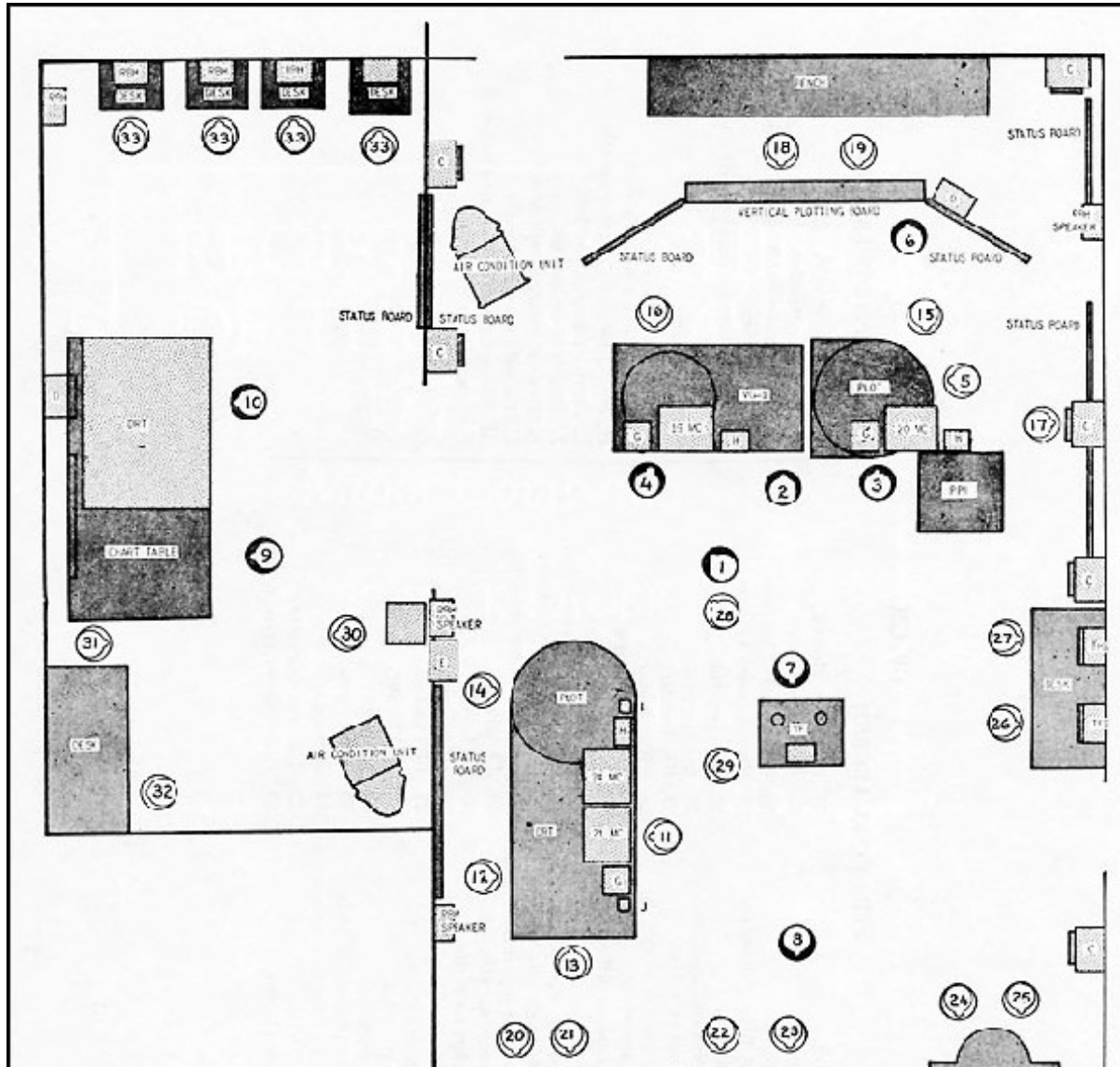




Figure 9.--CIC and AIR PLOT--CVE (105 Class)

--80--

COMINCH P-013

**PERSONNEL LEGEND**

1. Evaluator.
2. CIC officer.
3. Fighter director.
4. Assistant fighter director (and ships information officer).
5. DR plotter.
6. Radar control officer.
7. Gunnery liaison officer.
8. Radar supervisor.
9. Air operations officer (air plot officer).
10. Assistant air operations officer (assistant air plot officer).
11. Geographic plotter.
12. Assistant geographic plotter.
13. Geographic recorder.
14. Surface plotter.
15. Intercept plotter.
16. Intercept plotter.
17. Status board keeper.
18. Summary plotter.
19. Summary plotter.
20. SG operator.
21. SG operator.
22. SP operator.
23. SP operator.
24. SK operator.

**CVE CIC**

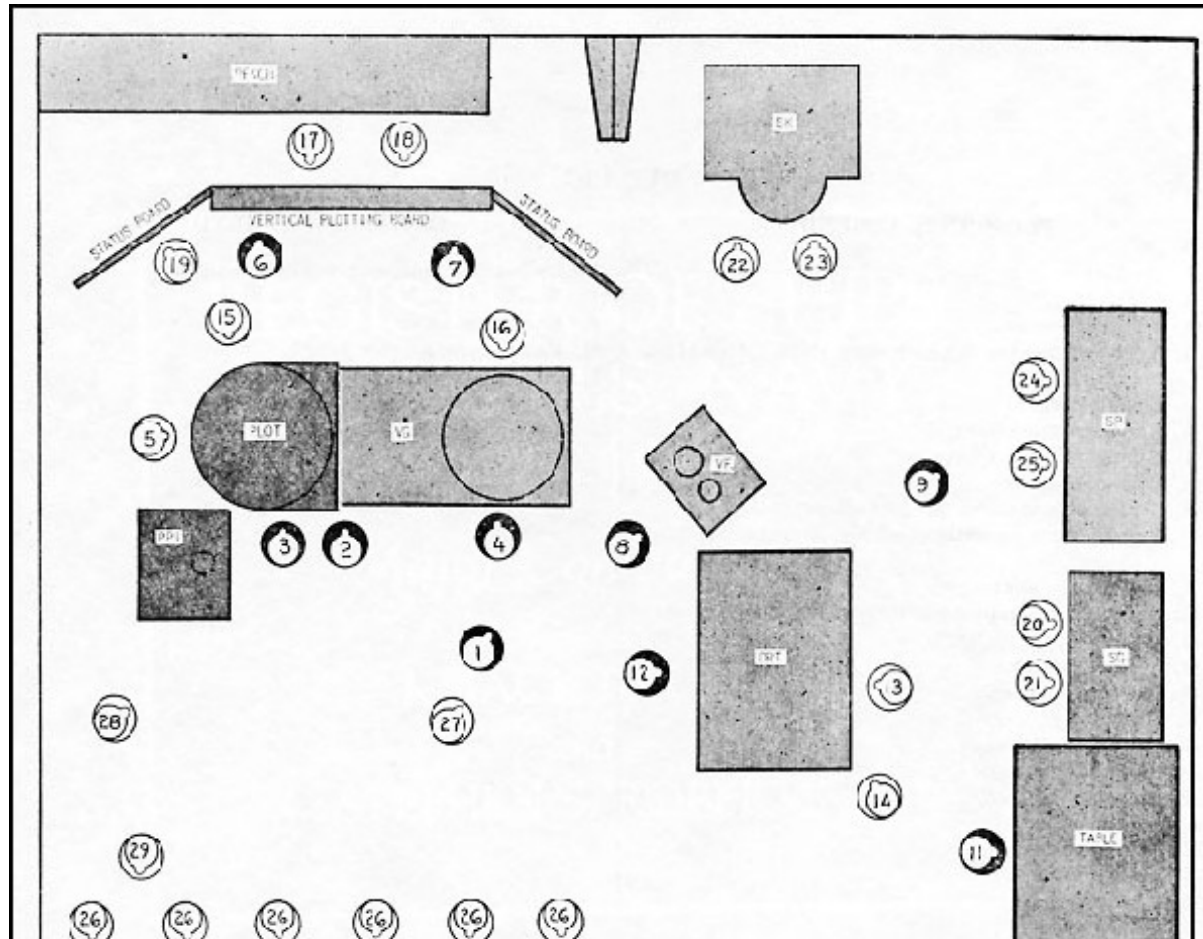
**EQUIPMENT LEGEND**

- C. Radiophone unit and speaker amplifier.
- D. Wind.
- E. Pitometer.
- G. Radiophone selector switch.
- H. Sound-powered selector switch.
- I. Sound-powered handset.
- J. Radiophone handset.

- 25. SK operator.
- 26. Radio operator recorder.
- 27. Radio operator recorder.
- 28. JA talker.
- 29. JL talker.
- 30. 1JG talker.
- 31. 2JG talker.
- 32. Yeoman.
- 33. Radio operator recorder.

--81--

COMINCH P-013





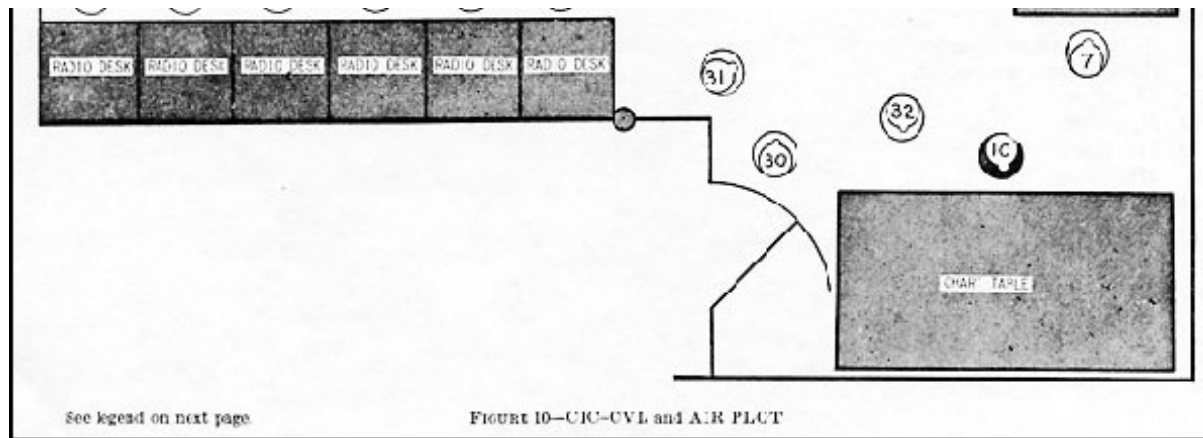


Figure 10.--CIC-CVL and AIR PLOT

--82--

COMINCH P-013

### PERSONNEL LEGEND

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Evaluator.</li> <li>2. CIC officer.</li> <li>3. Fighter director.</li> <li>4. Assistant fighter director (ships information officer).</li> <li>5. DR plotter.</li> <li>6. Radar control officer.</li> <li>7. Ships information officer.</li> <li>8. Gunnery liaison officer.</li> <li>9. Radar supervisor.</li> <li>10. Air operations officer (air plot officer).</li> <li>11. Assistant air operations officer (assistant air plot officer).</li> <li>12. Geographic plot officer.</li> <li>13. Geographic plotter.</li> <li>14. Geographic recorder.</li> <li>15. Intercept plotter.</li> <li>16. Intercept plotter or surface plotter (at VG).</li> <li>17. Summary plotter.</li> <li>18. Summary plotter.</li> </ol> | <ol style="list-style-type: none"> <li>17. Summary plotter.</li> <li>18. Summary plotter.</li> <li>19. Status board keeper.</li> <li>20. SG operator.</li> <li>21. SG operator.</li> <li>22. SK operator.</li> <li>23. SK operator.</li> <li>24. SM/SP operator.</li> <li>25. SM/SP operator.</li> <li>26. Radio operator/recorders.</li> <li>27. JA talker.</li> <li>28. JL talker.</li> <li>29. JX talker.</li> <li>30. 1JG talker.</li> <li>31. 2JG talker.</li> <li>32. Yeoman.</li> </ol> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

5550. *Operational organization of CIC.*

5551. Diagram of battle bill and condition watches (Table 11).

TABLE 11.--CV: Watch Bill

Station	Condition I		Condition IA			
	Officers	Men	Officers	Men	Officers	Men
Evaluator	1					
CIC officer	1		1			
Fighter director	1				1	
Assistant fighter director	1		1		1	
Radar control officer	1		1		1	
Geographic plot officer						
Geographic plotter		1		1		1
Geographic recorder		1				
Summary plotters		3		3		3
Intercept plotters		2		1		1
DR plotter		1		1		1
Surface plotter		1		1		1
Assistant surface plotter		1				
Status board keepers		2		1		1
Gunnery liaison officer <sup>1</sup>	1		1		1	
Ship's information officer	1					
Radar supervisor	1		1		1	
Maintenance man		1		1		1
SG operator and standby <sup>3</sup>		2		2		2
SK operator and standby		2		2		2
SP/SM operators and standbys		4		4		4
Precision PPI operator		1		1		1
Radar switchboard operator <sup>4</sup>		1		1		1

Radio recorder/operator <sup>2</sup>		3		2		2
JA talker		1				
JL talker		1		1		1
JX talker						
JF talker (if flag embarked)	1					
Flag liaison officer (if flag embarked)		1				
<b>Station</b>	<b>Condition II and III</b>					
				<b>Officers</b>	<b>Men</b>	
CIC watch officer				1		
Fighter director				1		
Geographic plotter						1
Summary plotters						2
Surface plotter						1
Status board keeper						1
SG operator and standby						2
SK operator and standby						2
SP/SM operator and standby						4
Radar switchboard operator						1
Radio recorder operator						1
JL talker						1

<sup>1</sup>Officers supplied by other divisions if necessary.

<sup>2</sup> Additional Radio recorders supplied as the occasion demands. During condition III, duties of personnel should be combined as complement requires.

<sup>3</sup> Omit in those vessels with SG indicators installed in auxiliary CIC. Target designation switchboard manned by one of the talkers.

<sup>4</sup> Usually located outside of CIC.

<i>Station</i>	<i>Duties</i>
Evaluator	May be executive officer, air officer, assistant air officer, or suitably experienced officer delegated by air officer. Exercises control and supervision over all stations. Evaluates and digests information for presentation to captain and flag. Recommends courses of action based on radar information and intelligence.
CIC officer	He is charged with the administration, training and organization of the CIC; he is the division officer. At General Quarters he assists the evaluator as directed. He carries out the duties prescribe in USF 10A. He exercises tactical control of CAP subject to orders of the OTC. He is responsible for providing an organization which furnishes the flag, captain, and control stations with all the tactical information, air or surface, which is essential to the respective stations.
Fighter director	Assists CIC officer. Maintains information of VF status in own ships, and other air-borne aircraft. Conducts interceptions as directed.
Assistant fighter director	Under the direction of the CIC officer he conducts interceptions of designated raids. When not so engaged, a surface plot can be kept on his projection PPI or polar plotting board.
DR plotter	Plots radar reports. Dead reckons aircraft.
No. 1 intercept plotter	Plots reports from designated air search radars.
No. 2 intercept plotter	Same; in addition, maintains a surface plot when the plotting board or VG is not in use as an intercept plot.
No. 2 DR plotter	Plots reports from fighter direction radar, dead reckons as required. He may act as extra geographic plotter, instead of above.
Ship's information officer	Mans ship's information circuit. Disseminates information available in CIC to all control stations.
Gunnery liaison officer	Furnishes gunnery officer and gunnery stations with information and coaches gun directors to targets. Directs transfer of targets from search to fire control radar via the target designation system.
Status board keepers	Maintain information and status boards. Status of CAP including fuel, vector calls, altitude, time out and in, searches A/S patrols, weather, disposition of VF, etc.
Radar control officer	Controls radar of own ship and force under direction force (Group, Force) CIC officer or ship's CIC officer in accordance with air search doctrine. Supervises vertical summary plot. Filters plots as necessary. Plots warning net reports. Initiates warning net reports as directed.
Geographic plot officer and assistant geographic surface recorder	Plot SG/SM-SP reports on DRT; record SG-SM-SP reports with bearing, distance, and time.
Talker (JA)	Talker.
Talker (JX)	Talker.
Messenger	Messenger.
Visual fighter directors	Conducts visually directed intercepts as designated by ship's CIC officer. Plotter plots radar information relayed from CIC.
Radio recorder	Record TBS No. 1.
Radio recorder	Record TBS No. 2.
Radio recorder	Record VHF 1 thru 10 (as required).

Radio recorder	Record HF warning net.
Radio recorder	Record search and attack frequencies.
Radio recorder	Record HF fighter net (as required).

--85--

**COMINCH P-013**

<i>Station</i>	<i>Duties</i>
SK radar operator	Operates SK radar.
SK radar	Talker as required or second scope operator.
SG radar	Same as for SK.
SM/SP radar	Operator PPI scope.
SM/SP radar	Operator "A" and "R" scopes.
SM/SP radar	Talker (sometimes required)..
Radar supervisor	Roving watch. Supervision of SM/SP, SK, SG radar operation and maintenance. Check identification, composition, and altitude of contacts.

--86--

**COMINCH P-013**

**5600. The CIC of a Destroyer (DD).**

5601. The destroyer is a general utility ship and has many missions to perform. It may be used in surface actions, air actions or against subsurface craft. Its primary weapon of attack is the torpedo, but it has a potent secondary weapon of dual purpose guns. Escort work for combatant or noncombatant ships is also a destroyer's duty.

5610. *Function, duties and responsibilities of CIC.*

5611. The CIC of a destroyer performs the same general functions as outlined in Parts II, III and IV of Rad SIX. The CIC of a destroyer should provide for the efficient handling of simultaneous enemy attacks of all types.

5612. In addition to the general functions, a destroyer's CIC has the following added responsibilities:

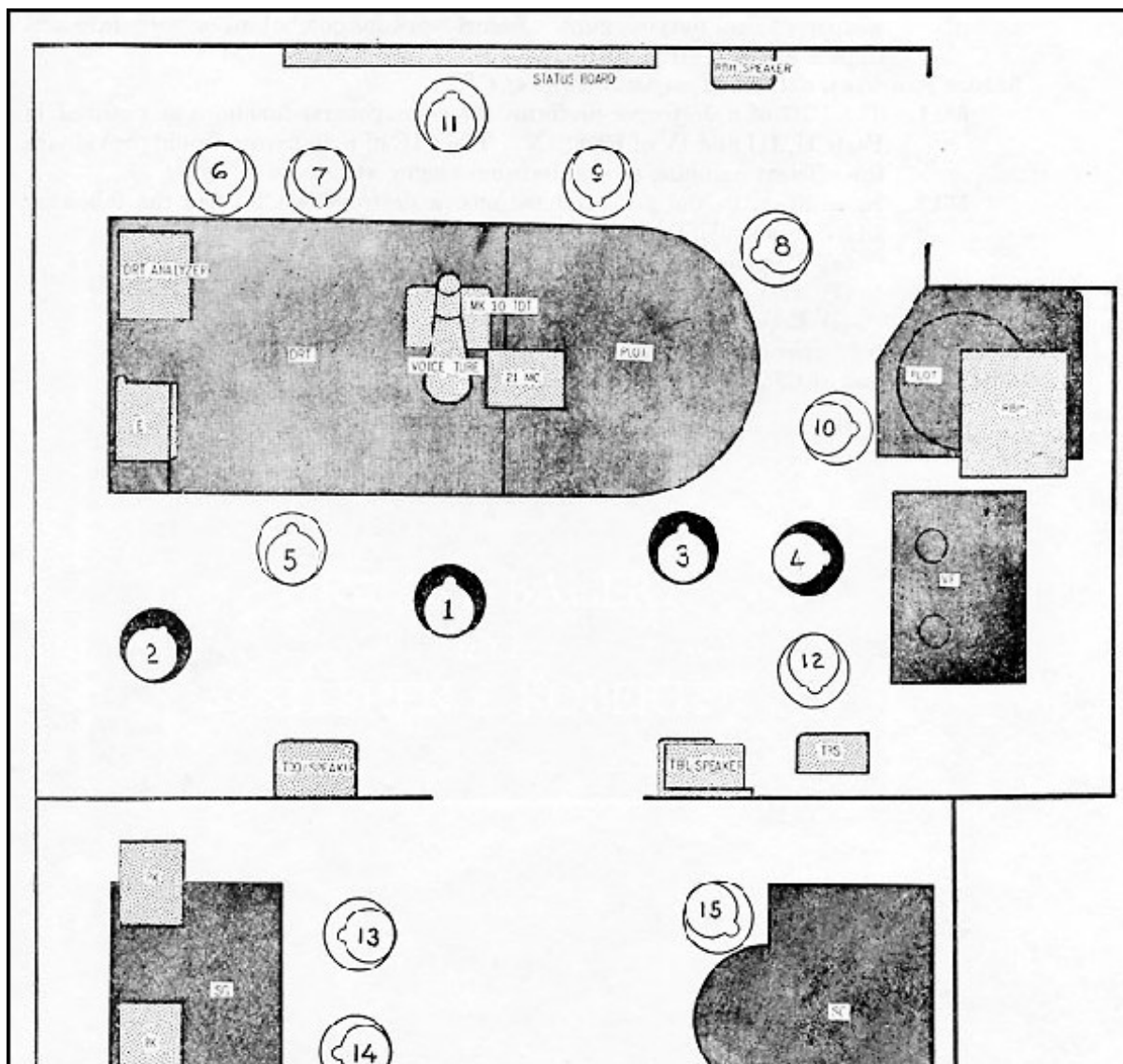
1. Torpedo fire.
2. Anti submarine warfare.

3. Escort work.

5620. Administrative organization of CIC. (Pending decision)

5630. Diagram of CIC (figs. 11, 12, 13, and 14).

COMINCH P-013



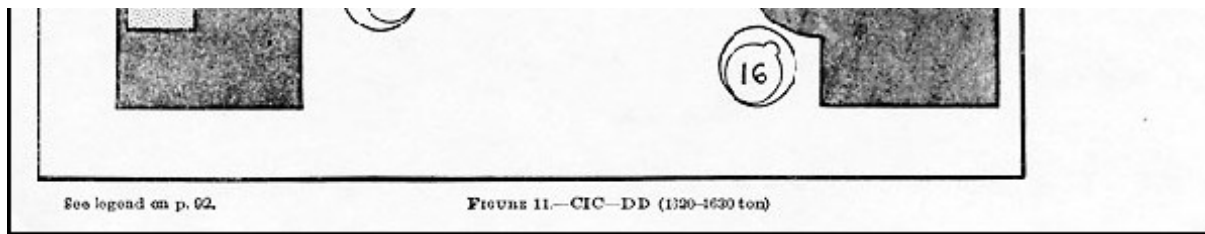
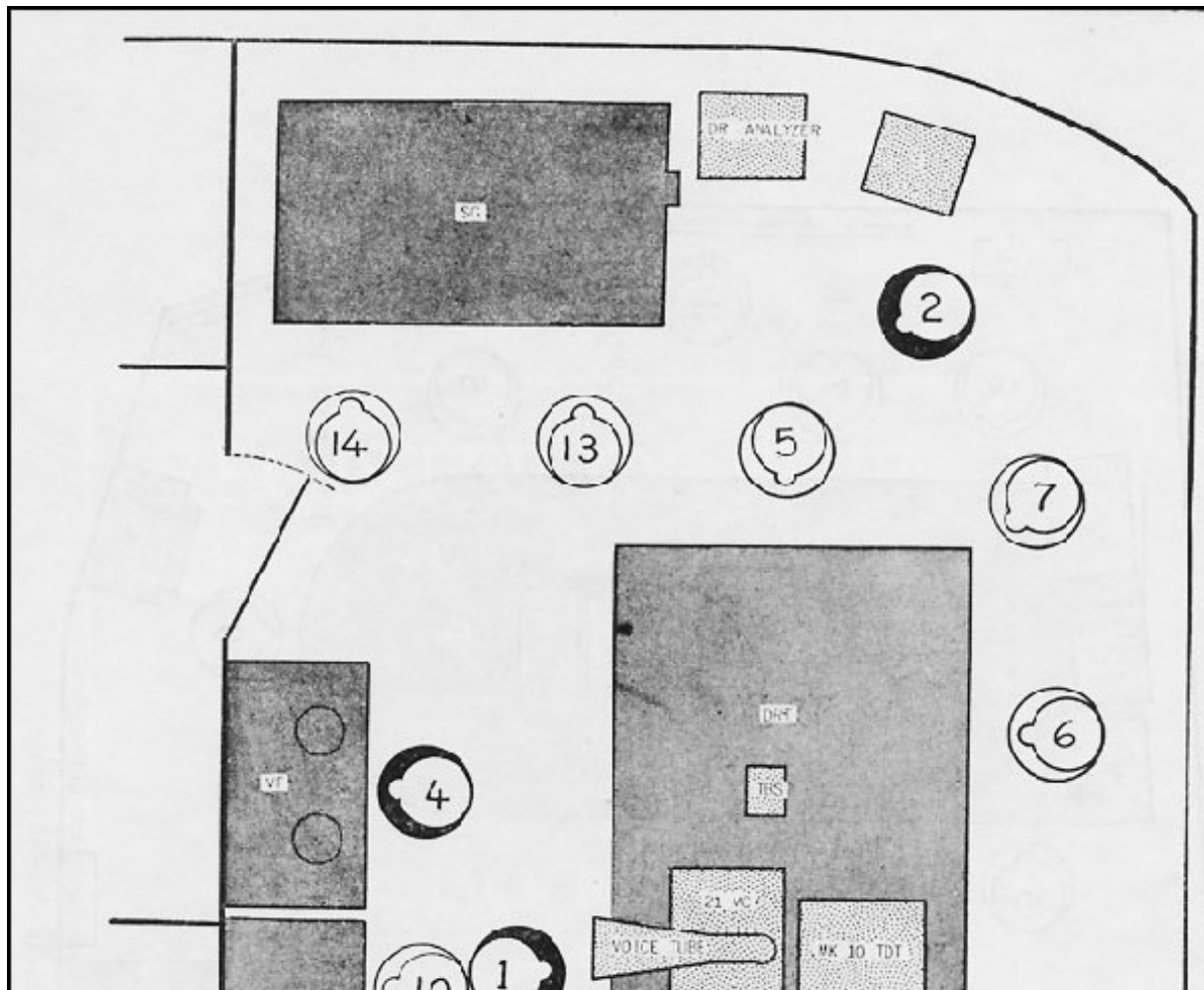


Figure 11.--CIC--DD (1620-1630 ton)

(See legend on page 92.)

COMINCH P-013



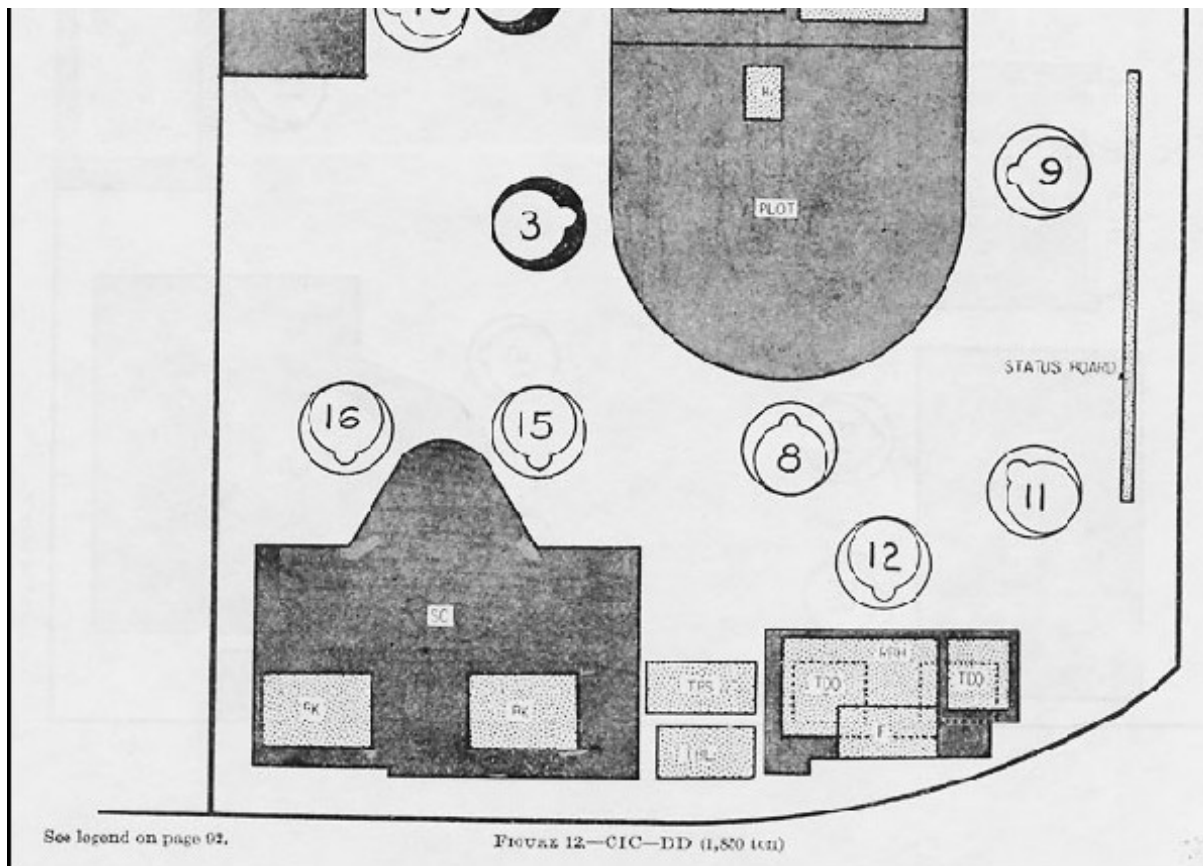


Figure 12.--CIC--DD (1,850 ton)

(See legend on page 92.)



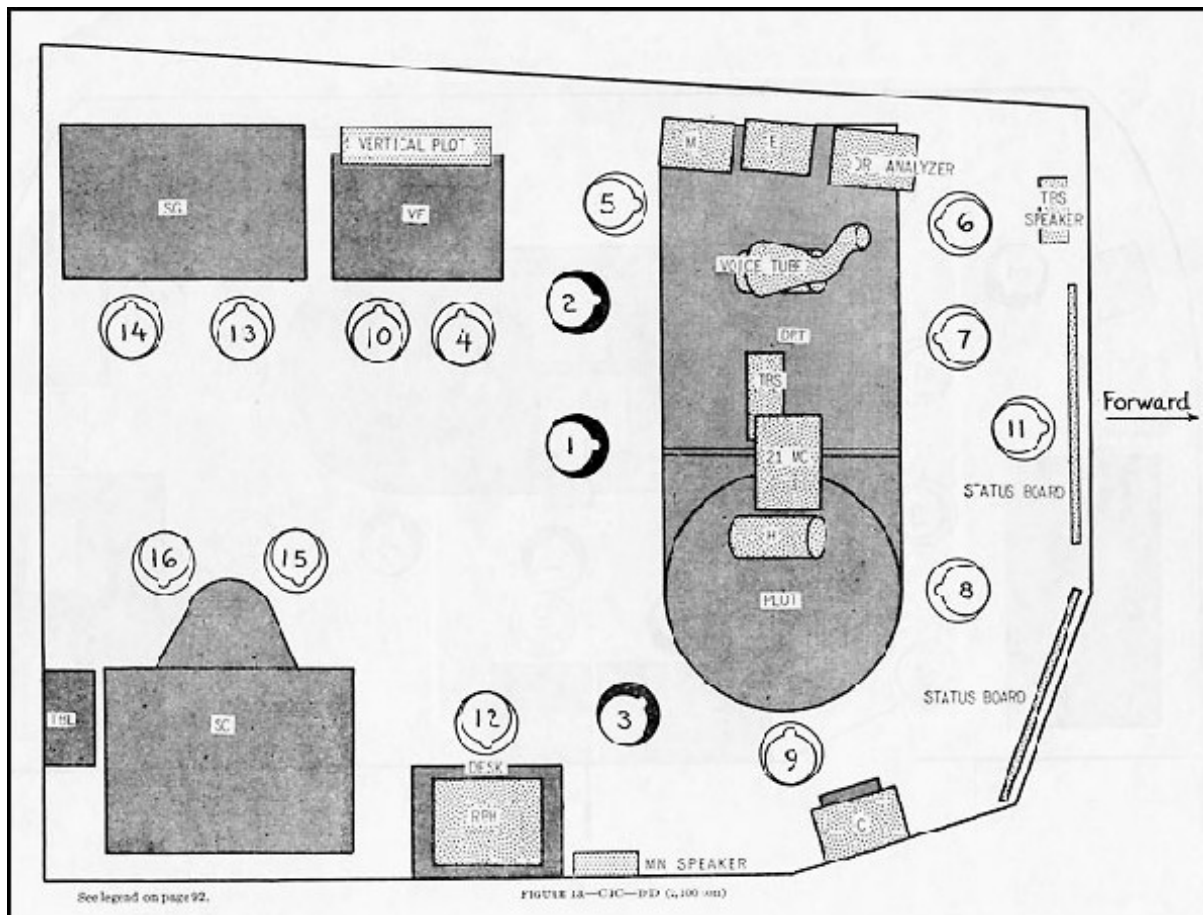


Figure 13.--CIC--DD (2,100 ton)

(See legend on page 92.)

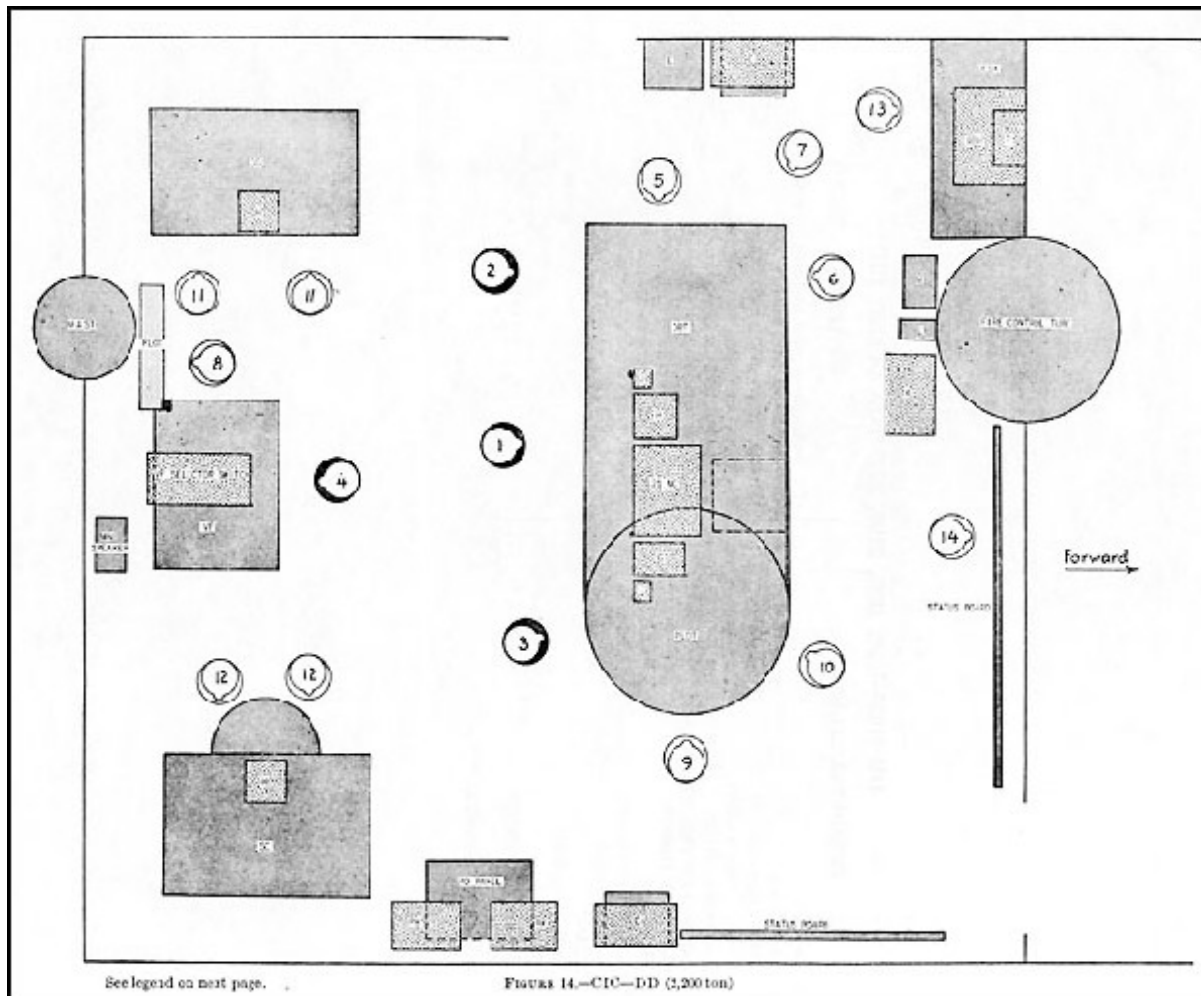


Figure 14.--CIC--DD (2,200 ton)

(See legend on next page.)

DD (1620-1630, 1850, 2100, 2200 TON CLASS) CIC  
PERSONNEL LEGEND

EQUIPMENT LEGEND

1. Evaluator.
2. CIC officer.
3. Fighter director.
4. Gunnery liaison officer.
5. Geographic plotter.
6. Assistant geographic plotter.
7. Geographic recorder.
8. Air plotter.
9. Assistant air plotter.
10. Surface plotter.
11. JA talker.
12. Radio recorder.
13. SG operator.
14. Standby SG operator.
15. SC operator.
16. Standby SC operator.

- C. Radio phone unit and speaker amplifier.
- E. Pitometer.
- F. Speaker.
- H. Sound-powered selector switch.
- K. Remote bearing indicator.
- L. Remote range indicator.
- M. Remote range and bearing indicator.

COMINCH P-013

5640. *Communications in CIC.*

5641. Diagram of S/P communications and other intraship communications. (See table 12.)

TABLE 12.--DD: *Communication Diagram*

	JA	1JP	21 JS	22 JS	41 JS	81 JS	JU	1JV	1 or 5 JW	JX	49 JY (4)	X6J	21 MC	VHF & HF
Evaluator	■	■				■	■	■	■	■			■	■
CIC officer	■					■	■		■	■			■	■
Fighter director											■			
Gunnery liaison officer		■			■						■			
Geographic plotter			■	■		■								
Assistant geographic plotter			■	■		■								
Geographic recorder			■	■		■								
Surface plotter			■	■										
Air plotter			■	■										

Assistant air plotter			■	■										
SG operator and standby			■	■							■			
SC operator and standby			■	■							■			
Radio recorder										■				■
JA talker	■													

5642. Equipment used for intership radio communications. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous H.F. channels.

DD(445-692)

Equipment	Frequency	Use
2 remote control transmitter-receivers	VHF	Maneuvering and emergency warning.
1 transmitter and receiver	VHF	Inter CIC, support aircraft direction.
2 10-channel transmitters receivers <sup>1</sup>	VHF	Aircraft control, force (group) CIC circuit, fighter net.
2 radio telephone units (RPU) transmit and receive	VHF, HF	Fighter net, CIC circuit, local air warning.
2 radio receivers	HF	General purpose.

<sup>1</sup> 3 for picket DD, 1 for DM-DMS, DE and other DD.

5650. *Operational Organization of CIC.*

5651. Battle bill and condition watches (table 13).

TABLE 13.--DD: *CIC Watch Bill*

Station	Condition I	
	Officers	Men
Evaluator	1	
CIC officer	1	
Fighter director	1	
Gunnery liaison officer	1	
Geographic plotter		1

Assistant geographic plotter		1
Geographic recorder		1
Surface plotter		1
Air plotter		1
Assistant air plotter		1
SG operator and standby		2
SC operator and standby		2
Radio recorder		1
JA talker		1
	<b>Condition III</b>	
	<b>Officers</b>	<b>Men</b>
CIC watch officer	1	
Geographic plotter		1
Surface plotter and VF operator		1
Air plotter		1
SG operator		1
SC operator		1

Precision PPI operated by surface plotter or gunnery liaison officer during condition I. A precision PPI operator may be desirable, in addition, during condition I.

*5652. Detailed duties--battle bill.*

a. The evaluator should:

1. Supervise all activities in CIC during General Quarters.
2. Furnish timely, properly evaluated, accurate information to the captain, the unit commander embarked and the control officers as necessary.
3. Train CIC teams so that specific orders are not necessary.
4. Supervise exterior and interior communications used by CIC. Require that immediate reports be made to him of all pertinent information received from all sources, including radio, internal communications systems, lookout, and visual signals.
5. Coordinate the plotting and tracking of all air and surface contacts.

6. Use fire control radars to check doubtful contacts.
7. Make initial reports to command on all contacts and see that necessary contact report is sent out on warning net.

--94--

---

### COMINCH P-013

8. Make necessary amplifying reports to command and warning net.
  9. Designate targets as ordered by the commanding officer. Coach main battery and torpedo directors and automatic weapons on to invisible targets.
  10. Inform the radar operators of all facts that might aid them in radar interpretation, such as presence of all land echoes, masses, squalls, expected friendly contacts, second sweep echoes.
  11. Use all facilities to insure safe navigation of the ship.
  12. Have DRT and other equipment checked for accuracy at frequent intervals. Gyro repeaters should be checked every 15 minutes.
  13. Report enemy countermeasures immediately to command.
  14. Be thoroughly familiar with the capabilities and limitations of all radar and identification equipment.
- b. The CIC officer should:
1. Be thoroughly familiar with the responsibilities of the evaluator, and in his absence assume those responsibilities.
  2. Coordinate and supervise the tracking of targets, supervise the upkeep of the surface plot insuring that standard plotting procedures are followed.
  3. Solve all problems involving the use of the maneuvering board, own and enemy torpedo effective range devices and the CIC equipment.
  4. Be thoroughly familiar with destroyer tactical, torpedo, gunnery, and associated doctrines, including the force plans.
  5. When in contact with unidentified surface units, solve torpedo effective range problems and advise the evaluator of his findings.
  6. Furnish necessary information on invisible targets to the torpedo director for the solution of torpedo control problems.

7. Understand and control the use of IFF.
8. Perform other duties as directed by the evaluator.

c. The fighter director should:

1. Know the responsibilities of the force (group, unit) and ship CIC in connection with the control of aircraft as laid down in current tactical publications and the operations plans.
2. Control communications with the combat air patrol, and, when necessary, with the force (group, unit) CIC officer and CIC officers of the other units.
3. Control the use of the air search radar when actually engaged in the direction of fighter aircraft.
4. Relinquish his control of the air search radar to the officer performing gunnery liaison duties when air attack is imminent.
5. Keep the evaluator informed of the air situation.
6. Have an accurate log of radio transmission kept.
7. When not engaged in directing fighter aircraft, supervise maintenance of air or summary plot.
8. Be prepared to direct aircraft engaged in antisubmarine patrol, and perform that function when ordered.
9. Notify the evaluator at once of the bearing and range of emergency IFF.

--95--

---

**COMINCH P-013**

d. The gunnery liaison officer should:

1. Coordinate and supervise the operation of search radars, following standard operational procedures.
2. Interpret all radar contacts and be proficient in that function.
3. Keep himself and all radar operators informed of expected contacts.
4. Coach main battery director on invisible targets designated by the evaluator, using all available facilities such as

precision PPI.

5. Furnish radar spots to the gunnery control officer as requested.

e. Visual fighter director (applies to specially designated fighter director ships) should:

1. Take over direction of aircraft by visual means when the situation dictates this necessity.
2. Assist the fighter director in CIC by coordinating all visual information and relaying to CIC.
3. This officer may be the recognition officer or other officer appropriately trained.

f. Geographic plotter, assistant geographic plotter and the geographic recorder should:

1. Work as a team, tracking all unidentified or designated targets on the DRT accurately and rapidly.
2. Give particular attention to targets designated by the evaluator when plotting several targets simultaneously. A rough plot should be kept of the location of all unidentified units.
3. Include in the plot up-to-date minute data on course, speed, number, and composition of targets, in accordance with standard surface plotting procedures.
4. The surface recorder should keep a record of time, target range, bearing and identity of all targets being tracked, and give the time "marks" for such tracking.
5. Check the DRT and supplementary equipment for proper scale settings, alignment and accuracy.
6. Aid in low visibility navigation and shore bombardment.

g. The air plotter, assistant air plotter should:

1. Work as a team, plotting all air targets rapidly and accurately in accordance with standard air plotting procedure, and in accordance with standard air plotting procedure, determine their altitude, identity, course, speed, and composition. When plotting several targets, particular attention should be given those targets designated by the fighter director or, if attack is imminent, by the evaluator or his assistant.
2. Maintain an up-to-date air status board.
3. Advise the fighter director and air search radar operator of all targets which fail to track with a normal air speed.
4. Dead reckon friendly planes when they are being vectored for interception if no fixes are reported by radar.
5. Keep reference points plotted and convert contacts for contact and amplifying reports.



6. Check with surface search radar for spotting low flying aircraft.

--96--

---

**COMINCH P-013**

h. The surface (or summary) plotter should:

1. By keeping a continuous track of all surface contacts (or all surface and air contacts); keep the cognizant personnel in CIC informed of the identity of any surface radar contact (if summary plotter, any surface or air contact) in question.
2. He must aid the gunnery liaison officer in preventing the fire of own ship from endangering friendly ships.
3. Maintain a relative plot of own disposition.
4. Indicate location and disposition of friendly ships, pickets, and stragglers.
5. Maintain maneuvering board plot of own ship's course and speed and be prepared to furnish tactical data.
6. Provide ranges and bearings of sound contacts by escorts, in relation to self and to fleet center.
7. Plot such data as rain clouds, land, wind speed, and direction.
8. Plot reports from radar operators and lookouts.

i. Surface search radar operator should:

1. Operate the surface search radar in accordance with standard operating procedures.
2. Report all new targets as soon as detected, and obtain acknowledgment.
3. Report ranges and bearings of targets in accordance with standard procedure.
4. Report any abnormal performance of the surface search radar, and obtain acknowledgment.
5. Report the suspected use of radar countermeasures.
6. Report presence of IFF on all targets.
7. Be alert to pick up low flying aircraft and report them to the air search radar operator and geographic plotter.

j. Assistant surface search radar operator should:

1. Assist the surface search radar operator with his duties.
2. Alternate with the surface search radar operator in operating the radar.
3. Report ranges and bearings to surface (or summary) plotter if desired.

k. Air search radar operator should:

1. Operate the air search radar in accordance with procedure set forth in paragraph (i) above.

l. Assistant air search radar operator should:

1. Assist the air search radar operator with his duties.
2. Alternate with the air search radar operator in operating the radar.

m. JA talker should:

1. Report to the evaluator all transmissions in this circuit.
2. Serve as the evaluator's talker.

5653. Detailed duties--condition watches.

a. CIC watch officer should:

1. Perform the duties assigned during General Quarters to the evaluator, CIC officer, and gunnery liaison officer.
2. Conduct sufficient drills and training exercises when practicable to train condition watch CIC team.

--97--

---

**COMINCH P-013**

b. The geographic plotter should:

1. Perform the duties assigned to the geographic plotting team during General Quarters.
2. Maintain the surface (or summary) plot.

3. Alternate with a search radar operator at frequent intervals (about every 30 minutes).

c. The air plotter should:

1. Perform the duties of the air plotting team during General Quarters.
2. Maintain a record of all voice transmissions.
3. Alternate with a search radar operator at frequent intervals.

d. The surface search radar operator should:

1. Perform the duties assigned to the surface search operators during General Quarters.
2. Alternate with one of the plotters at frequent intervals.

--98--

---

**COMINCH P-013**

**5700. The CIC in a Destroyer Escort, Patrol Frigate or Coast Guard Cutter (DE, PF, CGC).**

5701. These ships are designed as escorts and antisubmarine ships. They have highly developed antisubmarine equipment, but little surface or air armament. These types of ships are particularly important for the protection of merchant ships without radar.

5710. *Functions, duties and responsibilities of CIC.*

5711. The normal functions and responsibilities of a combatant ship's CIC as indicated in parts II, III, and IV apply to these ships including fighter direction, surface tracking and efficient radar search for both air and surface targets.

5712. See section on CIC and antisubmarine warfare in part IV. These ships, as antisubmarine ships, should have a CIC that is prepared to handle information from the sonar equipment in an efficient manner. CIC should be cognizant of latest doctrines in antisubmarine warfare, particularly concerning:

- a. Regaining contact procedures.
- b. Use of retiring search plans.
- c. Current doctrine in coordinated attacks, including creeping attacks.
- d. Control of planes for aerial antisubmarine operations.

e. Launching, monitoring, and recovering effective sonobuoy patterns.

Torpedo control by radar on destroyer escorts may be the function of CIC at night or during low visibility. With no torpedo director, CIC should be prepared to control torpedo fire by giving orders directly to tubes.

5720. *Administrative organization of CIC.* (Pending decision)

5730. *Diagram of CIC.* (See [fig. 15.](#))

5740. *Communications in CIC.*

5741. *Diagram of S/P communications and other intraship communications.* (See table 14).

TABLE 14.--DE: *Communication Diagram*

	JA	1 JP	51 JS	21 JS	22 JS	81 JS	JU	1 JV	JX	21 MC	VHF & HF
Evaluator	■	■	■			■	■	■	■	■	■
CIC officer	■	■	■			■	■	■	■	■	■
Geographic plotter				■	■						
Geographic recorder				■	■						
Surface plotter				■	■						
Air plotter				■	■						
Assistant air plotter				■	■						
Surface search radar operator				■	■						
Air search radar operator				■	■						
Assistant air search radar operator				■	■						
Radio recorder									■		■
JA talker/status board keeper	■										

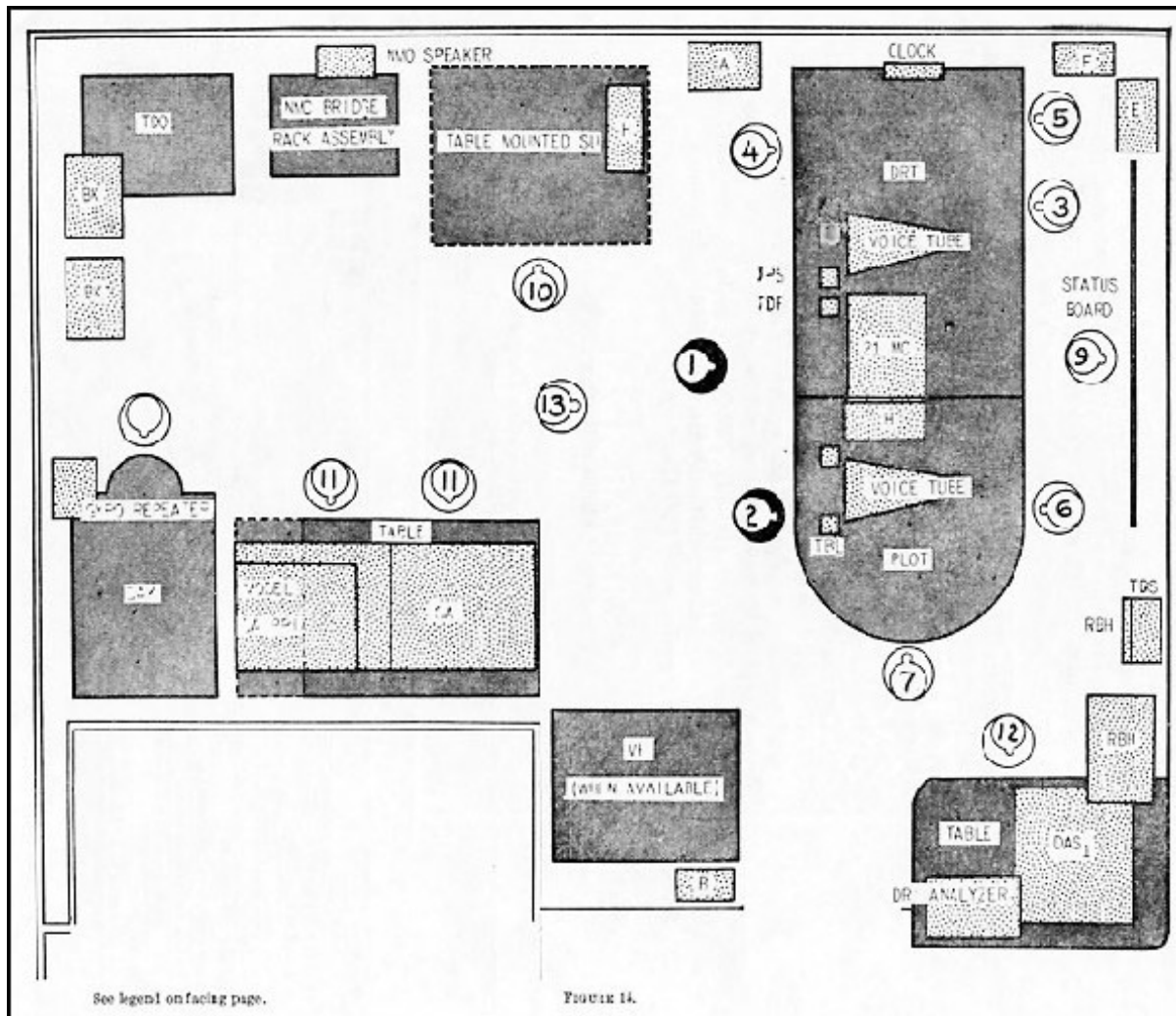


Figure 15

(See legend on facing page.)

--100--

COMINCH P-013

CIC DE (3")

PERSONNEL LEGEND

EQUIPMENT LEGEND

1. Evaluator.
2. CIC officer.
3. Geographic plotter.
4. Assistant geographic plotter.
5. Geographic recorder.
6. Air plotter.
7. Assistant air plotter (optional).
8. Surface plotter.<sup>1</sup>
9. Status board keeper.
10. Surface search radar operator.
11. Air search radar operator.
12. Radio recorder.
13. JA talker (if necessary).

- A. Radiophone unit.
- B. Speaker amplifier.
- F. Speaker.
- E. Pitometer.
- H. Sound-powered selector switch.
- I. Sound-powered hand set.

<sup>1</sup> Small polar plot located where convenient.

--101--

**COMINCH P-013**

5742. Equipment used for intership radio communications. The allowance of radio equipment changes often, and the installation at times varies from the allowance. A specific list of radio equipment would therefore be misleading. The VHF channels available will indicate in a general manner the extent and type of radio equipment provided. Remote radio phone units and speaker amplifiers provide CIC with a flexible means for transmitting and receiving on multitudinous H.F. channels.

<b>Radio</b>	<b>Frequency</b>	<b>Examples of use</b>
1 Remote control transmitter-receiver unit.	VHF	Primary warning and maneuvering.
2 10-channel transmitter-receiver sets	VHF	Aircraft control, Inter CIC circuit.
2 radio telephone units (RPU) transmit and receive	VHF, HF	Spotting circuit, inter-CIC circuit, local air warning.
2 receivers	HF	General purpose.

5750. *Operational organization of CIC.*

5751. Battle bill and condition watches. (See table 15.)

TABLE 15.--DE: CIC Watch Bill

<b>Station</b>	<b>Condition I</b>	
	<b>Officers</b>	<b>Men</b>
Evaluator	1	
CIC officer	1	

Gunnery liaison officer	1	
Geographic plotter		1
Geographic recorder		1
Surface plotter		1
Air plotter		1
Assistant air plotter		1
Surface search radar operator		1
Air search radar operator		1
Assistant air search radar operator		1
Radio recorder		1
JA talker/status board keeper		1
	<b>Condition II and III</b>	
	<b>Officers</b>	<b>Men</b>
CIC watch officer	1	
Geographic plotter		1
Air plotter		1
Air search radar operator		1
Surface search radar operator		1

5752. *Detailed duties.*

a. Evaluator (executive officer) should:

1. Exercise general supervision over the collection of all combat and tactical information by CIC.
2. Evaluate this information.
3. Disseminate the evaluated information.
4. Recommend courses of action to the commanding officer.
5. Assist in the execution of chosen courses of action.

6. Execute any specific control functions which command may delegate to CIC, such as target designation, torpedo firing control, and the monitoring of voice circuits.
  7. Maintain an hourly plot of ship's position on the strategic chart.
- b. CIC Officer (division officer) should:
1. Execute direct supervision over the collection of all information by CIC and its presentation to the evaluator.
  2. Assist in evaluation.
  3. Prepare contact and all amplifying contacts.
  4. Use CIC aids, such as the maneuvering board and MK 7 angle solver in the solution of tactical problems.
  5. Be prepared to serve as evaluator.
  6. Be prepared to serve as fighter direction officer should an emergency warrant detailing limited fighter direction to the ship.
- c. Geographic plotter, assistant geographic plotter, surface recorder, should:
1. Track unidentified and designated targets on the DRT.
  2. Note on the plot all amplifying data, such as identification, course, speed, number of targets, in group, wind direction, firing of and track of torpedoes, and opening of gunfire.
  3. Maintain an orderly record of time, range, and bearing of all plots.
  4. Be able to track 2 targets simultaneously, plotting each once a minute.
  5. Be able to track 2 targets simultaneously, plotting each 1 a minute, while at the same time maintaining an approximate multiple plot on at least 10 other targets.

Procedure:

1. Destroyer escort and frigate IFF should be considered non-directional. Apparent IFF bearings should not be used in checking identification of targets. With two targets at the same range, analysis should be made by the CIC officer before noting, friendly indication for either target. The plotters should not make this deduction themselves.
2. In tracking targets at long range where the radar pip may fade, the radar operator should give the time mark. Where radar conditions permit, the recorder should give the time mark, preferably at regular intervals.



3. To avoid confusion in sonar target tracking, only the time mark, center bearing, and range should be furnished the plotting team. Such information should be furnished by the sonar-hut over sound-powered phones. Other sonar

--103--

---

### COMINCH P-013

information required by the evaluator should be collected over other phone circuits. Use of the 21 MC should be avoided.

4. Whenever possible standard scale settings of 2,000 yards per inch should be used on the DRT for plotting surface targets, and 200 or 500 yards per inch for sonar targets.

d. Air plotter and assistant air plotter should:

1. Maintain an air plot of all air radar contacts for identification and defensive gunnery purposes. This primary function should not be sacrificed for the tracking of specific targets.
2. Track only those air targets designated by the evaluator.
3. Dead reckon friendly planes.
4. Note all possible amplifying data on unidentified and enemy targets, such as course, speed, altitude, size, and number.
5. Be able to maintain a plot on at least 10 different air targets.
6. Keep air information on data board.

Procedure:

1. Apparent IFF bearings should not be used in checking identification of air targets. With two targets at the same range, the air plotters should make a careful analysis before noting which is showing IFF.

e. Surface plotter should:

1. Maintain a plot of the relative location and identity of all surface targets within radar or visual range. When disposition or size of force makes this impossible with all targets, emphasis should be centered on the following:
  - a. New or enemy targets.
  - b. The guide.

- c. Adjacent ships.
  - d. Major radar land marks.
  - e. Screening ships.
  - f. Column leaders.
  - g. Stragglers.
  - h. Major ships in company.
  - i. Other friendly units.
2. Be able to identify each pip on the surface search radar scope at all times.
  3. Maintain the relative movement line of each target, paying particular attention to adjacent ships.
  4. Keep posted on the data board the disposition, formation, course, speed, and axis, patrol speed, and details of zigzag plans.

Procedure:

1. Man JA circuit to receive lookout reports.
  2. Obtain radar information by reading surface search radar scope directly, without interfering with the operation.
  3. Label identified targets with the TBS calls, or with raid designations as directed by the CIC officer.
- f. Surface search radar operator should:
1. Search for new targets, using normal operating procedure.
  2. Maintain this search effectively at all times, even when providing data on targets.

3. Reports new targets immediately to evaluator and obtains his acknowledgment.

4. Check unidentified targets for IFF, first requesting permission from the evaluator, and report results to surface plot.
5. Furnish ranges and bearings to surface plot as requested.
6. Furnish ranges and bearings of guide to the OOD or evaluator upon request to assist in station keeping.
7. Make immediate and forceful reports to the evaluator of any target closing the ship within one thousand yards and obtain his acknowledgment.
8. Check the alignment of azimuth on scope each half hour against ship's head by magnetic compass if using SL radar.
9. Report any casualty or erratic performance of the radar to the evaluator.

g. Air search radar and assistant operator should:

1. Search for air targets, using normal operating procedure.
2. Maintain this search effectively at all times, even when providing data on targets.
3. Report new targets to evaluator immediately and obtain his acknowledgment. Indicate as soon as possible the size of contact, altitude, and number of aircraft in group.
4. Check unidentified targets for IFF< first requesting permission from the evvaluator, and report results to air plot.
5. Furnish ranges and bearings to air plot to assist in tracking.
6. Report any casualty or erratic performance of the radar to the evaluator.
7. Report any indications of radar countermeasures to the evaluator.

h. Radio recorder should:

1. Maintain a log of all exterior voice traffic heard in CIC, both incoming and outgoing.
2. Keep the volume of all speakers at the minimum required for proper reception.
3. Make sure the evaluator has heard all important messages.
4. Report any circuit failure to the evaluator.
5. Inform the CIC officer when unable to keep up with traffic volume.

6. Assist in decoding and encoding voice messages as traffic permits.

i. JA talker should:

1. Serve as the evaluator's talker, unless the evaluator himself wears the phones, in which case the talker is not necessary.
2. Report to the evaluator all transmission on this circuit.
3. Report routine information to the bridge when directed by the evaluator.

5753. The following stations should be manned in CIC during war cruising conditions:

- a. CIC watch officer: Assists plotting on surface plot where necessary.
- b. Geographic plotter: Plots on geographic plot. Rotates with surface search radar operator.
- c. Air plotter: Also handles radio recording.
- d. Surface search radar operator.

--105--

---

**COMINCH P-013**

- e. Air search radar operator: Alternates with surface search radar operator if air search radar is not being used.

During war cruising condition, the CIC watch officer assumes the combined duties of evaluator and CIC officer. The CIC watch officer must be properly relieved before leaving his station in CIC. He is responsible for (a) the proper functioning of CIC and (b) furnishing the OOD with all possible information and assistance.

--106--

---

---

## **APPENDIX**

### **CIC Glossary**

A

Position angle.

*ABA-1*  
(SCR-515-A) airborne IFF transponder, Mk. IV system.

*ABK*  
Airborne IFF transponder, series, Mk. II system.

*ABF*  
Airborne IFF transponder.

*A/C*  
Aircraft.

*ACI*  
Air combat intelligence.

*ACIC*  
Auxiliary combat information center.

*ADCC*  
Air defense control center (shore based).

*AEW*  
Airborne early warning--radar.

*AF*  
Audio frequency.

*AFDO*  
Assistant fighter director officer.

*AFDS*  
Auxiliary fighter director ship.

*AGC*  
Automatic gain control--also, amphibious force flagships.

*AI*  
Airborne intercept radar.

*A/J*  
Antijamming.

*AM*  
Amplitude modulation.

*AN/APA-5*  
(Formerly LAB-2) airborne radar auxiliary bombing equipment.

*AN/APA-6, AN/APA-11*  
Airborne pulse analyzer: RCM.

*AN/APA-16*  
(Formerly B-LAB) airborne auxiliary bombing attachment used with ASB

*AN/APA-18, AN/APA-19, AN/APA-21*  
Airborne LAB adaptor assemblies.

*AN/APG (Series)*  
Airborne gunlaying, gun sighting or bomb release equipment.

*AN/APN-1*  
(Formerly AYP) airborne radar altimeter--L band.

*AN/APN-4*  
(SCR-622) LORAN.

*AN/APN-9*

LORAN--similar to AN/APN-4.

*AN/APQ-2*

("RUG") RCM--airborne jammer.

*AN/APR Series*

Airborne radar search receiving equipment (RCM).

*AN/APS-2*

(Formerly ASG) airborne radar search equipment ("S" band).

*AN/APS-3*

(Formerly ASD) airborne radar search equipment ("X" band).

*AN/APS-4*

(Formerly ASH) airborne radar search equipment ("X" band).

*AN/APS-6*

(Formerly AIA) airborne search-intercept-gun-aiming radar with beacon and IFF search provisions.

*AN/APS-8*

(Formerly MBA) airborne radio marker beacon receiving equipment.

*AN/APS-9*

Airborne "tail warning" radar equipment used in fighter planes.

*AN/APS-10*

Very light airborne search radar. "X" band.

*AN/APS-11*

Airborne "tail warning" radar. UHF and FM.

*AN/APS-13*

(SCR 718) airborne "tail warning" radar. "L" band used in fighter planes.

*AN/APS-15*

(Formerly British H2X) airborne radar search equipment for high altitude or night bombing. Combination of ASD and ASG.

*AN/APS-16*

(Similar to ASB) airborne "tail warning" radar. "L" band. Use in bombers and night fighters.

*AN/APS-17*

(Similar to ASJ) airborne "tail warning" radar. "S" band. Used in patrol bombers.

*AN/APT (series)*

Includes "Carpet," "Diana II," "Mandrel," "Broadloom," etc. RCM--airborne radar transmitting equipment.

*AN/APX-1*

Airborne transponder equipment. (IFF.) Similar to SCR-695.

*AN/APX-2*

(Formerly ABJ) airborne interrogator-responder-transponder equipment.

*AN/ARC (series)*

Airborne radio communication equipment.

*AN/ARN-1*

(Formerly AYD) airborne radar altimeter ("L" band).

*AN/ARN-5*

Airborne radio VHF receiving equipment for instrument landings.

*AN/ARN-6, AN/ARN-7*

Airborne automatic radio compass.

*AN/ARN-8*

(Formerly ZA-2) airborne radio approach receiving equipment.

*AN/ARN-10*

(Formerly ZAX) airborne radio approach receiving equipment.

*AN/ARQ (Series)*

Airborne special radio equipment (RCM).

*AN/ARR (Series)*

Airborne radio receivers.

*AN/ARW (Series)*

Airborne radio (remote control) equipment.

*AN/ASQ (Series)*

(Formerly MAD series) airborne magnetic submarine detection equipment.

*AN/CPN-3*

Air transportable homing beacon--See YK.

*AN/CPN-6*

Air transportable homing beacon (X-band). See YM.

--107--

---

**COMINCH P-013**

*AN/CRT-1A*

Radio sono-buoy which detects propellor sounds and transmits them to AN/ARR-3 and other suitable airborne receivers.

*AN/TPSI-B*

Portable long-range early warning search radar. Replacing SCR 602.

*AN/TTQ-1*

ADCC telephone system and operations room.

*ARC*

Airborne radar intercept search receiver (redesignated as APR-1).

*ARD*

Aircraft radar intercept search receiver.

*Argus*

Navy shore-based fighter direction unit.

*ASAP*

Antisubmarine attack plotter.

*ASB*

Airborne search radar.

*A-Scan*

Radar oscilloscope with horizontal trace.

*ASD*

Airborne search radar.

*ASE*

Airborne search radar.

*ASG*

Airborne search radar.

*ASH*

*Airborne search radar.*

*ASP* Antisubmarine patrol.

*ASV* Airborne search radar.

*ASW* Antisubmarine warfare.

*AVC* Automatic volume control (same as AGC).

*AWS* Air warning squadron (Marine).

*A-1* Continuous wave (CW).

*A-2* Modulated waves (MCW, ICW).

*A-3* Voice modulated waves.

*BC-639* Radio voice receiver. VHF.

*BC-640* Radio voice transmitter. VHF.

*BDI* Bearing deviation indicator.

*BK* IFF transponder.

*BL* IFF interrogator-responder.

*BM* IFF interrogator--(A band).

*BO* IFF interrogator-responder.

*Broadloom-2* AN/APT-6 electronic jammer.

*Broadloom-3* AN/APT-4 electronic jammer.

*BN* IFF interrogator, for surface search radars.

*B-Scan* Radar oscilloscope showing pip on rectangular plot of bearing vs. range.

*C* Condenser; capacity.

*CAP* Combat air patrol.

*Carpet* AN/SPT-2, AN/APT-2 electronic jammer.



*Carpet-3*

AN/APQ-9 electronic jammer.

*Carpet-IV*

AN/APT-5 electronic jammer.

*Carpet Sweeper*

AN/APQ-1 electronic transceiver.

*CD*

Conning Director.

*CHICK*

RCM decoy.

*C & I*

Control and indicator (radar console).

*CIC*

Combat Information Center.

*CM & D*

Countermeasure and deception.

*CRO*

Cathode ray oscilloscope.

*CRT*

Cathode ray tube.

*C-Scan*

Radar oscilloscopes showing pip on rectangular plot of bearing vs. elevation.

*CXHR*

Preproduction designation of SX radar.

*DAK*

LF-MF radio direction finder.

*DAQ*

HF radio direction finder.

*DC*

Depth charge.

*DC*

Direct current.

*DF*

Radio direction finding.

*DINA-2*

AN/APT-1 electronic jammer.

*DP*

MF airborne radio direction finder.

*DRA*

Dead reckoning analyzer.

*DRP*

Dead reckoning plotter.

*DRT*

Dead reckoning tracer.

*DUMBO*

Rescue plane (usually PB type).

*E-call*

Buzzer, bell or light indicating system.

*Echo*

Reflected radar signal.

*ECM*

Electrical coding machine.

*E-1, E-2, etc.*

System of designating echo strength.

*ETA*

Estimated time of arrival.

*ETI*

Estimated time of interception.

*ETRA*

Estimated time to reach altitude.

*F*

Suffix; fighter director officer designation.

*f*

Frequency.

*Fade*

Disappearance of echo from radar screen.

*FDO*

Fighter director officer.

*FDS*

Fighter director ship.

*FDT*

Fighter director tender.

*FFDO*

Force fighter director officer.

*FM*

Frequency modulation.

*GCA*

Ground control approach.

*CGI*

Ground control intercept.

*GMCM*

Guided missile countermeasures.

*Grass*

Noise as seen on radar scope (amplitude indication).

*GS*

Guardship.

*Gulls*

Balloon supported radar reflectors to simulate targets.

*HAYRAKE Junior*

Radar beacon and homing device.

*HF* High frequency (3,000-30,000kc).  
*H/H* Hedge hogs.  
*H-Scan* Radar oscilloscope showing double dot presentation of range, bearing and elevation.  
*HTD* Hand target designator.  
*HV* HIGH voltage.  
*IC* Interior communications.  
*IF* Intermediate frequency (receiver).  
*IFF* Identification friend or foe (radar).  
*IO* Intercept officer.  
*Jackal* RCM deceptive device--barrage jammer.  
*KC* Kilocycle (1,000 cycles).

--109--

---

**COMINCH P-013**

*KITES* Previously called angels: Delayed descent or balloon-supported types of electromagnetic reflectors dropped by aircraft to simulate radar targets; consisting of light metal sheets on various frame works of various shapes of a series of resonant dipoles.

*Kts* Knots.

*KV* Kilovolt (1,000 volts).

*KW* Kilowatt (1,000 watts).

*LF* Low frequency (30-300 kc).

*LLI* Latitude and longitude indicator.

*LORAN* Long range navigation.

*MANDREL* AN/APT-3 electronic jammer.

- MAS*  
Low-powered guided missile jammer.
- MC*  
Megacycle (1,000,000 cycles).
- MEW*  
Micro-wave early warning radar with multiscopes.
- MF*  
Medium frequency (300-3,000 kc).
- MF*  
Midget peeper radar jam (training with fire-control radar).
- Mk. 3*  
Main battery fire-control radar (formerly FC).
- Mk. 4*  
Secondary battery fire-control radar (formerly FD).
- Mk. 8*  
Main battery fire-control radar (formerly FH).
- Mk. 11*  
Automatic weapons fire-control radar.
- Mk. 12*  
Secondary battery fire-control radar.
- Mk. 22*  
Secondary battery low angle fire-control radar.
- Mk. 27*  
Auxiliary fire-control radar, with precision sweep, lobe switching for matched pips. S-band. For BB's and CA's.
- Mk. 28*  
Secondary battery fire-control radar.
- Mk. 101*  
Radar jamming transmitter for training.
- MN, or MAN*  
Very high frequency voice radio (FM).
- Moonshine*  
RCM countermeasures device.
- M-Scan*  
Horizontal trace with step (*e.g.* SK).
- MTB*  
Maintenance of true bearing.
- NAN*  
Night signalling equipment.
- OAA*  
Radar test equipment.
- OBJ*  
Training device for placing synthetic aircraft echoes on certain radar equipment.
- OCJ*  
Training device for placing synthetic surface echoes on certain radar equipment.
- Osc*

	Oscillator.
<i>OSC</i>	Own ship's course.
<i>Picket</i>	Advanced or distant radar guard ship.
<i>PD</i>	Target designator circuit; also Navy model letters for transcribing and reproducing equipment.
<i>PE</i>	Permanent echo; also Navy model letters for transcribing and reproducing equipment.
<i>Phantom</i>	Radar decoys.
<i>Pip</i>	Displacement of radar trace caused by echo.
<i>Pipology</i>	Determination of target composition from appearance and behavior of target's echo.
<i>PPI</i>	Plan position indicator.
<i>PPPI</i>	Precision plan position indicator (VF) (P31). Shows expanded segment on B scope (also called 3PI).
<i>PPPI</i>	Projection plan position indicator (VG) similar to British skiatron.
<i>PRF</i>	Pulse repetition frequency.
<i>PRR</i>	Pulse repetition rate.
<i>QCJ</i>	Underwater sound gear.
<i>QCL</i>	Underwater sound gear.
<i>R</i>	Resister; resistance.
<i>R</i>	Suffix; radar officer designation.
<i>Racon</i>	Radar beacon and homing device (Hayrake Junior).
<i>Radar</i>	Radio detection and ranging.
<i>Radex</i>	Radar countermeasures training.
<i>RAB</i>	Radio receiver (HF).
<i>RAK</i>	Radio receiver (HF).
<i>RAO</i>	Radio receiver (HF).

<i>RAS</i>	Radio receiver (MF to HF).
<i>RBB</i>	Radio receiver (MF).
<i>RBC</i>	Radio receiver (HF).
<i>RBH</i>	Radio receiver (HF).
<i>RBK</i>	Radio receiver (VHF).
<i>RBO</i>	Radio receiver (HF).
<i>RBW</i>	Panoramic adapter for use with RBK.
<i>RBV</i>	Radio receiver with panoramic display.
<i>RCK</i>	Radio receiver.
<i>RCM</i>	Radio and radar countermeasures.
<i>RCO</i>	Radar control officer.
<i>RCO</i>	Radio receiver (VHF).
<i>RCS</i>	Radar control ship.
<i>RDF</i>	Radio direction finder.
<i>RDF</i>	British designation for "radar" (obsolete).
<i>RdM</i>	Petty officer designation for enlisted radarman.
<i>RF</i>	Radio frequency.
<i>RMO</i>	Radio matériel officer (radar maintenance).
<i>RP</i>	Raid plotter.
<i>RPD</i>	Radar planning device.
<i>RPPI</i>	Remote plan position indicator.
<i>R-scope</i>	Radar oscilloscope showing expanded segment of "A-scope".
<i>RT</i>	

*R/T* Petty officer designation for enlisted radio technician.  
*RUG* Voice radio.  
*R<sub>x</sub>* AN/APQ-2 electronic jammer.  
*SA* Receiver (general term).  
*SBK* Air-search radar (series) (shipborne).  
*SC* Status board keeper.  
*SCI* Air search radar (series) (shipborne).  
*SCI* Ship-controlled intercept.

--109--

---

**COMINCH P-013**

*SCR* Signal corps radio. Followed by three numbers designates the particular Army radio or radar units. Used only for equipment types on which production was commenced prior to adoption of AN designation system (17 Feb., 1943). Some of the more common are listed below:

*SCR 268*  
 Gunlaying radar for AA and searchlight control.

*SCR 270*  
 Mobile long range, early warning air search radar (270-DA has 12-inch PPI and 12-inch scope added.)

*SCR 271*  
 Fixed long range, early warning air search radar. (271 DA has 12-inch PPI and 12-inch A scope added.)

*SCR 299*  
 Mobile HF radio voice transmitter and associated receiver.

*SCR 399*  
 Transportable HF radio CW-voice transmitter and associated receiver.

*SCR 499*  
 Air transportable HF radio voice transmitter and associated receiver.

*SCR 508*  
 Vehicular radio voice FM transceiver.

*SCR 522*  
 Airborne radio voice transceiver. VHF 4-channel, battery powered.

*SCR 527*  
 Mobile GCI radar.

*SCR 573*  
 Mobile VHF transmitter.

*SCR 574*

Mobile VHF receiver.

*SCR 575*

Mobile IVHF DF equipment.

*SCR 584*

Gunlaying radar for AA and searchlight control. Designed to replace SCR 268. Being used also by Army for GCI.

*SCR 588*

Fixed GCI radar--American version of British CHL.

*SCR 602*

Portable short range, early warning radar.

*SCR 608*

Radio voice FM transceiver.

*SCR 610*

Radio voice transceiver.

*SCR 615*

Army version of Navy SM.

*SCR 624*

Air transportable radio voice transceiver. VHF 4-channel. Generator powered.

*SCR 627*

Air transportable radar, similar to SCR 527 with improved antennas.

*SCR 634*

Ground DF VHF unit--air transportable.

*SCR 639*

Automatic radio compass.

*SCR 640*

Homing beacon.

*SCR 720*

Airborne intercept radar.

*SCR 729*

Airborne IFF equipment.

*SCR 808*

Radio voice FM transceiver.

*SD*

Aircraft detection radar for submarines.

*Sea Clutter*

Echo from surface of sea (sea return).

*SF*

Surface search radar.

*SFDS*

Standby fighter director ship.

*SG*

Surface search radar.

*Shackle*

Code used in Pacific Fleet.

*SHF*



- SIO* Super high frequency (3,000-30,000 mc.).
- SIO* Ship's information officer.
- SJ* Surface search radar for submarines.
- SK* Air search radar (shipborne).
- SK-IM* Modified (mobile) SK for shore-based operation.
- Skiatron* British term for projection plan position indicator.
- SL* Surface search radar.
- SM* Air and surface search radar, capable of giving altitude of a/c directly.
- SN* Portable surface search radar.
- Snow* Receiver noise seen on PPI scope (amplitude indication).
- SO* Surface search radar.
- Sonar* Sound and navigation ranging.
- S/P* Sound power phone.
- SP* Summary plotter.
- SP* Air and surface search radar, capable of giving altitude of a/c directly, a newer and smaller production model of SM.
- SP-IM* Modified (mobile) SP for shore-based operation.
- SR* Air search radar receiver (shipborne).
- STC* Sensitivity time control.
- SU* Surface search radar.
- S/V* Surface vessel.
- SX* Radio receiver (Hallicrafter series).
- SX* Search and altitude determining radar with constant sweep.
- T* Suffix; Radio specialist officer.

<i>TAJ</i>	Radio transmitter.
<i>TBD</i>	Target bearing designator.
<i>TBI</i>	Target bearing indicator.
<i>TBK</i>	Radio transmitter (HF).
<i>TBL</i>	
<i>TBM</i>	Radio transmitter (HF).
<i>TBS</i>	Radio transceiver (VHF).
<i>TCS</i>	Radio transceiver (HF).
<i>TDS</i>	Target designation system.
<i>TDT</i>	Target designation transmitter.
<i>TDT</i>	Radio transmitter (VHF).
<i>TDQ</i>	Radio transmitter (VHF).
<i>TEA</i>	Gamming transmitter (VHF); GMCM.
<i>TR-box</i>	Transmit-receive duplex switching box on radar antenna lead.
<i>TVG</i>	Time variation of gain.
<i>TX</i>	Transmitter (general term).
<i>U-sec</i>	Micro-seconds (millionths of second).
<i>VHF</i>	Ultra high frequency (300-3,000 mc).
<i>VC</i>	Remote PPI equipment.
<i>VD</i>	Remote PPI equipment.

- VE* PPI equipment standardized for either remote or direct use.
- VF* See PPPI.
- VG* See PPPI.
- VHF* Very high frequency (30-300 mc).
- VFD* Visual fighter director.
- WE 233A* Airborne radio voice transceiver. VHF 4-channel, battery powered.
- WE 233X* Airborne radio voice transceiver. VHF 10-channel, battery powered (AN/ARC-1).
- Window* Freely flowing bodies, usually paper with metallized surface, of a size and shape which best reflect radar beams, and suitable for projecting into space from a plane, rocket or shell, to deceive enemy radar as to number and location of targets.
- W/T* Wireless telegraphy (British).
- X* Suffix intercept officer designation.
- YE* Aircraft radio homing beacon (Hayrake).
- YG* Land-based radio homing beacon (called Mother by many shore bases).
- YH* Radar beacon. Used with ASE, AN/APX-2, SCR 729.
- YJ* Radar homing beacon. Used with ASE, ASB, AN/APX-2, SCR 729.
- YK* Radar beacon. (Also AN/CPN-3, SCR 620). Used with ASD, ASD-1, AIA, AN/APS 3, 4, 5, 15.
- YM* (Also AN/CPN-6) radar beacon. Used with ASD, ASD-1, AIA, AN/APS-1, 4, 6, 15.
- Z* Impedance.
- ZA* Airborne instrument approach equipment.
- ZB* Airborne part of HF homing equipment.
- $\lambda$  Lambda--wave length.

---

## STANDARD NOMENCLATURE OF UNITED STATES NAVAL VESSELS

BB Battleships.  
 CA Heavy cruisers.  
 CB Large cruisers.  
 CL Light cruisers.  
 CV Aircraft carriers.  
 CVB Large aircraft carrier.  
 CVL Small aircraft carrier.  
 CVE Escort aircraft carrier.  
 DD Destroyers.  
 DE Destroyer escort vessels.  
 OBB Old battleship.  
 SS Submarines.

**MINE VESSELS**

CM Mine layers.  
 CMc Coastal mine layers.  
 ACM Auxiliary mine layers.  
 DM Light mine layers.  
 DMS High speed mine sweepers.  
 AM Mine sweepers.  
 AMc Coastal mine sweepers.

**PATROL VESSELS**

SC Submarine chasers (110').  
 PCS Submarine chasers (136').  
 PC Submarine chasers (173').  
 PCE Escort (180').  
 PCE(R) Escort (rescue) (180').  
 PE Eagles.  
 PF Frigates.  
 PG Gunboats.  
 PGM Motor gunboats.  
 PT Motor torpedo boats.  
 PTC Motor boats, submarine chasers.  
 PY Yachts.  
 PYc Yachts, coastal.

**AUXILIARIES**

**AUXILIARIES**

(continued)

AKS General stores-issue ships.  
 AKV Cargo ship and aircraft ferry.  
 AN Net laying ships.  
 AO Oilers.  
 AOG Gasoline tankers.  
 APA Transports, attack.  
 AP Transports.  
 APc Coastal transports (small).  
 APD High speed (destroyer) transports.  
 APH Transports fitted for evacuation of wounded..  
 APB Barrack ships; self-propelled.  
 APL Barrack ships.  
 APV Transport and aircraft ferry.  
 AR Repair ships.  
 ARB Repair ships, battle damage.  
 ARD Floating drydocks.  
 ARDC Repair dock, concrete.  
 ABD Advance base docks.  
 ABSD Advance base sectional docks.  
 AFD Mobile floating drydocks.  
 ARG Repair ships, internal combustion engine.  
 ARH Heavy-hull repair ships.  
 ARL Repair ships, landing craft.  
 ARS Salvage vessels.  
 ARV Aircraft repair ships.  
 AS Submarine tenders.  
 ASR Submarine rescue vessels.  
 ATF Ocean tugs, fleet.  
 ATA Ocean tugs, auxiliary.  
 ATO Ocean tugs, old.  
 ATR Ocean tugs, rescue.  
 AV Seaplane tenders.  
 AVC Catapult lighters.

AB	Crane ships.	AVD	Seaplane tenders (destroyer).
AD	Destroyer tenders.	AVP	Seaplane tenders (small).
AE	Ammunition ships.	AW	Distilling ship.
AF	Store ships.	IX	Miscellaneous, unclassified.
AG	Miscellaneous.		<b>LANDING SHIPS</b>
AGC	Amphibious force flagships.	LSD	Dock.
AGP	Motor torpedo boat tenders.	LSM	Medium.
AGS	Surveying ships.	LST	Tank.
AH	Hospital ships.	LSV	Vehicle.
AK	Cargo ships.		
AKA	cargo, attack.		
AKN	Net cargo ships.		

--111--

**COMINCH P-013**

**LANDING CRAFT**

LCI(G)	Infantry (gunboat).
LCI(L)	Infantry (large).
LCS(L)(3)	Support (large) (Mk. III).
LCT(5)	Tank, Mk. V.
LCT(6)	Tank, Mk. VI.

**DISTRICT CRAFT**

YHB	House boats.
YO	Fuel oil barges.
YOG	Gasoline barges.
YOS	Oil storage barges.
YPK	Pontoon stowage barges.
YSR	Sludge removal barges.
YS	Stevedoring barges.
YTT	Torpedo testing barges.
YW	Water barges.
YD	Floating derricks.
YSD	Seaplane wrecking derricks.
YAG	Auxiliary, miscellaneous.

**DISTRICT CRAFT  
(continued)**

YM	Dredges.
YFB	Ferryboats and launches.
YFD	Floating drydocks.
YCF	Car floats.
YCV	Aircraft transportation lighters.
YA	Ash lighters.
YF	Covered lighters.
YG	Garbage lighters.
YC	Open lighters.
YCK	Open cargo lighters.
YFT	Torpedo transportation lighters.
YNT	Net tenders (tug class).
YNg	Gate vessels.
YMS	Motor mine sweepers.
YP	Patrol vessels.
YPD	Floating pile drivers.
YSP	Salvage pontoons.

YDG Degaussing vessels.  
 YDT Diving tenders.

YHT Scows, heating.  
 YTB Harbor tugs, big.  
 YTM Harbor tugs, medium.  
 YTL Harbor tugs, little.  
 YR Floating workshops.  
 YRD(H) Workshops, floating, drydock (hull).  
 YRD(M) Workshops, floating, drydock (machinery).

### SPECIAL TERMS USED BY SHOREBASED ADCC's

It is possible that ships operating in areas where ADCC's are stationed may intercept reports containing the following terms. These are being included for information only. They should not be used by shipboard CIC's.

#### IDENTIFICATION OF AIRCRAFT

*Able* Experimental of calibration.  
*Charlie* Army.  
*Dog* Navy.  
*Green Star* Area activity, friendly planes.  
*How* Transport.  
*Item* Antisubmarine patrol.  
*King* Combat air patrol  
*Red Star* Area raid, hostile.  
*X-Ray Indian* Gunnery or local maneuvering mission.  
*Bluebird* Crash boat.  
*Bojangles* Turn on IFF.  
*Check Oil* Check radar station for azimuth accuracy.  
*Check Water* Check radar station for range accuracy.  
*Curtains* Turn off IFF.  
*Fortune* Attempt local identification.  
*Fortune Negat* Cannot identify locally.  
*Rainbow* IFF Mk. III response from more than one transponder in such a manner that the code cannot be distinguished.  
*Rusty* IFF Mk. II.  
*Snow* Window.

#### NETS OF PRIMARY CONCERN TO CIC

ASC Air support command net.  
 ASP Antisubmarine patrol net.  
 H/K Hunter killer net.  
 ICSA Inter commander support air net.  
 IFD Inter fighter director net.  
 IFW Inter force warning net.  
 IIRT Inter island radar telling net.  
 LAW Local air warning net.  
 Primary Primary fighter control net.  
 SAD Support air direction net.  
 SAD (E) Support air direction net (emergency).  
 SAO Support air observer net.  
 SAR Support air request net.  
 Secondary Standby fighter control net.  
 SNASP ASP net, when used for antisnooper patrol.  
 TBS Tactical voice circuit.

*Stretcher* IFF Mk. III abnormal response from single transponder  
(not according to any given code).

*Wet Cat* Pilot (or crew member) bailed out in vicinity of---

--112--

COMINCH P-013

## TRAINING FILMS

The letter designation in front of the project numbers for the films listed below signify:

MN: Sound motion picture produced by the Training Film Branch, Photographic Division, Bureau of Aeronautics.

SN: Slide films produced by the Navy (BuAer).

MA: Sound motion pictures (Army).

MC: Commercial films distributed by the Bureau of Aeronautics.

The films desired should be requested from the nearest Training Aids Library in your district or area by letter indicating:

- a. Quantity desired.
- b. Navy project number.
- c. Title of film, and subtitle where there are several in a series.

Refer to the Basic Catalog of United States Navy Training Films, NAVAER TF 22-10 for additional details concerning the latest available films.

### AMPHIBIOUS OPERATIONS

<i>Project No.</i>	<i>Title</i>
MN-942s	Amphibious Warfare: The Ship-to-Shore Movement in a Joint Amphibious Operation.
MN-942u	Amphibious Warfare--Naval Gunfire Support in a Landing Operation.

### ANTISUBMARINE WARFARE

SN-2760a-e	MAD (AN/ASQ-1A) Operation Series.
SN-2761a-b	MAD (AN/ASQ-1A) Alignment and Adjustment Series.
MN-3420a	MAD Signal Interpretation (AN/ASQ-2)

### AVIATION

MN-1327n	Flight Characteristics of the F4U Corsair.
----------	--------------------------------------------

MN-1327p Flight characteristics of the F6F Hellcat.  
MN-84e Fighter Combat Tactics: Attack Against Bomber Formations.  
MN-84h Fighter Combat Tactics: Fighter Escort.  
MN-84i Fighter Combat Tactics: Combat Air Patrol.  
MN-84f Offensive Tactics Against Enemy Fighters.  
MN-84g Defensive Tactics Against Enemy Fighters.  
MN-1460f American Torpedo Plane Tactics and Combat Incidents.  
MN-15a Carrier Landing Signals.  
MN-15d Carrier Operations--Aircraft Rendezvous.  
MN-1247 Fighter Pilot.  
MN-32 Oxygen in Aviation.  
MN-84c Snoopers--and How to Blast 'em.

### **COMBAT INFORMATION CENTER**

MN-3634 Combat Information Center.

### **Communications**

SN-62r Sound Powered Telephone.  
MN-1389a-c Hits, Runs, and Errors in Aircraft Tactical Communications (in three parts).

### **FIGHTER DIRECTION**

MN-1006d This Is Fighter Direction.  
MN-1006f The Radarman in Fighter Direction.  
MN-1006g Communications in Fighter Direction.  
MN-1006h Fighter Direction--Principles of Interception.  
MN-1006i Typical Intercepts--Straight in Attack.  
MN-1006j Typical Intercepts--Crossing and Dog Leg.  
MN-1006k Typical Intercepts--Reconnaissance Planes.  
MN-1006L Typical Intercepts--Low Visibility.

### **FIRE CONTROL RADAR**

MN-955c Operation of Mark 3 Fire Control Radar.  
MN-955d Operation of Mark 4 Fire Control Radar.  
MN-3202a-b Fire Control Radar--Mark 8 at Sea.  
MN-3221a Fire Control Radar--Mark 12.  
MN-3221b Fire Control Radar--Mark 22.  
MN-4922 Fire Control Radar--Main Battery Fire Control Equipment (Mark 8, 13, 19) (available about 1 June).  
MN-4925 Fire Control Radar--Heavy Machine Gun Radar.  
MN-5050c-d Radar Scope Interpretation--Fire Control Radar--Parts I and II. Available about 1 June.



**GUNNERY**

<i>Project No.</i>	<i>Title</i>
MN-942u	Amphibious Warfare--Naval Gunfire Support in a Landing Operation.

**IFF AND IDENTIFICATION**

MN-3224	Mark III IFF.
MN-3224b	IFF Operation (AN/APX-2).
MN-3224c	IFF Operation (AN/APX-8).
SN-3472a-j	ABK Maintenance.

**RADAR--GENERAL**

MN-1550	Radar, Weapon of Attack.
MN-955a	Finding the Enemy.
MN-2104a	The Cathode Ray Tube--How It Works.
MN-2140b	The Cathode Ray Oscilloscope.
MN-2104d <sup>1</sup>	The Cathode Ray Tube--Types of Indicators.
MN-5050a and b <sup>1</sup>	Radar Scope Interpretation--Fundamentals--parts I and II.
MN-5050e <sup>1</sup>	Radar Scope Interpretation--Air Search.
MN-5050f and g <sup>1</sup>	Radio Scope Interpretation--Surface Search and Piloting

**RADAR COUNTERMEASURES**

MN-2867b	Radex--ASB.
MN-955j	Radar Jamming.
MN-2867a	Window.
MN-2867c	Radex--Fire Control Radar Mark 3.
MN-2867d	Radex--Fire Control Radar Mark 4.
MN-2867e	Radex-Air-borne PPI and B Scan.
MN-2867f	Radex--Shipboard Search.
MN-3635	Introduction to Radar (short version of MN-1550)

**RADIO AND RADAR--AIR-BORNE**

SN-1075-1084	ASV Operation Series.
MN-1315	ASE Interpretation.
SN-1316a-ad	ASE Maintenance Series.
SN-1317a-e	ASB Operation Series.
MN-1309	ASB Interpretation.

MN-1312	ASG Interpretation.
SN-1303a-p	ASB Maintenance Series.
SN-1300a-j	ASG-ASC Operation Series.
SN-1305a-y	ASG Maintenance Series.
SN-1318a-e	ASD Operation Series.
MN-1311	ASD Interpretation.
SN-1304a-t	ASD Maintenance Series
MN-2736	AN/APS-3 (ASD-1) Interpretation.
SN-2732a-e	ASO-1 Operation Series.
SN-1307a-d	AIA Operation.
MN-2452	AIA Interpretation.
SN-2726a-h	LZ Test Gear Series.
SN-2737a-d	ASH Operation Series.
MN-2741	AN/APS-4 Interpretation.
SN-2738a-g	ASH Alignment and Adjustment Series.
SN-2749a-b	YJ Beacon Operation.
SN-2750a-g	YJ Beacon--Alignment and Adjustment.
MN-3583	YJ Beacon Operation.
MN-4363	AN/APS-15 Operation.
MN-2104c	The Cathode Ray Tube in Air-borne Radar.
SN-2745a-c	Radio Altimeter (AN/ARN-1) Operation Series.
SN-2746a-c	Radio Altimeter (AN/ARN-1) Alignment and Adjustment Series.
SN-2747a-f	Radio Altimeter (AN/ARN-1) How It Works.
SN-2748a-e	Radio Altimeter (AN/ARN-1) Trouble Shooting Series.
	<b>AIR-BORNE ELECTRONIC INTERFERENCE SERIES</b>
MN-5014a	Sources and Effects of Interference.
MN-5014b-c	Techniques for Eliminating Interference to Communication Gear.
MN-5014d	Techniques for Eliminating Interference to Radar Gear.
MN-5014e	Eliminating Electronic Interference Through System Engineering.
	<b>RADAR EQUIPMENT</b>
MN-955b	Operation of SC-1 Radar.
MN-955c-d	Operation of Mark 3 and 4 Fire Control Radar.
MN-955e	Operation of SG Radar.
MN-955L	Operation of SF Radar.
MN-955m	SL Radar Operation.
MC-955o	Operation of the SO Radar Series.

MC-955p	Servicing the SO Radar Series.
MN-2104a	Cathode Ray Tube--How it Works.
MN-2104b	Cathode Ray Oscilloscope.
MC-955q	Maintenance of the SO Radar Series. Part I: Units of the SO Series.
MC-955r	Part II: The Motor Alternator and Modulator Assembly.
MC-955s	Part III: The Transmitter and Receiver Unit.
MC-955t	Part IV: The Rectifier Power Unit, Indicator Unit, the Antenna.
MN-2562a	Maintenance of Transmission Lines--the Coaxial Line.
MN-2562b	Maintenance of Transmission Lines--the Wave Guide.

#### NAVIGATION

SN-2357d-f	LORAN--Air-borne Operation and Adjustment.
SN-2728a-e	LORAN Maintenance.
MN-2731a	LORAN--Basic Principles.
MN-2731b	LORAN--Air-borne Operation.
MN-2731c	LORAN--Shipboard Operation.
MN-2731d	LORAN-Ground Station System (available about 1 July).
MN-2731e	LORAN--Air-borne Signal Characteristics.
MA-1706	Radio Transmitters.
MA-750	Airplane Antennas--Types and Installations.
MN-1389a-c	Hits, Runs, and Errors in Aircraft Tactical Communications (three parts).

<sup>1</sup> In production.

--114--

COMINCH P-013

## Publications

The reports and publications listed in the Electronic Index may be obtained from the following source by request through the proper channels.

1. Commander in Chief, U.S. Fleet, Readiness Division, Navy Department, Washington, D.C.
2. Office of the Chief of Naval Operations, Navy Department, Washington, D.C.
3. Bureau of Aeronautics, Publications Section, Navy Department, Washington, D.C.
4. Bureau of Ships, Navy Department, Washington, D.C.
5. Commander in Chief, Pacific Fleet, FPO, San Francisco, Calif.
6. Bureau of Ordnance, Publications Section, Navy Department, Washington, D.C.
7. Commander, Destroyers, Pacific Fleet, FPO, San Francisco.
8. Pacific Fleet Radar Center, FPO, San Francisco.

9. Technical Information Unit, Airborne Coordinating Group, Naval Research Laboratory, Bellevue 20, D.C.
10. Hydrographic Office, Navy Department, Washington, D.C.
11. Commander, Amphibious Forces, Pacific Fleet, FPO, San Francisco, Calif.
12. Commander in Chief, Pacific Ocean Areas, FPO, San Francisco, California.
13. Commander, Air Pacific Fleet, FPO, San Francisco, Calif.
14. Bureau of Naval Personnel, Training Division, Washington, D.C.

NOTE.--Publications which list R. P. S. as the source may be obtained from the Registered Publications Issuing Office in your area.

Title	General publications date	Classification	Source	
Air Navigation Bulletin	Quarterly	Confidential	(2)	
Anti-Submarine Bulletin	Monthly	Secret	(1)	
BuAer Confidential Bulletin	Monthly	Confidential	(3)	
Bulletin of Ordnance Information	Quarterly	Confidential	(6)	
CIC Magazine	Monthly	Confidential	(2)	
Digest of Airborne Radio and Radar News	Monthly	Confidential	(3)	
Harbor Underwater Detection	Monthly	Confidential	(2)	
Mine Warfare Notes	Periodically	Confidential	(2)	
Naval Aviation Confidential Bulletin	Monthly	Confidential	(2)	
Naval Aviation News	Bimonthly	Restricted	(2)	
Naval Communications Security Bulletin	Quarterly	Restricted	(2)	
Recognition Journal	Monthly	Restricted	(2)	
Description of Amphibious Force Flagship (AGC) (Cominch P-02)	1944	Confidential	(1)	
<b>COMBAT INFORMATION CENTER</b>				
Title	Date	Short Title or No.	Classification	Source
Undetected Enemy Plane Attacks				(7)
The Capabilities and Limitations of Shipborne Radar*		RADONE-A	Confidential	(1)
Tactical Uses of Airborne Radar*		RADTWO-A	Confidential	(1)
Radar Operator's Manual	1944	RADTHREE	Confidential	(1)
The Air Plotting Manual	1944	RADFOUR	Confidential	(1)
The Surface Plotting Manual	1944	RADFIVE	Confidential	(1)
Radar Countermeasures Manual*		RADSEVEN	Confidential	(1)
Aircraft Control Manual*		RADEIGHT	Confidential	(1)
The Shipborne Radar Countermeasures Operator's Manual*		RADELEVEN	Confidential	(1)

\* In preparation.

COMINCH P-013

<b>COMMUNICATIONS</b>				
<b>Title</b>	<b>Date</b>	<b>Short Title or No.</b>	<b>Classification</b>	<b>Source</b>
Central Pacific Area Communication Plan and Doctrine	April 1944	CENTCOMTWO	Confidential	R.P.S.
United States Fleet Basic Rapid Communications Plan for War	March 1943	PAC 71	Confidential	(5) or R.P.S.
Signal Vocabulary		CSP 412		R.P.S.
Communications Instructions	1944	DNC-5	Restricted	R.P.S.
United States Fleet Basic Rapid Communications Doctrine and Basic Communications Plan for War	March 1943	USF 70(A)	Confidential	R.P.S.
Telephone Talkers' Manual	November 1943	NAVPERS 14005	Restricted	(14)
Combined Operating Signals (U.S.-British)	1944	CCBP-2-2	Confidential	R.P.S.
Notes on Communications Security	1943		Restricted	R.P.S.
Combined Communications Instructions		CCBP-5	Confidential	R.P.S.
Signal Communication		FM-1-45		(3)
Signal Communication		FM-24-5		(3)
Combined U.S.-British Radio-telephone (R/T) Procedure.		RM-24-9		(3)
Combined Radio-telegraph (W/T) Procedure		FM-24-10		(3)
Air-Ground Communications		TM 1-465		(3)
Communications Handbook		CO-NAVAER 00-80V-44	Confidential	(3)
General Signal Book	March 1944		Confidential	R.P.S.
The Communication Officer	1944	NAVPERS 16101	Restricted	(14)
Catalogue of Naval Radio Equipment	August 1944	Ships 275	Confidential	(4)
<b>DOCTRINE AND TACTICS (GENERAL)</b>				
Current Tactical Orders and Doctrine, U.S. Fleet	February 1944	USF-10 (A)	Confidential	R.P.S.
War Instructions, U.S. Navy	1934	FTP-143 (A)	Confidential	(1)
General Tactical Instructions	1940-42	FTP-183/188	Confidential	R.P.S.
U.S. Fleet Anti-Submarine and Escort of Convoys	1945	FTP-223 A	Confidential	R.P.S.
Current Tactical Orders, Battleships	1938	USF-16	Confidential	R.P.S.
Current Doctrine, Battleships	1938	USF-17/td>	Confidential	R.P.S.
Current Tactical Orders, Cruisers	January 1941	USF-20 (rev.)	Confidential	R.P.S.

Current Doctrine, Cruisers	January 1941	USF-21 (rev.)	Confidential	R.P.S.
Current Doctrine, Submarines	May 1944	USF-25 (A)	Confidential	R.P.S.
Current Tactical Orders, Destroyer	1940	USF-32 (rev.)	Confidential	R.P.S.
Current Doctrine, Destroyers	1940	USF-33 (rev.)	Confidential	R.P.S.
Current Tactical Orders, Aircraft Carriers, U.S. Fleet	1943	USF-77 (A)	Confidential	R.P.S.
Transport Doctrine, Amphibious Forces, U.S. Pacific Fleet	May 1944		Confidential	(11)
Current Tactical Orders and Doctrine, U.S. Fleet Aircraft, vol. 2, Battleship and Cruiser Aircraft	May 1943	USF 75 (A)	Confidential	R.P.S.

--116--

COMINCH P-013

Title	Date	Short Title or No.	Classification	Source
<b>FIGHTER DIRECTION</b>				
Fighter Direction and Combat Air Patrol	January 1944		Confidential	(7)
Fighter Director Vocabulary	1943	CCBP-11-2	Restricted	R.P.S.
Fighter Direction Manual (Tent.) for Island Based Fighter Director Officers	November 1943		Confidential	(13)
Air Defense Control Center Doctrine (Tent.)	March 1944		Confidential	(5)
Aircraft Control Manual*		RADEIGHT	Confidential	(1)
<b>FIRE-CONTROL RADAR</b>				
Fire-Control Radars Mark 3 (FC) and Mark 4 (FD)		OP 657 (rev.)	Confidential	(4)
Fire-Control Radar Mark 8		OP 658	Confidential	(4)
Radar Equipment Mark 8 Mods. 1 and 2		OP 658 (rev.)	Confidential	(4)
Radar Equipment Mark 12 Mod. 0		OP 1076 (with change 1).	Confidential	(4)
Radar Equipment Mark 13 Mod. 0		OP 1297	Confidential	(4)
Radar Equipment Mark 22 Mod. 0		OP 1153	Confidential	(4)
Radar Equipment Mark 26 Mods. 3, 4		OP 1154	Confidential	(4)
Radar Equipment Mark 27		OP 1155	Confidential	(4)
Radar Equipment Mark 28 Mods. 0, 3		OP 1156	Confidential	(4)
Radar Equipment Mark 28 Mod. 2		OP 1238	Confidential	(4)
Radar Equipment Mark 29 Mod. 2	1945	OP 1299	Confidential	(4)
Radar Equipment Mark 32 Mod. 1	1945	OP 1300	Confidential	(4)

Radar Equipment Mark 34 Mods. 3, 4	1945	OP 1301	Confidential	(4)
Radar Beacon Mark 1 Mod. 1		OP 1193	Confidential	(4)
Radar Beacon Mark 2 Mods. 0, 1		OP 1336	Confidential	(4)
<b>GUNNERY</b>				
Gunnery Instruction, U.S. Navy	1940	FTP-134	Confidential	R.P.S.
Gunnery Doctrine and Standard Fire Control Procedures for Destroyers with 5"/38 and 3"/50 Batteries	January 1944	DTB-1-44, DTB-2-44	Confidential	(7)
Destroyer Torpedo Attack Instructions (Tent.)	October 1943	DTB-4-43	Confidential	(7)
Destroyer Torpedo Doctrine and Manual of Torpedo Control	February 1943	DTB 4-44	Confidential	(7)
Shore Bombardment		CO-NAVAER 00-80V-54	Confidential	(3)
Spotting		NAVAER 00-80V-52	Restricted	(3)
Air Gunner--Get that Fighter		NAVAER 00-80S-32	Restricted	(3)
Combat Air Patrol		CO NAVAER 00-808S-21	Confidential	(3)
Defensive Tactics		CO NAVAER 00-80S-17	Confidential	(3)
Don't Kill Your Friends		NAVAER 00-80Q-1	Restricted	(3)
Gunnery Approaches		CO NAVAER 00-80V-59	Confidential	(3)
How to Get Hits		CO NAVAER 00-80V-27	Confidential	(3)
Offensive Tactics		CO NAVAER 00-80S-15	Confidential	(3)
Gunnery Sense		NAVAER 00-80Q-3	Restricted	(3)

\* In preparation.

--117--

COMINCH P-013

<b>IFF AND IDENTIFICATION</b>				
Title	Date	Short Title or No.	Classification	Source
Routing, Recognition and Identification of Aircraft, Pt. 4: Identification Procedure, Change No. 5	January 1944		Confidential	R.P.S.
Radar Operator's Manual	1944	RAD THREE	Confidential	(1)
Recognition and Identification Sense		NAVAER 00-80Q-21	Restricted	(3)
Capabilities and Limitations of Shipborne Radar*	1945	RAD ONE (A)	Confidential	(1)
<b>NAVIGATION</b>				
Tactical Plotter, No. 1		NAVAER 30-104-81		(3)

Air Navigation Radio Aids	Weekly			(10)
Manual for Operation of Airborne LORAN		CO NAVAER 00-80V-46	Confidential	(3)
LORAN Handbook for Shipboard Operators		SHIPS 278	Confidential	R.P.S.
The Amphibious Sketch, Its Function in Amphibious Training and Operation	1945	HO PUB 227	Restricted	(10)
CIC Manual	1945	RAD SIX	Confidential	(1)
Tactical Uses of Radar in Small Vessels*		RAD NINE	Confidential	(1)
Radar Planning Device		CO NAVAER NO. 30-160R-28	Confidential	
<b>RADAR EQUIPMENT</b>				
Instructional Radar Diagrams No. 2-SA Radar No. 3-SC, SK Series	1944		Confidential	(4)
Timing Circuits	May 1944	NAVSHIPS 900-013	Confidential	(4)
List of Naval Radio, Radar and Sonar Equipment	1945	SHIPS 242A	Confidential	(4)
Fire Control Radars Mark 3 (FC) and Mark 4 (FD)	April 1943	ORD 657	Confidential	(6)
Fire Control Radar Mark 8 Operation	January 1943	ORD 658	Confidential	(6)
Operation of Airborne Radar	1944	CO NAVAER 00-80V-38	Confidential	(2)

\* In preparation.

--118--

**COMINCH P-013**

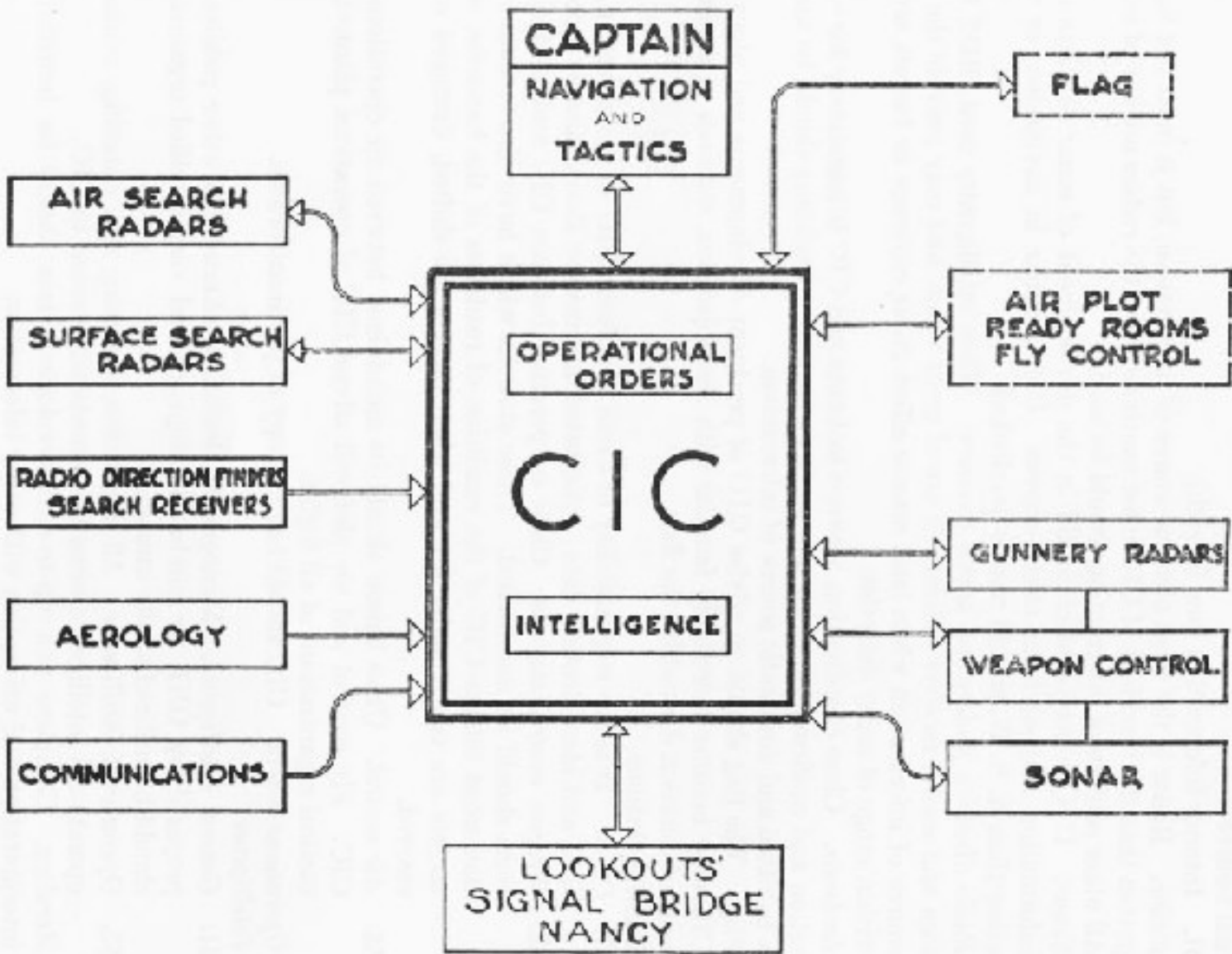
<b>RADIO</b>				
Title	Date	Short Title or No.	Classification	Source
Elements of Electricity and Radio	April 1944	NAVSHIPS 900,012	Restricted	(4)
Radio-Frequency Transmission Lines	May 1944	NAVSHIPS 900,008	Restricted	(4)
Airborne Radio Maintenance Notes, 2 parts		ARMN	Confidential Restricted	(3)
List of Naval Radio and Sonar Equipment	February 1944	SHIPS 242	Confidential	R.P.S.
Catalogue of Naval Radio Equipment	August 1944	SHIPS 275	Confidential	(4)
Radio and Electrical Equipment for Naval Aircraft	June 1943		Confidential	(3)
The Radio Operator		TMT 11-454		(3)
Radio Fundamentals	May 1944	RM 11-455	Restricted	(3)
Radio and Sound Bulletin	Quarterly	NAVSHIPS 900,011	Restricted	(4)



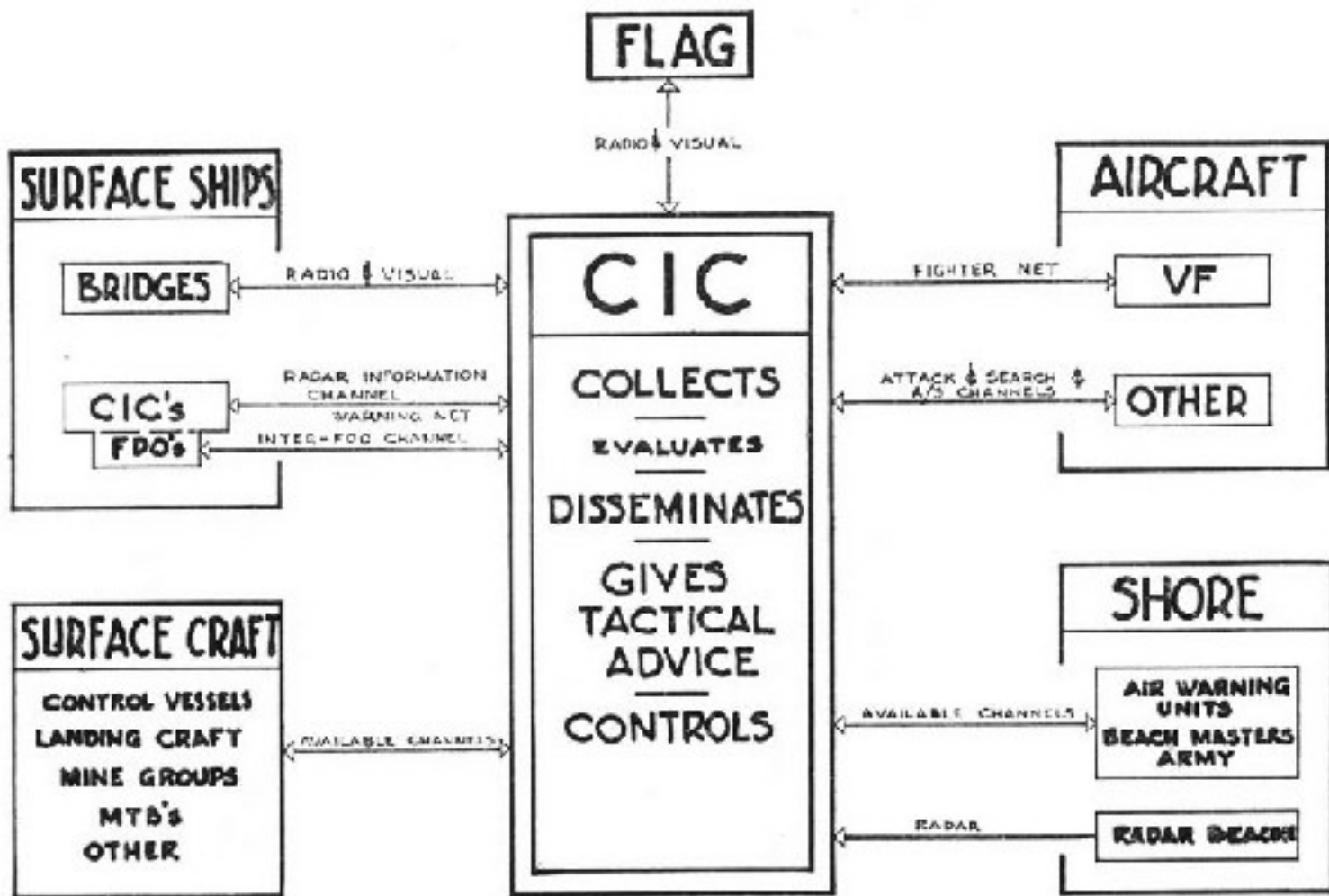
The Klystron		NAVSHIPS 903-7	Restricted	(4)
<b>RADAR COUNTERMEASURES</b>				
Radar Countermeasures Manual*		RADSEVEN	Confidential	(1)
The Shipborne Radar Countermeasures Operator's Manual*		RADELEVEN	Confidential	(1)
The Airborne Radar Countermeasures Operator's Manual*		RADTWELVE	Confidential	(1)
Countermeasures and Deception Summary, Issues 1 to 6 (discontinued)	1944		Secret	(2)
What is Window	1944	Bull. 2	Confidential	(8)
RCM Letter	Monthly		Confidential	(4)
Countermeasures and Deception Bulletins	As necessary		As proper	(5 & 12)
Attack Plotters Mark 1 Mods. 1 and 2	January 1944	OP 1101	Confidential	(6)
<b>RADAR--GENERAL</b>				
Radar Electronic Fundamentals	June 1944	NAVSHIPS 900,016	Confidential	(4)
Radar System Fundamentals	April 1944	NAVSHIPS 900,017	Confidential	(4)
Radar Maintenance Bulletin	Monthly	NAVSHIPS 900,034	Confidential	(4)
Microwaves and Waveguides		NAVSHIPS 903-5	Restricted	(4)
Microwave Techniques		NAVSHIPS 900,028	Confidential	(4)

--119--

[12 October 2005](#)



# INTERIOR INFORMATION FLOW



## EXTERIOR INFORMATION FLOW