ATP 1(D)
VOLUME I

Allied Maritime Tactical Instructions and Procedures

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JANUARY 2002

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NATO STANDARDIZATION AGENCY (NSA)

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Rear Admiral, NONA
Director NSA

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2	NONE
3	NONE
4	NONE
5	US
6	IT
7	NONE
8	NONE
9	NONE
10	NONE
11	TU
12	NONE
13	NONE
14	NONE

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NATION	SPECIFIC RESERVATIONS
TU	a. The use of the term “Coastal Waters/Areas” is not acceptable to Turkey. Because it is not included in international law. b. TURKEY understands that the commanders who will undertake the OCA functions in both regional and full NCS will be designated by NAC/MNC and approved by MC/DPC. (Chapter 1, Para 1270) c. Since the command and control issues have not been solved yet, Turkey does not accept the criteria concerning boundaries all between NATO Commands in establishing an amphibious area (AOA). (Chapter 11, Para 11015 and 11022.b)
IT	Chapter 6, Article 6780: The text of paragraph 4 does not specify that SMAA acknowledgment of a CATAS advisory should contain information/ advice on possible mutual interference between the surface unit and Allied submarines (if any). The text provides authority for possible ASW surveillance coordination by SMAA which is only responsible for monitoring surface ships/submarines movements to avoid mutual interference (AAP 6 definition and Article 6771 refer).
US	Chapter 5, Article 5101: Acoustic Spectrum contradicts long established U.S. Definitions. U.S. Position on the Acoustic Spectrum is as follows: Acoustic Spectrum (Hz) ULF 0.1 Hz 1 Hz ELF 1 Hz 10 Hz VLF 10 Hz 100 Hz LF 100 Hz 1000 Hz MF 1 KHz 10 KHz HF 10 KHz 100 KHz VHF 100 KHz 1000 KHz

DEPARTMENT OF THE NAVY
NAVY WARFARE DEVELOPMENT COMMAND
686 CUSHING ROAD
NEWPORT RI 02841-1207

January 2002

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PREFACE

1. ATP 1, Volume I, Allied Maritime Tactical Instructions and Procedures, contains tactical principles, procedures, and instructions evolved as a result of experience and exercises to implement operations based on the philosophy supporting the various forms of maritime warfare.
(NR) (NMM) The background to subsurface warfare and surface warfare is contained in ATP 28 and ATP 31, respectively. Purely procedural information and brevity codes are in publications such as ATP 1, Volume II, Allied Maritime Tactical Signal and Maneuvering Book; APP 1, Allied Maritime Voice Reporting Procedures; APP 11, NATO Message Catalog; and APP 7/MPP 7, Joint Brevity Words Publication.
Definitions necessary to the understanding of this book will be found in the glossary.
(NR) (NMM) Procedures for tactical air support of maritime operations are contained in ATP 34. The fundamental aspects of joint operations doctrine are contained in AJP 1, Allied Joint Operations Doctrine. The primary objective of AJP 1 is to provide a doctrine that outlines the principal factors affecting the planning, execution, and support of Allied joint operations.

2. The procedures for each type of warfare are explained in separate comprehensive chapters. While the construction of the book necessitates that subjects are dealt with separately, it is of the utmost importance to understand that there is interaction between tactical procedures which are intended to counter different types of threat.

3. It is unrealistic to assume that a situation will ever exist in which a force may safely prepare to face a single threat in isolation. It is vital that tactical thought is shaped accordingly, that due account is taken of the need for the coordination of all sensors and weapons to meet the most urgent situation within the shortest possible reaction time, and thus to face any threat with the most effective counter.

PURPOSE

1. The purpose of ATP 1 is to provide doctrine, tactics, instructions, and procedures governing the command, control, and maneuvering of all maritime units. This publication serves as the cornerstone upon which the Allied Maritime Tactical Library is built. As such, this publication has precedence over other maritime tactical publications should ambiguity or conflict arise.

2. ATP 1 is divided into two volumes. The specific purpose of each volume is as follows:

a. Volume I — Allied Maritime Tactical Instructions and Procedures, provides doctrine, tactics, instructions, and procedures for the tactical command, control, and maneuvering of all maritime units. This volume also provides instructions related to the employment of forces in selected aspects of specialized warfare, and, in particular, to the safe handling of units operating in close company.

b. Volume II — Allied Maritime Tactical Signal and Maneuvering Book, provides maneuvering, standard operational and administrative signals primarily for use between naval ships, and basic maneuvering instructions.

SCOPE

1. The doctrine and tactics contained in ATP 1 cover all aspects of the command and control of maritime forces in peace and war. The publication provides the instructions and procedures required by a commander to issue orders to fulfill his specified responsibilities and to enable subordinates to understand and comply with these orders. It also gives details of specific duties associated with the execution of tactical tasks.

2. The scope of the individual volumes of ATP 1 is as follows:

a. Volume I — Contains the doctrine, tactics, instructions, and procedures related to the tactical employment of forces in specialized forms of warfare, and to the safe and effective maneuvering of maritime units at sea. Volume I is divided into two parts: Part I — General and Part II — Warfare Procedures.

(1) Part I contains the principal organizational, planning, and procedural information required for the effective conduct to maritime operations.

(2) Part II sets forth specific types of warfare necessary for mission accomplishment in a multithreat environment.

b. Volume II — Contains signals covering all instructions and procedures provided in Volume I.

NOTE

Nonmetric values are accurate. Metric values are rounded off to the nearest meter. It is therefore recommended that nations check converted figures for correctness and report any errors to their appropriate national authority.

PART I

General

Chapter 1 — Organization, Command, and Readiness

Chapter 2 — Position, Movement, and Maneuvering

Chapter 3 — Disposition of Forces

Chapter 4 — Communications

Chapter 5 — Electronic and Acoustic Warfare

Chapter 6 — General Warfare Instructions

CHAPTER 1

Organization, Command, and Readiness

SECTION I — ORGANIZATION

1100 TASK, TYPE, AND WARFARE ORGANIZATIONS

There are three systems, all in force at the same time, for organizing the operational units allocated to various commands.

a. Task Organization. The organization of forces for operational purpose is to provide the necessary flexibility for meeting changing operational requirements while retaining a clear indication of the chain of command. Whenever a task organization is created, the commander shall be named in the order creating it.

b. Type Organization. The organization of units normally of the same type into fleets/flotillas/groups/squadrons, divisions, and subdivisions together with assigned flagships, tenders, and aircraft. Type organization is mainly for national administration and logistic purposes.

c. Warfare Organization. The functional organization of forces assigned to conduct tasks within a specific area of Maritime Warfare: antiair warfare (AAW), antisurface warfare (ASUW), antisubmarine warfare (ASW). The warfare organization should be implemented within either a task or type organization.

1101 TASK ORGANIZATION — TASK FORCE NUMBERS

A fleet commander is allocated a block of whole numbers which he assigns as task force numbers in accordance with his needs. Fleet organization into task forces is illustrated in Figure 1-1.

1102 TASK ORGANIZATION — TASK DESIGNATORS

A fleet commander allocates units to specific task forces, but leaves to the task force commander and his subordinate commanders the subdivision of the task force into task groups, task units, and task elements which comprise his task organization. The system of task designation employed is described below and is illustrated in Figure 1-1.

a. Task Groups. A task force may be divided into as many as 99 task groups, designated by adding .01 through .99 to the task force number. Task Force 58 (the example in Figure 1-1) may comprise Task Groups 58.01, 58.40, 58.64, and so on, up to and including 58.99. (For simplicity, Figure 1-1 shows only three task groups.) In the series, 58 designates the task force and .01 through .99 designate the task groups.

b. Task Units. A task group may be divided into as many as 99 task units, designated by adding .01 through .99 to the task group number. In the example in Figure 1-1, task units formed from Task Group 58.40 are 58.40.01, 58.40.02, etc.

c. Task Elements. Task elements subordinate to task units are only organized when the complexity of the task assigned and the size of the force is such as to require an additional echelon of command for the accomplishment of assigned tasks. Subdivision into task elements should be limited to the minimum required for operations. There may be as many as 99 task elements, designated by adding .01 through .99 to the task unit number. In the example in Figure 1-1, task elements formed from Task Unit 58.40.34 are 58.40.34.01 and 58.40.34.99.

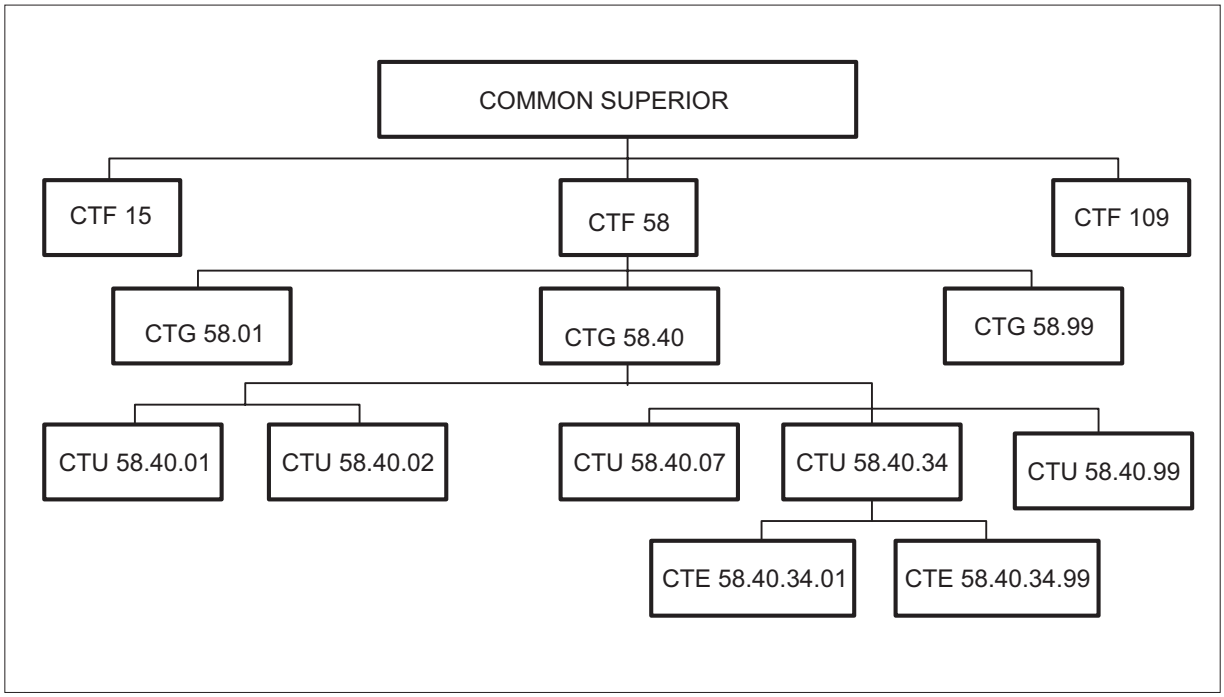

Figure 1-1. Example of Task Organization

d. Restriction on Subdivision. Subdivision should be limited to the minimum required. A task organization commander may subdivide his units into lower ordered components only.

1103 CHANGES IN TASK ORGANIZATION ASSIGNMENTS

It may sometimes be necessary to assign part or all of one task organization to another temporarily or permanently. Such a change is accomplished by change of operational control (CHOP) (see Article 1214) when the OPCON authority changes. The communications aspect of a change of task designator should be considered. An assignment to another task organization will be one of the following:

a. Short-Term Duration. In short-term duration, it will normally be desirable for the force being transferred to retain its existing task organization designation.

b. Longer-Term Duration. Where the assignment is of a longer or of permanent duration, it is preferable for the assigned force to adopt a designator derived from that component of the task organization which it has joined.

1104 — 1199 SPARE

SECTION II — COMMAND

1200 SCOPE

This section includes definitions for command functions. It is written to specify responsibilities in maritime warfare, to enable commanders to issue orders and instructions to fulfill their responsibilities, and to enable subordinates to understand and comply with the orders and instructions they receive. The duties to execute tactical tasks are not included in this chapter but are incorporated in the relevant chapters.

Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures which are employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of his mission.

Note: Certain AAP-6 definitions that appear in this chapter are expanded to clarify their meaning within the context of maritime command. However, AAP-6 definitions are unchanged and are shown in italics. Other definitions and terms used may not presently be found in AAP-6.

1201 AUTHORITY

a. Person. An authority is a person vested with the power to make decisions and issue orders.

b. Individual Power. Authority is also the individual power to make decisions and issue related orders imposing those decisions — such power may be limited in scope, time, and location.

c. Responsibility. Authority automatically confers the responsibility to carry out tasks and report results to the assigning authority.

1202 COMMAND

The authority vested in an individual of the armed forces for the direction, coordination, and control of military forces.

The aim of command is to achieve the maximum operational and/or administrative efficiency.

a. Direction. The process of planning decisionmaking, establishing priorities, formulation policies, and imposing decision.

b. Coordination. The establishment in operations, according to a changing situation, of an orderly correlation in time and place of planned actions in order to achieve the best overall result. In the maritime environment, the term coordination may include certain specified control functions.

c. Control. That authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, which encompasses the responsibility for implementing orders or directives. All or part of this authority may be transferred or delegated.

d. Exercising command presupposes the existence of a chain of command and a command and control system. Some functions arising from direction, coordination, or control may be delegated to subordinates. This is normally done in large or widely dispersed forces where decentralized decisionmaking is required. However, a centralized command is the most direct way of allowing a commander to make use of his experience and ability.

1203 DELEGATION OF AUTHORITY

The action by which a commander assigns a part of his authority commensurate with the assigned task to a subordinate commander. While ultimate responsibility cannot be relinquished, delegation of authority carries with it the imposition of a measure of responsibility. The extent of the authority delegated must be clearly stated.

Delegation to a subordinate commander creates a new responsibility for a specific task. Subordinates should be kept aware of the policies and intentions of their superiors, so that they can act accordingly when faced with unexpected circumstances. A subordinate should never await instructions beyond the time for action.

1204 CHAIN OF COMMAND

The succession of commanding officers from a superior to a subordinate through which command is exercised.

A chain of command establishes the interdependencies which exist at various levels between the superior and his subordinates. Command functions may be exercised at any one of these levels. The organization (task, type, or warfare) adopted for the forces employed automatically defines the chains of command.

1205 COMMAND SYSTEM

A command system is formed by a chain of command and includes the means necessary to distribute orders and collect, evaluate, and disseminate information.

1206 EXERCISING COMMAND

a. General. Successful accomplishment of any mission entails seven phases:

(1) Appreciation of the situation.

(2) Selection of the aim.

(3) Decision on course of action.

(4) Development of a plan.

(5) The operation order.

(6) Execution.

(7) Evaluation.

b. Appreciation of the Situation and Decision. A mission should have only one aim from which the commander can derive his tasks and purpose. It is essential that all units participating in the mission understand the aim, so that they may act in accordance with the commander's intentions, even when the tactical situation has changed and it is no longer possible to follow the original operation order.

c. Execution and Evaluation. Command and control of different operations vary widely and depend on mission, composition, and disposition of the force. Documentation for the evaluation of these operations may be drawn from many sources, most significant of which is probably the war diary. The

primary purpose of the war diary is to provide a cohesive picture of events which have occurred, so that higher authorities may study the operation in all its aspects and evaluate the results achieved. Additional documents to clarify or link events, such as copies of relevant messages, should be included as necessary.

1207 — 1209 SPARE

1210 STRUCTURE FOR THE COMMAND OF MARITIME FORCES

1211 FULL COMMAND

The military authority and responsibility of a superior officer to issue orders to subordinates. It covers every aspect of military operations and administration and exists only within national services. The term "command," when used internationally, implies a lesser degree of authority than when it is used in a purely national sense. It follows that no NATO commander has full command over the forces that are assigned to him. This is because nations, in assigning forces to NATO, assign only operational command or operational control.

1212 OPERATIONAL COMMAND

The authority granted to a commander to assign missions or tasks to subordinate commanders, to deploy units, to reassign forces, and to retain or delegate operational and/or tactical control as may be deemed necessary. It does not of itself include administrative command or logistical responsibility. Operational command may also be used to denote the forces assigned to a commander.

Operational command of maritime forces also includes retention or assignment of tactical command.

NATO commanders receiving operational command or operational control of NATO forces will specify the mission(s) and tasking for these forces and delegate command and control authority as required.

1213 OPERATIONAL CONTROL

The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned; and to retain or assign tactical control of those units. It does not include the authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative or logistic control.

Operational control of maritime forces also includes retention or assignment of tactical command.

NOTE

Operational control is subordinate to operational command and has limited authority; its most important limitation is its inability to allow reassignment of forces.

1214 CHANGE OF OPERATIONAL CONTROL (CHOP)

The date and time (GMT) at which the responsibility for operational control of a force or unit passes from one operational control authority to another.

When it is intended that operational control of a force or unit pass from one operational control authority to another, the operation order should state in explicit terms the manner of execution of CHOP. This may be done in terms of time (GMT), position, or boundary crossing. Subject to the EMCON plan, units executing CHOP should report to both operational control authorities and to the authority vested with operational command over the force or unit. When a CHOP occurs, task organization commanders should

inform the operational control authority of changes in the composition of their forces and major deviations from their normal capabilities.

1215 TACTICAL COMMAND

The authority delegated to a commander to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority.

It involves, therefore, the responsibility for the conduct of the tasks pertaining to the mission; that is, issuing detailed orders and ensuring their correct execution. It also involves responsibility for the general safety of assigned units, although ultimate responsibility remains with the commanding officers. Tactical command of units temporarily attached does not include the authority to give them tasks inconsistent with the mission previously allocated to them.

NOTE

Tactical command of forces also includes retention or assignment of tactical control.

1216 OFFICER IN TACTICAL COMMAND (OTC)

The OTC is the senior officer present eligible to assume command or the officer to whom he has delegated tactical command.

When a task organization is established, the commander (OTC) shall be named in the order creating it. If the OTC is unable to exercise command, the next senior officer present in the task organization will assume and retain command until or unless otherwise ordered. When a task organization has not been established and the higher authority has not selected the OTC, the senior officer present eligible to command will act as OTC.

The OTC will normally be under the operational control of a higher authority (i.e., fleet commander or area commander). That authority will provide direction which specifies the mission, tasking, and forces assigned to the OTC and will also delegate tactical command and control of those forces to the OTC. That authority may designate himself, the task force/group commander, or another command as appropriate, to be OTC of the constituted force(s) or group(s). The OTC must design his command and control organization to accomplish the assigned mission and effectively defend the force. Article 1202 states that exercising command presupposes the existence of a chain of command. Some functions arising from direction, coordination, or control may be delegated to subordinates.

1217 TACTICAL CONTROL (TACON)

The detailed and usually local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned.

This authority is granted by the authority exercising operational command, operational control, or tactical command to a subordinate commander to assume some function concerning direction, coordination, or control of movements, maneuvers, and actions relative to a specific task. The officer exercising tactical control is also responsible for the safety of the units under his control. Tactical control is usually assigned to a subordinate for a limited period of time to conduct a specific mission or task.

NOTE

Tactical control is subordinate to tactical command.

1218 COMMAND BY VETO

In many aspects of maritime warfare, it is necessary to preplan the actions of a force to an assessed threat and to delegate some command functions to a subordinate. Once such functions are delegated, the subordinate is to take the required action without delay, always keeping the OTC informed of the situation. The OTC retains the power to veto any particular action.

1219 COMMAND OF ALLIED FORCES

When Allied task forces of units of two or more nations are formed, the commander shall be named in the order creating them. The commanders of national units joining an Allied task force at sea should not displace the designated Allied commander by virtue of their national seniority or date of commission unless specifically so directed by the senior in the chain of Allied command.

1220 COMMAND OF AIRCRAFT

The degree of authority exercised by the OTC over aircraft employed in maritime operations is determined by the type of mission and whether the aircraft are shipborne or land based (see Chapter 6).

a. Aircraft Commander. The aircraft commander is responsible for the efficient execution of the assigned mission and for the command and safety of the aircraft throughout its mission. He shall inform his controlling authority if weather conditions or material failure significantly affect his ability to perform his mission. An aircraft commander retains ultimate responsibility for the safety of his own aircraft.

b. Command of a Flight of Aircraft. The senior aircraft commander of a flight of aircraft or the officer designated exercises tactical command of the flight and is responsible for the efficient execution of the assigned mission.

1221 — 1229 SPARE

1230 COMMAND DURING REPLENISHMENT AT SEA

The senior commander of the two forces — the commander of the force to be replenished and the RAS force commander — is the OTC. Although the OTC is responsible for the proper execution of the entire replenishment operation, he should consider the recommendations of the other force commander. If the RAS force commander is the OTC, he should generally respect the desires of the commander of the force to be replenished as to position and time of rendezvous and the general direction of movement during the replenishment. If the commander of the force to be replenished is the OTC, he should carefully consider the RAS force commander's recommendation as to replenishment course and speed.

The Maritime Tactical Message System (MTMS) provides an improved standard format for ordering replenishment.

1231 METHOD OF EXECUTION

MTMS involves the use of five standard signals, as follows, all of which should be classified at least Restricted.

a. OPSTAT RASREQ. For use by a combatant ship to signal its requirements, either direct to the supplying ship or to the OTC. In either case, the requirements must be submitted in a timely fashion.

b. OPTASK RAS. For use by the OTC to promulgate the replenishment program.

c. OPSTAT RAS. For use by supplying ships to provide customer ships with details of rigs and types of stores that can be delivered from respective transfer stations.

d. OPSTAT UNIT. For use by all ships to promulgate details of transfer stations.

e. OPSTAT CARGO. For use by supplying ships to report cargo remaining to the OTC after an RAS operation and on changing operational control.

Details and examples of these RAS signals are provided in APP-11. It should be noted that the use of MTMS RAS signals requires that transfer stations should be numbered.

1232 OPTASK RAS: THE OTC PROMULGATING THE REPLENISHMENT PROGRAM

a. Replenishment Program. When he has received the ships' requirements, the OTC will arrange and promulgate the replenishment sequence. This should arrive in the ships concerned as soon as possible before the RAS operation to enable the supplying ships to prepare their stores and pre-dump as required.

RAS operations involving several replenishment units should be planned on RAS sheets (see APP 4).

The complete replenishment program will be passed by signal to all ships. A replenishment program of a more complex kind can be signaled by Method A, and one which involves a small number of moves by Method B.

(1) Method A. Paragraphs E1 and E2 of the OPTASK RAS are used for this method and list first the supplying ships in sequence from the planning sheet, and then the customer ships and the coded description of their replenishment program taken from the RAS sheet.

(a) On receipt of the OPTASK RAS signal, individual ships should use a standard RAS plotting sheet to ascertain their own ship's replenishment program.

(2) Method B. Paragraphs F1 and F2 of the OPTASK RAS are used for this method and list the sides of the supplying ships that will be used for replenishment, followed by the customer ships and the transfer station numbers from the RAS sheet.

b. Preliminary Movements. When the OTC of the combatant force orders his ships to "Replenish," the ships shown in the signal as being first to replenish are to proceed to the supplying ship. Remaining escorts are to join the screen and heavy units are to proceed to their allocated stations in the formation. Unless otherwise ordered by the OTC, replenishments should then proceed as follows:

(1) Ships replenishing are to conform to the replenishment sequence laid down without further orders.

(2) Heavy units are to take up the waiting position automatically when the ship ahead reports that she expects to disengage in 15 minutes, and are to replenish when it is clear to do so.

(3) Escorts are to proceed as described in paragraph 1232(1) above, if they have been ordered to relieve at the replenishment unit. If they have been ordered to relieve on station, escorts are to proceed to replenish as soon as they have been relieved in their station, without further signal.

1233 OPSTAT UNIT: SUPPLYING SHIP PROVIDING DETAILS OF RIGS TO CUSTOMER SHIPS

On receipt of the OPTASK RAS or when ordered by the OTC, supplying ships are to provide customer ships concerned with the details of rigs and types of stores to be delivered at each transfer station. This shall be done by using only paragraphs D1 and E3 of the OPSTAT UNIT.

1234 OPSTAT CARGO: SUPPLYING SHIP REPORTING CARGO

On completion of replenishment, each supplying ship is to report to the officer under whose command the support ships have been placed (and to the replenishment force commander for information) the quantities of cargo types remaining. If the OTC of an RAS operation is to be some other officer, the supplying ship is also to report her cargo to the OTC 48 hours before the RAS operation.

1235 COMMAND IN MINE COUNTERMEASURES

Self-protection mine countermeasures are the responsibility of the OTC or commanding officer. Active mine countermeasures are the responsibility of the local commander in own waters and of the advance force commander in amphibious operations. For detailed responsibilities, see Chapter 13.

1236 — 1239 SPARE

1240 COMMAND IN OPERATION AWKWARD

For detailed responsibilities, see Chapter 14.

1241 — 1249 SPARE

1250 COMMAND IN SUBMARINE OPERATIONS

Traditionally, submarine operations have been conducted independent of aircraft and surface ships, and have required a centralized command system. Improvements in submarine communication capabilities along with refocusing of maritime objectives have brought about much closer cooperation and interoperability of submarines and other maritime forces. Shifting of tactical command or control to an OTC for coordinated operations between submarines and surface and/or air forces is highly desirable in many scenarios. Procedures and requirements of the shifting of tactical command and control are contained in ATP 18. The submarine operating authority (SUBOPAUTH) is the commander who has, as a minimum, operational control of submarines, and has the authority to delegate tactical command or control. The SUBOPAUTH is normally the submarine force commander. When he is the area submarine commander, the SUBOPAUTH is responsible to the area commander.

1251 AUTHORITIES FOR SUBMARINE MOVEMENTS

Authorities who have responsibilities with regard to submarine movements are the Submarine Movement Advisory Authorities (SMAAs), Submarine Exercise Area Coordinators (SEACs), and Submarine Operating Authorities (SUB-OPAUTHs). (See Article 6771.)

1252 — 1259 SPARE

1260 COMMAND IN AMPHIBIOUS WARFARE

The Commander Amphibious Task Force (CATF), upon the commencement of operations, assumes responsibility for the entire force and for the operation, and is vested with the commensurate authority to ensure success of the operation. The specific means through which CATF exercises this authority during an amphibious operation is set forth in ATP 8 and other relevant amphibious warfare publications. For detailed responsibilities in amphibious warfare, which are complex and involve close cooperation between many agencies, a summary has been included in Chapter 11.

1261 PARALLEL CHAINS OF COMMAND

The interrelation of naval and landing force tasks during the planning for an execution of amphibious operations requires the establishment of parallel chains of command and corresponding commanders at all levels of the amphibious task force organization. The following fundamental considerations govern the application of such a system of parallel command:

a. Except during the planning phase, CATF, a naval officer, is responsible for the operation and exercises that degree of authority over the entire force necessary to ensure success of the operation.

b. The amphibious task force and landing force commands are on corresponding level of command with regard to their respective components.

c. Corresponding commanders are established at each subordinate level of both the amphibious task force and landing force elements.

d. Matters of command which affect only the Navy forces are dealt with by CATF through the naval chain of command.

e. Matters of command which affect only the landing forces are dealt with by the Commander Landing Force (CLF) through the landing force chain of command.

f. Matters of command which affect both the naval force and the landing force are dealt with through the corresponding naval and landing force chains of command. Commanders at all levels are

required to maintain a close and continuous relationship to ensure that, except in emergencies, no commander makes decisions affecting corresponding commanders without consultation. In such cases, the commander making an emergency decision will notify corresponding commanders of his action at the earliest practicable time.

1262 DESIGNATION OF COMMANDERS

Regardless of the composition of the amphibious task force, CATF is a naval officer designated in the Initiating Directive. The commander of all troop components within the amphibious task force is CLF and is also designated in the Initiating Directive. Commanders of subordinate task groups within the amphibious task force, if they have not been named in the Initiating Directive, are designated by CATF or CLF as appropriate. Should air forces be assigned, their commander, an air force officer, will be designated in the Initiating Directive.

1263 RELATIONSHIPS DURING PLANNING

a. As directed by higher authority, component commanders of the amphibious task force, at the beginning of the planning phase, report for planning purposes to CATF, who is responsible for the preparation of the overall plan for the amphibious operation. CATF serves as the coordinating authority for the conduct of planning. Matters on which CATF and CLF and commanders of the other forces are unable to agree are referred to their common superior for decision.

b. Since immediate responsibility for the conduct of landing force operations ashore is vested in CLF, the planning and execution of the landing and assault are primarily his concern. Participation of other components in the assault consists generally in providing support for the landing force. This involves the analysis of landing force proposals to determine their feasibility from the standpoint of the remainder of the amphibious task force. The capability of providing the necessary support is a primary factor in evaluating and concurring to proposed landing force plans and concepts.

1264 COMMAND DURING OPERATIONS

a. CATF, upon the commencement of operations, assumes responsibility for the entire force and for the operation, and is vested with the commensurate authority to ensure success of the operation.

b. The specific means through which CATF exercises this authority is treated in relation to those aspects of the amphibious operations set forth in this and subsequent paragraphs.

c. CATF exercises his command authority through the commanders of his task organization. The latter, in turn, exercise their authority through their own chains of command.

d. Within the amphibious objective area, CATF is given specific command authority as prescribed by the commander having overall authority for the operation. He will exercise control, as prescribed in the Initiating Directive, over forces not a part of the amphibious task force, when such forces are operating within the amphibious objective area after the arrival of the advance force or the amphibious task force. When such forces are merely passing through the amphibious objective area, control will be exercised only to the extent of preventing or minimizing mutual interference.

e. Subject to the overall authority of CATF, responsibility for the conduct of operations ashore, and for the security of all personnel and installations located within the area of operations ashore, is vested in CLF.

1265 CONSULTATION BETWEEN COMMANDERS

In the exercise of his command authority, CATF, to the greatest possible extent, obtains and considers the opinion of appropriate commanders, particularly in cases involving a decision requiring the

exercise of professional judgment in their operational fields. However, this requirement in no way limits the command authority of CATF.

1266 CONSULTATION BETWEEN CORRESPONDING COMMANDERS

No significant decision affecting the plans, disposition, or intentions of a corresponding commander is made without consultation with the commander concerned.

1267 NAVAL AUTHORITY OVER LANDING FORCE UNITS

No Navy commander, other than CATF, exercises authority over, or assumes responsibility for, the operating of landing force units, except where a Navy commander below the amphibious task force level has been designated as commander of a subordinate force composed of Navy and landing force units.

1268 — 1269 SPARE

(R) 1270 NAVAL CONTROL OF SHIPPING

The naval commander, responsible within a specified geographic area for the naval control of all merchant shipping under Allied naval control, is the Operational Control Authority (OCA).

a. Regional Naval Control of Shipping (RNCS). When RNCS is implemented, the OCA is the naval commander designated as NCS Region Commander (NCSRC). He will be responsible for the control of all merchant shipping consigned to RNCS whilst they are in the NCS Region.

b. Full Naval Control of Shipping (FNCS). When mandatory NCS is introduced on a global basis (FNCS), the OCA's functions are undertaken by the naval commander responsible for each sea area.

1271 CONVOY COMMODORE AND HIS DEPUTIES

The Convoy Commodore, vice commodore, and rear commodore are naval officers or masters of ships in the convoy. The Convoy Commodore is designated to command the convoy, subject to the orders of the OTC, and the vice and rear commodores are designated to assist him. The vice commodore succeeds to command of the convoy if the commodore or his flagship is incapacitated; the rear commodore succeeds both. If a section of a convoy is detached and it does not include the vice or rear commodore, the convoy commodore must designate a commodore for the detaching section. Further discussion of convoy command relationships is found in Chapter 10.

1272 IMPLEMENTATION OF NAVAL CONTROL OF SHIPPING

In time of crisis, RNCS will be the responsibility of the authority nominated by the MNC as the NCSRC. This can either be a shore-based commander or the Maritime Component Commander afloat. The choice of which will be dictated by the location of the crisis area and the type of crisis. Given that the NCS Region will not accord with any existing command area boundaries, it is important that appropriate liaison with other commanders is maintained. In the event that FNCS is established, control will be compulsory and exercised by OCAs. Full details of NCS procedures and organization may be found in ATP 2, Vol. I. However, Chapter 10 of ATP 1, Vol. I, contains a comprehensive overview of NCS.

1273 — 1274 SPARE

1280 COMMAND DURING SUPPORT OPERATIONS

1281 SUPPORT SITUATIONS

Occasions may arise when one force provides support to another force. Support is the action of a force or portion thereof which aids, protects, complements, or sustains any other force. The degree, manner, and duration of support which forces provide each other will be specified by the commander ordering the support. He will indicate which of the following relationships is to apply. Support force OTC should be provided with the necessary information concerning the situation and the mission of the force in need of support at the time when the support is needed.

a. Situation A. The support force is to join and integrate with the other force. The senior officer present or the officer to whom he has delegated tactical command is to become the OTC of the combined force.

b. Situation B. The support force does not integrate. Unless otherwise ordered, the senior OTC of the two forces is to coordinate the tactical operations of the two forces.

c. Situation C. The support force commander has discretion how best to provide support. This situation may be ordered when for example:

(1) There is requirement for a force to provide simultaneous support to more than one force or to provide support to any number of forces entering a designated area, or

(2) When the supporting commander has under his operational control or tactical command the majority of ships or aircraft or has forces equipped with nuclear weapons.

1282 SUPPORT OPERATIONS, SITUATION A

The following considerations are applicable under Situation A:

a. Delegation of Tactical Command. The OTC of the overall force may delegate tactical command or control of designated forces to subordinate commanders for the execution of assigned tasks.

b. Tasking of Forces. The overall force OTC will issue tasking directives (e.g., OPGENs), specify reporting requirements, establish tactical communication circuits, order overall force dispositions, and issue other direction as required by the situation.

1283 SUPPORT OPERATIONS, SITUATION B

Under the conditions of Situation B, the coordination between forces will depend upon the following considerations:

a. Distance between forces.

b. Whether the support force is providing craft for overall force defense.

c. Whether only surface support is being afforded.

d. Communications requirements and capabilities.

e. Threat.

f. Weather.

g. Sensor capabilities and limitations.

h. Cover and deception plans.

1284 SUPPORT OPERATIONS, SITUATION C

The following considerations are applicable under Situation C:

a. General. Support Situation C differs from Situations A and B in that the missions of the respective forces may be different. When the supporting force commander is ordered to support a particular force under Situation C, the supporting force commander will decide what support can be provided as dictated by the constraints of his assigned mission. Coordination between respective OTCs is required to eliminate mutual interference and enhance conservation of resources.

b. Location of Operations. When the support force commander is ordered to support a particular force under the conditions of Situation C, he should decide, in view of the discretion allowed him, whether:

(1) To operate in a central location and thus be better placed to meet any expected commitments, or

(2) To move close to the particular force. Taking into consideration the circumstances above, it may be decided to adopt Situation A or Situation B.

c. Duration of Support. The duration of the support is to be decided by the supporting force commander in the absence of orders to the contrary. If the OTC of the force being supported wishes to retain the supporting force beyond this time, approval of appropriate authorities must be obtained.

d. Support in a Designated Area. The supporting force commander may be ordered to provide support in a designated area through which a number of forces may be passing. If the forces to be supported are not simultaneously in the same area, the procedures in subparagraph b. may be adopted by the supporting force commander with regard to each force.

e. Exchange of Information. In addition to the items in Article 1283, flow of information concerning the measures for the prevention of mutual interference can be ensured.

1285 — 1289 SPARE

1290 OTHER SUPPORT OPERATIONS

Individual units may be assigned to provide support to forces at sea. This support may be in one of four forms:

a. Integrated Operations. Integrated Operations are those operations in which a designated unit provides support to a specific Task Force/Group operating directly under its Tactical Command (TACOM) and Tactical Control (TACON). During integrated operations, the assigning authority retains Operational Control (OPCON).

b. Direct Support. *The support provided by a unit or formation not attached or under command of the supported unit or formation, but required to give priority to the support required by that unit or formation.*

A unit assigned in direct support will operate under the tactical control of the OTC who is being supported. Operational control and tactical command remain with the assigning authority. The direct support unit will report to the designated controlling authority for employment. Control procedures are amplified in subsequent chapters.

c. Associated Support. A unit assigned in associated support operates independently of the supported force, but may be tasked to provide contact information to and receive intelligence from the OTC who is being supported. The designated unit operates under the tactical control of the assigning authority who coordinates the tasking and movement of the supporting unit in response to the supported OTC's requirements.

d. Area Operations. Area operations are normally conducted in a geographic area, not related to the protection of a specific force. Areas may be related to the protection of maritime forces scheduled to enter the area, or to provide defense in depth to distant forces. Tactical command of units conducting area operations remains with the assigning authority.

1291 — 1299 SPARE

SECTION III — TACTICAL COMMAND AT SEA

1300 INTRODUCTION

a. General. The OTC will always be responsible for accomplishing the mission of the force. He may delegate authority for the execution of various activities in some or all of the areas of maritime warfare noted below to designated subordinate warfare commanders and/or coordinators. The three principal areas of maritime warfare are antisurface warfare (ASUW), antisubmarine warfare (ASW), and antiair warfare (AAW). Requirements for air coordination, electronic warfare coordination, and surveillance coordination concern more than one area of warfare and so assume particular importance in the devising of a command structure.

b. Development of Command Structure. In the development of a command structure at sea, the OTC must identify the activities that will be required by the assigned task and determine who will be accountable to him for their execution. For the purposes of this book, the following conventions have been adopted for describing the activities in the OTC's chain of command.

(1) Responsibility. The obligation placed upon an individual for correct and timely execution of a task assigned by a superior that cannot be delegated. Responsibility also entails accountability for the exercise of the authority delegated when tasking was assigned. Responsibility cannot be delegated and thus accountability cannot be shifted. When a duty is assigned, the fact that some tasking can be delegated further down the chain will not lessen the obligation of the holder of the intermediate authority to his superior. The term responsibility is also used to describe an activity that is specific to a duty and cannot be delegated further.

(2) Duty. An identified block of related functions within a larger command structure that can be assigned to a single subordinate. Assignment automatically delegates the requisite authority for command and control required to fulfill the tasking. With the delegation of authority comes the inherent responsibility of the subordinate to the assigning superior for execution of the task in accordance with known orders and procedures. The list of duties is contained in the Duty Table (ATP 1, Vol. II, Table D), for signaling purposes.

(3) Function. A defined activity which may be delegated to subordinates through specific assignment or as part of a duty within the force command structure. Functions are listed in Tables 1-1 through 1-11 and are grouped by warfare area. When any function is delegated, it is assumed that the necessary authority for command, control, direction or coordination required for the execution of that function has also been delegated.

1301 COMMAND OF LARGE FORCES

A fundamental component of command effectiveness is the ability of the commander and commanded units to communicate. This is particularly so in the case of large or dispersed forces; if there are inadequacies in the communications capabilities of individual units, these must be identified and assessed before a disposition is ordered. There will thus be occasions when the communications capability of a force will impact upon the OTC's concept of operations.

1302 DELEGATION OF COMMAND FUNCTIONS

a. Considerations. A centralized command is the most direct way of allowing the OTC to make use of his experience and ability. However, circumstances and command facilities can make delegation necessary. Some factors are:

(1) Mission.

(2) The threat.

(3) Need for quick action or reaction.

(4) Necessity to carry out many actions in different places at the same time.

(5) Practical inability of the OTC to exercise all functions because of excessive workload or the requirements of some actions for specific knowledge of facilities.

(6) Lack of appropriate command, control, and communications facilities.

(7) Force size and composition.

1303 — 1304 SPARE

1305 COMMAND AND CONTROL OPTIONS

The OTC is always responsible for formulating and promulgating policy. Other OTC functions, including warfare functions, may, based on factors stated in Article 1302, be delegated to subordinates within the constraints of the Rules of Engagement (ROE) in force and stated policy. For the three principal warfare areas, the OTC has the following options:

a. The OTC retains command in the principal areas of warfare by retaining all the warfare functions.

b. The OTC delegates to one subordinate commander one or more warfare functions.

c. The OTC delegates to more than one subordinate commander several warfare functions.

d. The OTC delegates to subordinates within geographic areas (or sectors) warfare functions relevant to that area, but may retain any part of the overall function for himself. This form of delegation can be used by a principal warfare commander as well, if so assigned.

e. A special form of delegation as described in item b. is that the OTC of a large force may allocate all his warfare functions for the defense of a force to a Composite Warfare Commander (CWC) while retaining overall responsibility for the mission. The CWC may, in turn, delegate some or all warfare functions as described above.

NOTE

Item a. describes centralized command while options in items b. through e. all describe forms of decentralized command.

1306 RESPONSIBILITIES

a. OTC's Responsibilities. The OTC has overall responsibility for accomplishing the mission of the force and for executing defense. The OTC's policy and procedure for succession of command authority as well as designation of the standby OTC should be specified in advance of the operation in the OTC's orders. The OTC shall specify the chain of command between himself and, when designated, the CWC, principal warfare commanders, coordinators, supporting commanders, and the forces under their tactical command and/or control. This may be done by task number designation or by stipulating which task groups, units, or elements are designated for each commander. The detailed OTC's responsibilities for mission execution and defense of the force are listed in Table 1-1 and those for a convoy operation in Table 1-9 and mine warfare in Table 1-11. The OTC's responsibilities cannot be delegated.

b. Principal Warfare Area Responsibilities. In exercising his responsibilities, the OTC must consider both the threat to the force and the units which he has available to counter the threat. However, no single threat may be considered in isolation; consequently, no tactic to counter a specific threat may be employed without considering its effect on the security of the force from other threats which may subsequently materialize. The OTC's detailed functions are found in Tables 1-1 through 1-11. There are two categories reflected in the tables:

(1) Those functions of the OTC which may be delegated to a CWC.

(2) Those functions which may be delegated to warfare commanders, coordinators, or others to control assets and take action necessary to execute the promulgated policy.

c. Coordination Responsibilities.

(1) Air Coordination. The OTC is responsible for coordinating all friendly air movement within his area of interest. As he will not always know the position and intention of all friendly units, he must exercise coordination partly by procedural means. The detailed functions of the OTC for air coordination are to be found in Table 1-6 and are explained in Chapter 6, Section IV. They may be delegated to an Air Coordinator.

(2) Electronic and Acoustic Warfare (EAW) Coordination. The OTC is responsible for determining and promulgating force EAW policies. Details of responsibilities and functions are to be found in Tables 1-1 and 1-8 and are explained in Chapters 5 and 9. EW functions may be delegated to the Electronic Warfare Coordinator (EWC). Guidance on the application of acoustic warfare is to be found in ATP 28.

(3) Surveillance. The OTC is responsible for establishing the surveillance areas for each area of maritime warfare within the overall guidelines of the general picture compilation plan. Details of responsibilities and functions are to be found in Tables 1-1 through 1-4 and are explained in Chapter 6. Functions may be delegated to warfare commanders.

(4) Mine Warfare Coordination. The OTC is responsible for formulating and promulgating mine warfare policy. Detailed responsibilities and functions are found in Table 1-11. Mine warfare functions may be delegated to a designated Mine Warfare Coordinator (MWC), as indicated in the table.

d. The Convoy Responsibilities of the OTC. The OTC is responsible for the safe and timely arrival of the convoy. Detailed responsibilities and functions are found in Table 1-9 and are explained in Chapter 10.

(1) Mercantile Convoy. The OTC of the escorting ships is not altered when a more senior naval officer is present in a naval ship designated as part of the convoy and not part of the escort.

(2) Military Convoy. The senior naval officer of the ships in convoy and escorting ships will designate the OTC of the combined force in accordance with Article 1216.

(3) When a Support Force is in Situation A. (See Article 1282.) When the OTC of the support force is senior to the OTC of a mercantile convoy, he should consider allowing the OTC of the convoy to remain in tactical command. This maintains continuity of command and the previous close liaison between the OTC of the convoy and the convoy commodore.

(4) Unescorted Convoy. In the absence of a warship escort, the convoy commodore is to command the convoy.

e. OTC's Functions for Departure and Entry Operations.

The functions of the OTC are found in Table 1-10 and are explained in Chapter 3.

1307 —1309 SPARE

1310 DELEGATION OF AUTHORITY

The OTC may retain tactical command and tactical control authority or he may delegate some of that authority to subordinate commanders and coordinators. Such delegation does not mean that the OTC relinquishes authority over subordinates. It does mean that the subordinate is given some or all of that same authority over forces assigned to him by the OTC. If the OTC elects to designate a CWC and/or warfare commander/coordinators, he may delegate tactical command authority required to carry out assigned tasks to them by using the Duty Table (ATP 1, Vol. II, Table D) and Tables 1-1 through 1-11 of this chapter.

1311 DELEGATION CONSIDERATIONS

a. General. The following general considerations are provided for selection and location of warfare commanders:

(1) Availability of interoperable data link and access to required displays.

(2) Sufficiency and interoperability of communications equipments.

(3) Availability of sufficient skilled personnel and state of training (staff augmentation if necessary).

(4) Living/working space available in units.

(5) No undue limitations imposed by RADHAZ restrictions.

(6) Level of tension/state of hostilities.

(7) Threat assessment.

(8) Area of operations and disposition required.

(9) Emission policy including need for silence on unique emitters.

(10) Compatibility of unit force weapons and sensors employment with proposed warfare command functions.

(11) The desirability of delegating all functions in a single warfare area to a single subordinate.

b. Specific Antiair Warfare Commander (AAWC) Considerations.

(1) Easy access to EW information.

(2) Possibility of using AEW aircraft as sector or standby AAWC.

c. Specific Antisubmarine Warfare Commander (ASWC) Considerations.

(1) Availability of communication systems and space required for coordination with submarines and the submarine operating authority (SUBOPAUTH). (Staff augmentation will normally be required.)

(2) Availability of air ASW expertise.

(3) Requirement for specialized oceanographic expertise.

d. Specific Antisurface Warfare Commander (ASUWC) Considerations.

(1) Access to aircrew post mission debriefs.

(2) Access to AEW and strike warfare expertise.

(3) Access to adequate targeting data.

e. Authority and Responsibility. In deciding what degree of control is to be delegated, and when, the OTC must observe one cardinal principle: *To operate effectively, each unit and command must know in detail its obligation to the OTC, warfare commanders and coordinators, and other units.* To achieve this, it is essential that the OTC clearly specifies the chain of command. Although control of different force weapons systems in a single ship may be delegated to different warfare commanders, only one commander may exercise control over the movements of an individual unit at any one time. Should it be necessary to change tactical control to meet specific circumstances, the OTC must clearly specify under what circumstances and when such change is to take place. Should another commander wish to move a unit to better carry out duties in a warfare field, he must do so through the commander having tactical control of that ship or unit, as specified in the task organization, with the OTC or CWC adjudicating any differences.

1312 WARFARE COMMANDER AND COORDINATOR RESPONSIBILITIES

a. General.

(1) Composite Warfare Commander (CWC). That officer to whom the OTC has assigned all his authority and delegated functions for the overall direction and control of the defense of his force.

(2) Principal Warfare Commanders (PWCs). Subordinate to the OTC/CWC are three principal warfare commanders: Antiair Warfare Commander (AAWC), Antisurface Warfare Commander (ASUWC), and Antisubmarine Warfare Commander (ASWC). The warfare commanders are responsible for collecting and disseminating information and in certain situations are delegated authority to respond to threats with assigned assets.

(a) The warfare commanders, when so authorized, may autonomously initiate action. Attention is drawn to Article 1218, "Command by VETO." The CWC also has power of veto within his area of responsibility.

(b) In addition, commanders may be assigned authority for the deployment of force (long-range) weapons systems and sensors, in accordance with the warfare organization, by means of duty/function tables, regardless of the commander exercising tactical control of the unit.

(3) Functional Groups. The OTC may form temporary or permanent functional groups within the overall task organization. These groups would have specific stated functions, such as operational deception, underway replenishment, screening duties, etc.

(4) Functional Call Signs. Warfare commanders and coordinators may be allocated a two-letter call sign related to their respective command or coordination functions. This convention allows a clear picture of the command and control organization and provides a quick and easy reference to be used by warfare commanders for intercommunications. See Article 4123, paragraph b.

b. Delegation to Principal Warfare Commanders. The AAWC, ASUWC, and ASWC will be responsible for the collection of information in their particular areas and the dissemination to the OTC and force of evaluated information in those areas. Warfare commanders will maintain continuous liaison with each other to ensure timely flow of mutually supporting information and avoid mutual interference. Subsequent sections and Tables 1-2 through 1-4 deal with specific functions of the warfare commanders and specific amounts of authority delegated to them in particular environments. Some warships have weapons systems which have effective ranges that extend beyond the local area in which the ship is operating. Since warfare commanders are normally assigned authority to employ these weapons, this may cause situations in which one commander has tactical control of a ship and another has control of that ship's force weapons systems. If firing the weapon does not interfere with the tasking of the ship, there is generally no problem. However, if significant maneuvering is required, coordination between the appropriate warfare commanders is vital in prosecuting the threat. A temporary shift of tactical control might be required but command and control should remain clear. Disagreement between the warfare commanders should be resolved by the OTC (or CWC if designated).

c. Delegation to the Screen Commander (SC). The SC is a functional commander who will normally control movements for the ships in the inner screen in accordance with guidance received from the warfare commanders. The functions of the SC are contained in Table 1-5.

d. Delegation to Coordinators. Coordinators are asset and resource managers. They carry out the policies of the OTC and respond to the specific tasking of the warfare commanders. Coordinators may also exercise control of specified assets.

(1) The Electronic Warfare Coordinator (EWC). The EWC is the principal advisor to the OTC in all matters pertaining to the employment and exploitation of the electromagnetic and acoustic spectrum. Accordingly, he has broad responsibilities, which impact upon task group planning as well as the management and control of all active and passive weapons, sensors, and electronic communications equipment which operate in or target the electromagnetic spectrum/environment to include: ESM, ECM, EPM, EMCON, OPDEC, OPSEC, SIGINT (COMINT/ELINT), and SIGSEC (COMSEC/ELSEC). The extent to which the EWC exercises actual control over assets is scenario dependent and should be clearly stated by the OTC and understood by the principal warfare commanders. The EWC's planning and management responsibilities encompass several areas. The EWC's functions are found in Table 1-8. In addition:

(a) The EWC must ensure that force assets are employed to support the requirements of the OTC and principal warfare commanders. Coordination between the EWC and the principal warfare commanders is vital to ensure that all assets with ESM, ECM, and EPM capabilities are managed effectively.

(b) The EWC is the principal manager of the electromagnetic and acoustic spectrums. The EWC will formulate, promulgate, control, and monitor the EMCON plan based upon the OTC's emission policy. The ASWC must operate force acoustic emitters within the effective EMCON plan. The ASWC has the authority to break acoustic EMCON in defense of the force. He must, however, notify the EWC of his actions.

(c) The EWC must ensure that the force deception plan and assets are employed in a manner which facilitates the mission and policy of the OTC.

(d) The EWC must ensure that cryptologic assets, both organic and nonorganic, are employed in a manner which facilitates responsiveness to the AAW, ASW, ASUW, and EW information needs of the OTC.

(2) The Air Coordinator. The Air Coordinator exercises coordination within the force air coordination area. The duty for air coordination should be assigned to the unit which has the greatest number of electronic aids to aircraft navigation and control, the largest number of experienced air control personnel, and the best air picture facilities. This duty may be collocated with the AAWC, AREC, HEC, or ASWC.

(3) The Air Resource Element Coordinator (AREC). The AREC is a resource manager. He may, under certain circumstances, exercise tactical control for particular aircraft (i.e., for aircraft projecting power ashore), but his primary role remains that of asset allocation and of informing the warfare commander of the status of these assets, the results achieved by them, and the information gained from their sensors. Particular functions of the AREC are detailed in Table 1-7 and amplified in Chapter 6.

(4) The Helicopter Element Coordinator (HEC). When two or more ships other than a CV are helicopter equipped, a central scheduling authority for flight operations from these ships is useful. In a multithreat environment, the assets controlled by this coordinator may be in demand by any of the principal warfare commanders. The HEC's functions, therefore, will in many ways parallel those of the AREC, with whom he should coordinate, concerning helicopters. Additional functions found in Table 1-7 can be delegated to the HEC for non-CV-based helicopter operations. HEC functions will be delegated by the OTC, generally to the senior commanding officer of helicopter-equipped ships. These coordinating functions will normally not apply to amphibious force and logistic helicopters. Requests for helicopters embarked in other than the CV and amphibious and logistic ships will be direct to the HEC. The OTC must be made aware of helicopter scheduling, tasking, and flight operations in order to be able to resolve potential requirement conflicts. The HEC should promulgate a daily flight schedule.

(5) The Submarine Operations Coordinating Authority (SOCA).

(NC) (NMM) The SOCA functions as the primary point of contact in the task force/group with the SUBOPAUTH and submarines assigned to him concerning coordinated operations matters. The OTC/CWC may retain this function or delegate it to a subordinate commander (normally, but not necessarily, the ASWC) depending on the role of the submarine (e.g., ASUW, special warfare, support of amphibious warfare, etc.).

(a) (NC) (NMM) Division of SOCA Functions. In large operations, the OTC/CWC may retain selected submarine coordination functions (e.g., WSM coordination) and delegate all other functions (e.g., TACON) to one or more subordinate commanders. In doing so, unambiguous lines of coordination shall be retained between the task group and the SUBOPAUTH, and between individual submarines and the commanders to whom they are assigned. Division of submarine coordination functions can provide a task group greater flexibility in submarine employment, but it is not required if a single commander can effectively accomplish SOCA functions for all submarines.

(b) (NC) (NMM) Submarine Element Coordinator (SEC)/Submarine Advisory Team (SAT). The SEC is the principal advisor to the SOCA for submarine operations. Assignment of a SEC to the SOCA staff should be considered anytime submarines operate in associated support and is required in direct support (unless this requirement is waived by the SUBOPAUTH). While not always necessary, a SAT — composed of additional watchstanders — may be required depending on the scenario. SEC/SAT becomes an integral part of and is co-located with the SOCA staff.

(c) (NC) (NMM) SOCA and SEC/SAT functions and responsibilities are described in ATP 18.

(6) Local Warfare Coordinator. When two or more units are in company, a local warfare coordinator may be designated. Local warfare coordinators have the following functions:

(a) Direction Functions:

i. Delegating, as appropriate, specified functions to other units in his local group.

ii. Establishing watch zones for units in his group.

iii. Broadcasting the local picture to units of the group on the local coordination net.

(b) Coordination Functions. Correlating and evaluating reports from units in company and, where appropriate, relaying this information to the OTC/CWC or warfare commander.

(c) Control Functions. The local warfare coordinator controls the local coordination net.

(7) The Mine Warfare Coordinator (MWC). The MWC is the principal advisor to the OTC on matters pertaining to mine warfare. He is responsible for coordinating the laying of minefields in support of the OTC and the efforts of supporting mine countermeasures (MCM) forces, which are usually not under the direct command or control of the OTC/CWC. Specific functions of the MWC include:

(a) Employment of tactical mining against targets of opportunity, using force assets.

(b) Coordination with appropriate commanders for the laying of tactical minefields and the execution of mining plans.

(c) Tasking of MCM forces assigned to the tactical command of the OTC/CWC.

(d) Coordination with appropriate local commanders for response to enemy mining of choke points, safe havens, or operating areas, and for the execution of MCM plans.

(e) Maintaining and disseminating a plot of relevant mine warfare information to the force.

e. Asset Control and Coordination.

(1) Picket Ships, Towed Array Ships, or Other Ships. Picket ships, towed array ships, or other ships operating at a considerable distance from the main body will normally operate under the tactical control of a warfare commander. As previously set forth, force AAW weapons systems may be tasked by the AAWC and force ASUW weapons systems by the ASUWC, even though the ship is under the tactical control of another commander. A ship's stationing should be coordinated to consider the requirements of all warfare commanders. Because tasking of a ship's weapons by one warfare commander may interfere with its primary tasking, such action must be preceded by prior concurrence of the warfare commander having tactical control. If required, tactical control may be temporarily passed to another commander (e.g., two Harpoon-equipped towed array ships could be directed to form a surface action group (SAG) and temporarily operate under the tactical control of the SAG commander).

(2) Ships in the Inner Screen. Ships in the inner screen will normally operate under the tactical control of the screen commander (SC), with that authority delegated to him by the OTC/CWC. The ships' inner screen positions will be assigned by the SC in accordance with the OTC's or warfare commanders' requirements. These ships, like those in paragraph (1), may possess ASUW capabilities and the ASUWC may, if assigned authority to do so, direct the SC to detach units as a SAG, but not before getting prior concurrence of the ASWC, AAWC, or CWC as appropriate. To simplify coordination, the SC should also, whenever possible, be the ASWC. However, as noted previously, in large dispositions there may be several SCs or none, depending upon force disposition.

(3) Rescue Destroyer. During flight operations, the unit designated as rescue destroyer should be under the tactical control of the CV's commanding officer and not be removed from the rescue station without his consent. Rescue destroyers, like all other surface units, may be tasked by the AAWC for emergency AAW support, and by the ASUWC and ASWC for "in-place" firings.

(4) Submarines. Submarines operating with a task group will conduct operations as directed by the OTC/CWC (or subordinate commander delegated TACON) or, in the case of associated and area operations, the SUBOPAUTH. When conducting support operations or integrated operations, the submarine is to communicate directly with the SOCA regarding coordination of tactical operations and the exchange of intelligence and targeting information.

f. Delegation to Commanders of Functional Groups.

(1) The OTC may designate commanders of functional groups, such as deception groups, underway replenishment groups, etc. This commander will be implicitly responsible for all local warfare functions within his group. He may delegate these functions to units under his control; in this case, the unit executing those functions may be designated a local warfare coordinator. The group commander reports action taken, contact information, etc., to the OTC and/or warfare commander, as appropriate.

(2) The following is a list of the most commonly used titles (see the glossary for definitions and indicated chapters for additional information):

(a) Screen Commander (SC), see Chapter 9.

(b) Search and attack unit (SAU) commander, see Chapter 9.

(c) Surface action group (SAG) commander, see Chapter 8.

(d) Helicopter action group (HAG) commander, see Chapter 8.

(e) Main body group (MBG) commander.

(f) Underway replenishment group (URG) commander.

(g) Deception group (DCG) commander (including missile traps and wolf traps).

g. Delegation to Control Units. To carry out control functions, it is necessary to perform specialized duties which are generally delegated and distributed among the various units in the force. A complete list of such duties is contained in the Duty Table (ATP 1, Vol. II, Table D).

1313 PROMULGATION OF DUTIES AND DELEGATION OF FUNCTIONS

a. The term "duty" is used to define warfare commander/coordinator and other functional assignments. ATP 1, Vol. II, Table D, lists all duties. Certain duty assignments may be promulgated by appropriate commanders.

b. The term "functions" refers to the actions and tasking listed in Tables 1-1 through 1-11. These functions will be delegated by the OTC, CWC, and other commanders as appropriate to the command structure/force needs.

c. Figure 1-2 depicts levels of command and control within the OTC's warfare organization. Figures 1-3 and 1-4 provide examples of the command structure incorporating duty and warfare function assignments.

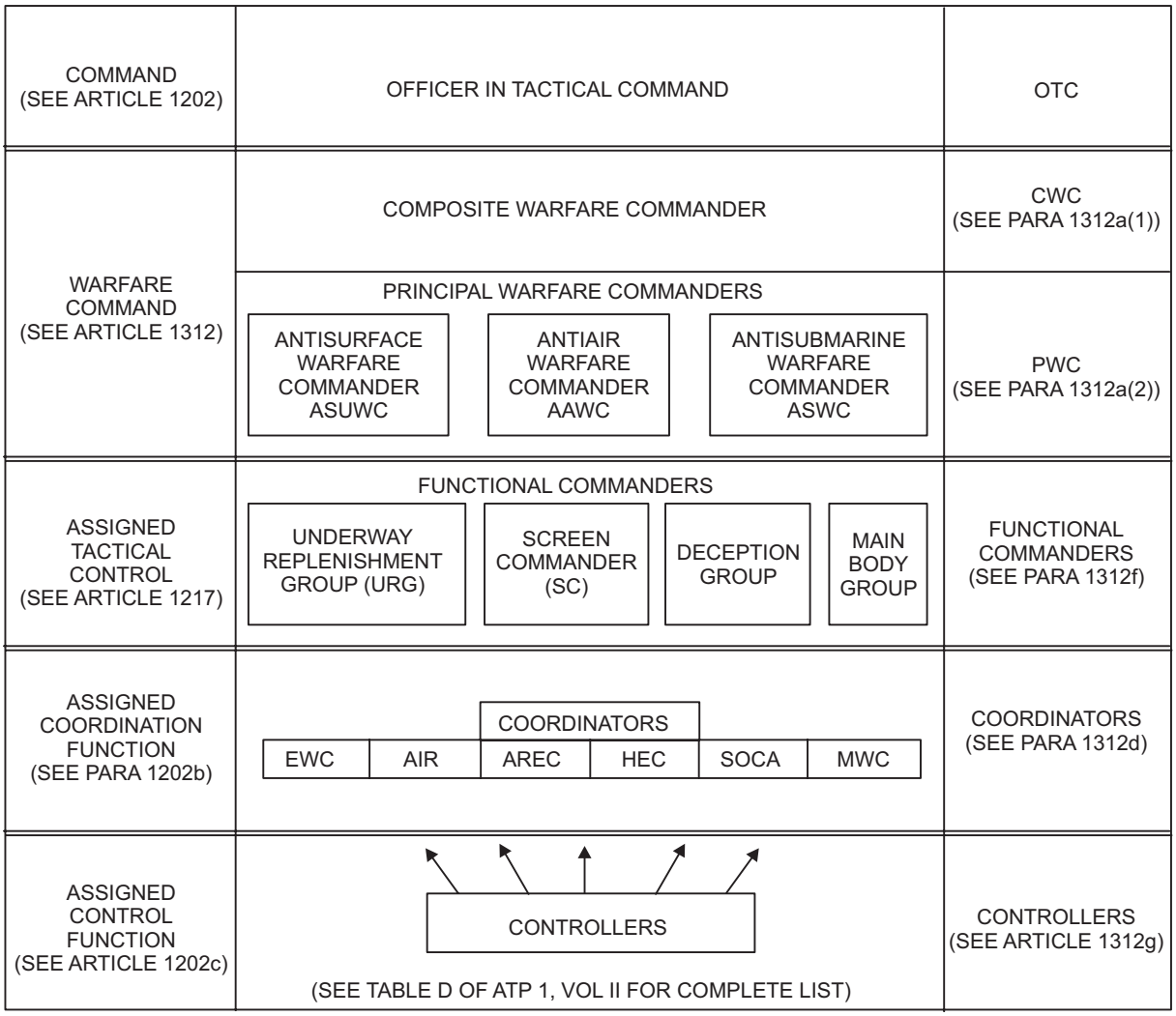

Figure 1-2. Levels of Command and Control Within the OTC's Warfare Organization

1314 — 1319 SPARE

1320 TASKING METHODS

The OTC and other maritime commanders have at their disposal different means of tasking the forces under their command. Suggested methods of tasking are as follows:

a. Maritime Tactical Message System (MTMS), see Article 1321.

b. RAINFORM System and Allied Tactical Air Messages (APP-11), see Article 1322.

c. Tactical signals (ATP 1, Vol. II, Article 3415 — Duty Table With Governing Group BV).

d. Appropriate tasking signals (e.g., OPTASK EW — Article 5401 and APP-11).

e. TASMO tasking messages (APP-11 and ATP 34).

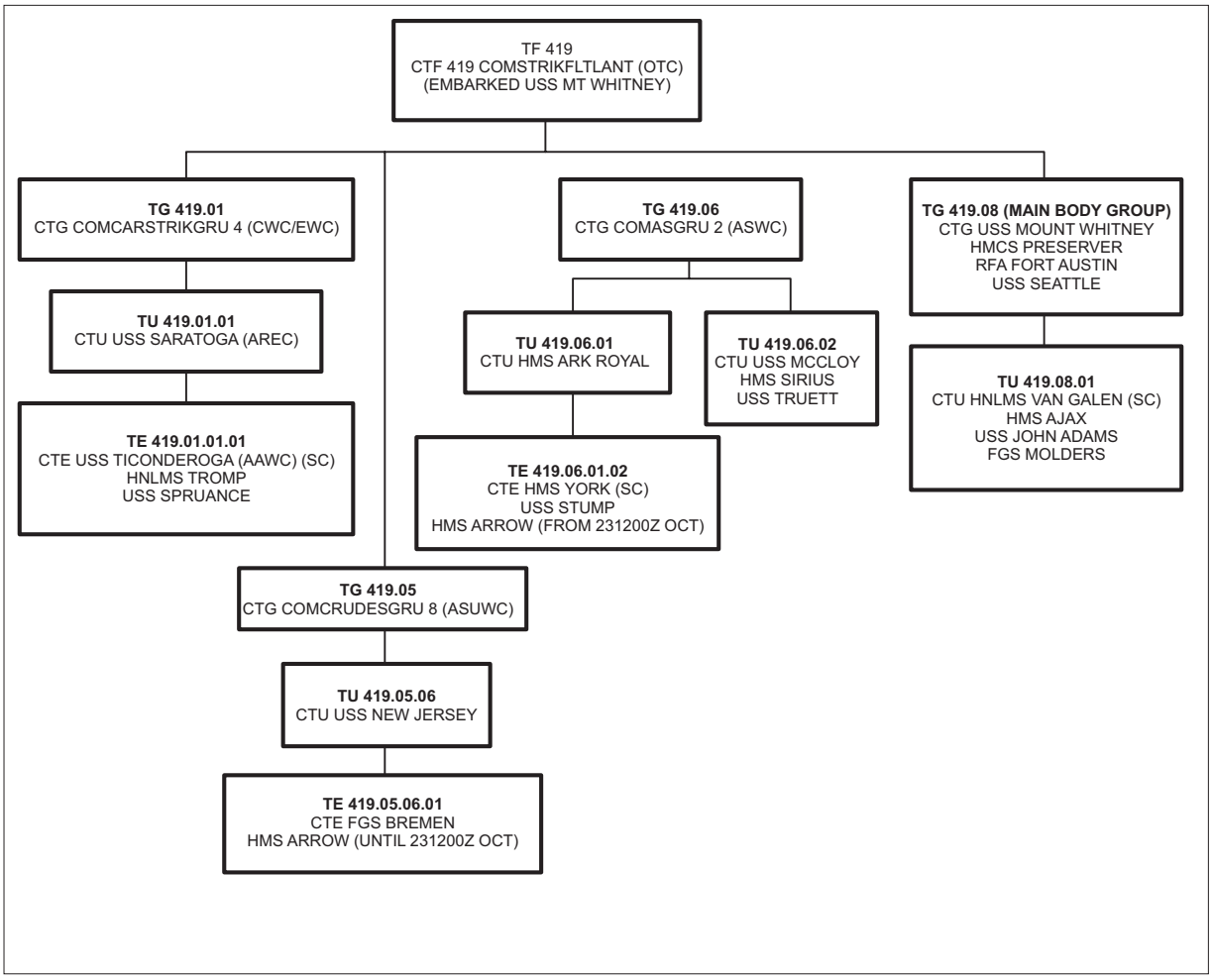

Figure 1-3. Example of Warfare Command and Coordination Incorporated in a Task Organization

f. Air plans, see Chapter 9.

g. ASW tasking, see Chapter 9.

h. Maritime air tasking, see Chapter 6, Section IV.

i. Operation orders/plain text/voice transmissions.

j. Submarine tasking and coordination messages (see APP-11 and ATP 18).

1321 MARITIME TACTICAL MESSAGE SYSTEM (MTMS) — PURPOSE AND METHOD OF USE

a. Purpose. The MTMS consists of standardized messages and may be used:

(1) To convey operational instructions or intentions.

(2) To pass operational information to tactical commanders at sea.

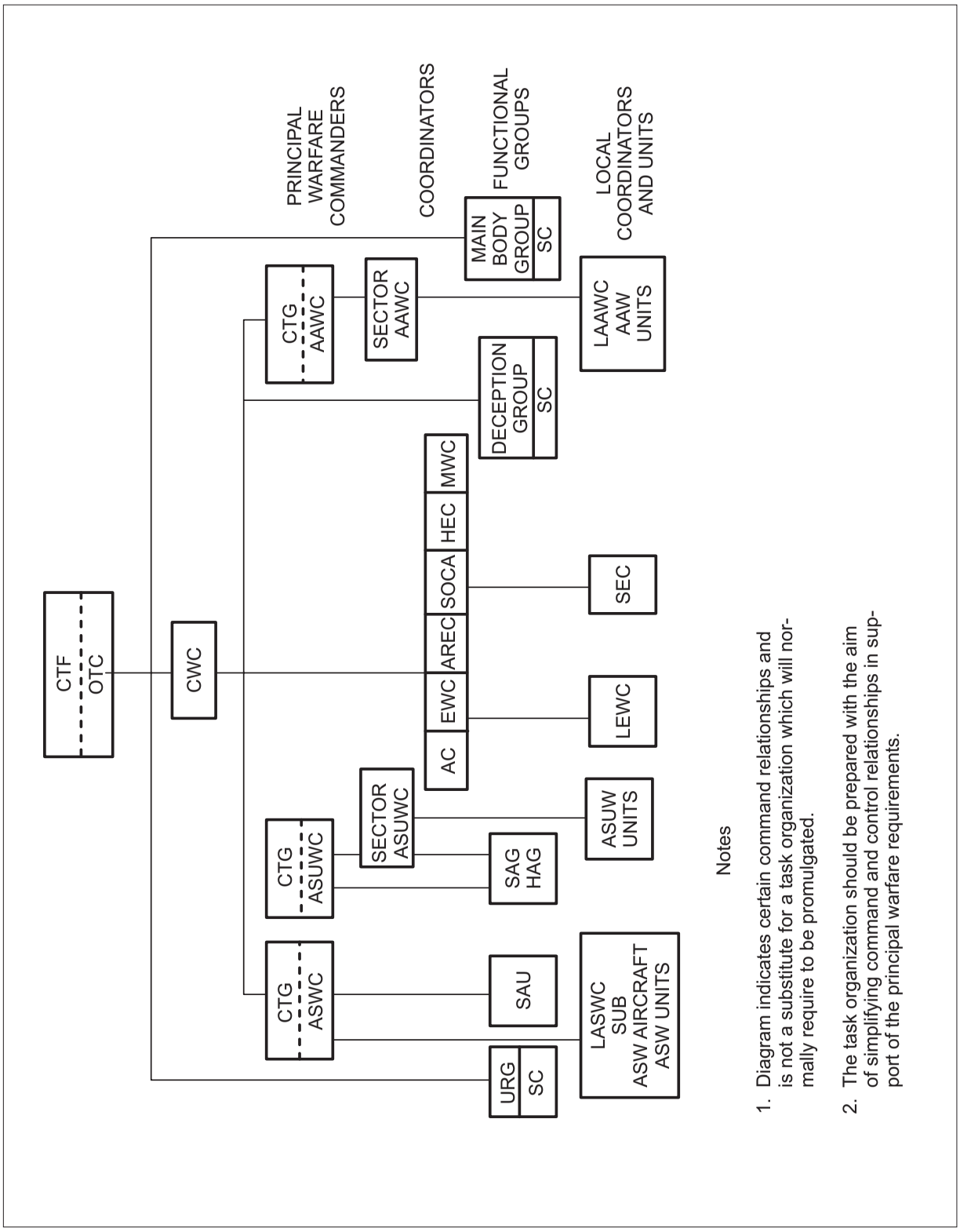

Figure 1-4. Example of Assigned Command and Coordinated Functions in a Force Using a CWC

Table 1-1. OTC's Responsibilities and Functions

NO.	RESPONSIBILITIES
	OTC'S RESPONSIBILITIES (Which cannot be delegated)
101	Promulgate policies and plans to accomplish the mission set forth by higher authority, providing a description of his intentions to his subordinate commanders
102	Direct and monitor operations
103	Establish command, control and communications policy, promulgate warfare command assignments, and establish the force task organization if not already established by higher authority.
104	Establish the degree of authority delegated, specifying command functions assigned to each Principle Warfare Commander (PWC).
105	Establish and (with the assistance of appropriate warfare commanders and coordinators) promulgate policies for force: (a) Picture Compilation Plan. (b) Electronic and acoustic emission, including Emission Control and Emission Security. (c) Radar frequency plans. (d) Electromagnetic compatibility.
106	Promulgate a force Communications Plan, including alternate plans, designating circuits and frequencies and establishing guard requirements and circuit priorities.
107	During periods of tension, request the Rules of Engagement (ROE) appropriate to his mission from higher authority.
108	**(NC) (NMM)** Formulate and promulgate plans for power projection and operations against land targets in conjunction with appropriate commanders.
109	Plan and coordinate logistics requirements.
110	Responsibilities specific to convoy operations as given in Table 1-9.
111	**(NC) (NMM)** Designate a Submarine Operations Coordinating Authority (SOCA) to coordinate with the Submarine Operations Authority (SUBOPAUTH) and assigned submarines.
112	**(NC) (NMM)** Provide for submarine tactical communication requirements in the overall communications plan (OPTASK COMMS). Ensure all aircraft and surface ship circuit operators are aware of GUERRILLA procedures.
113	**(NC) (NMM)** When appropriate, ensure that a Submarine Element Coordinator (SEC) (or Submarine Advisory Team (SAT) if additional personnel are required) is available to commanders serving as SOCA.
114	**(NC) (NMM)** Specify procedures for consolidation of SOCA responsibilities when joining task groups with each having submarines assigned.
115	**(NC) (NMM)** When delegated by the SUBOPAUTH, assume TACOM of designated submarines.
116	Ordering security alert states.
117 to 119	Spare

Table 1-1. OTC's Responsibilities and Functions (Cont.)

NO.	FUNCTIONS
	FUNCTIONS (Which may be delegated to a warfare commander/coordinator)
120	Promulgating the policy for Operational/Tactical Deception.
121	Formulating and promulgating the policy for planned responses.
122	**(NC) (NMM)** Promulgating the policy for, and when authorized, directing the employment of nuclear weapons.
123	Formulating and promulgating general safety policy or assigned units including policy for aircraft/units joining the force.
124	Providing air, surface, and subsurface units as available to appropriate PWCs, coordinating their respective efforts and, when necessary, resolving conflicting requirements.
125	Requesting assignments of such external assets as may be required.
126	Designating position and intended movement (PIM), disposition and force surveillance areas, and maneuvering the force.
127	With other appropriate commanders, arranging for coordination of air, surface, and subsurface surveillance with other friendly forces operating within or adjacent to the force surveillance area.
128	Specifying desired search efforts outside the established force surveillance area, requesting additional assets as necessary.
129	Specifying reference systems for air/surface/submarine contact reporting.
130	From all information available obtained from external sources and/or PWCs, resolving any existing conflict, and constructing, displaying, and passing to the force a composite picture of the tactical situation.
131	Evaluating information to establish probability areas/sectors for air, surface, and subsurface threats.
132	Ordering degrees of readiness.
133	Informing SUBOPAUTH of task force/group intentions and movements.
134	**(NC) (NMM)** Requesting support submarines as required. (Not applicable if submarines are permanently assigned to the task group.)
135	**(NC) (NMM)** Coordinating submarine and task force/group Waterspace Management (WSM) requirements with SUBOPAUTH.
136	**(NC) (NMM)** Providing SUBOPAUTH long-term submarine employment requirements and coordinating information.
137	**(NC) (NMM)** Promulgating communications procedures and protocols required for submarine operations applicable to the specific scenario. (See ATP 18.)
138	**(NC) (NMM)** Promulgating or otherwise ensuring all elements of the force, including nonorganic support units, have the effective SUBOPAUTH and, as applicable, TGSA, WSM Allocation and Status message for the area in which they are operating.

Table 1-1. OTC's Responsibilities and Functions (Cont.)

NO.	FUNCTIONS
139	**(NC) (NMM)** Providing assigned submarines with tailored intelligence support by Force Summary message by tactical communications or via the SUBOPAUTH for relay on the submarine broadcast.
140	**(NC) (NMM)** As required, exchanging on-scene tactical coordination and intelligence information with assigned submarines. Maintaining an updated Force Situation Report for immediate relay on tactical circuits.
141	**(NC) (NMM)** Acting as or designating the SGSA Coordinating Authority. (See Article 6762.)
142	**(NC) (NMM)** Overseeing on-scene operations to ensure submarine safety from attack by friendly forces. (See Article 6734.)
143	**(NC) (NMM)** When delegated by the SUBOPAUTH, assuming tactical control (TACON) of designated submarines.
144	**(NC) (NMM)** When authorized by the SUBOPAUTH, assume local WSM and PMI responsibilities for designated task group submarines. Promulgate a WSM Allocation and Status message, applicable to the TGSA (see ATP 18, Chapter 13).
145 to 199 SPARE	
	NOTE Standby OTC will be prepared to assume the duties of the OTC.

Table 1-2. OTC's Functions in AAW

NO.	FUNCTIONS
	FUNCTIONS **Functions which may be delegated to a CWC.**
220	Formulating and promulgating general AAW plans and, when necessary, specific guidance to the force.
221	Promulgating EW policy as it affects AAW.
222	Formulating and promulgating policy on planned responses in AAW.
223	Ordering AAW degrees of readiness.
224	Stating requirements for nonorganic air support for AAW and forwarding related requests.
225	Designating the AAWC and standby AAWC.
226	Establishing and promulgating the air surveillance area.
227	Assigning air and surface AAW units to AAWC for detection/localization/identification/recognition and reporting air contacts.
228 to 239	SPARE
	The following functions are normally delegated to the AAWC, but may be retained by the OTC/CWC.
240	Developing and implementing the air surveillance and defense plan.
241	Dividing the AAW area into sectors, if required.
242	Designating sector AAWCs (SAAWCs) and/or local AAWCs (LAAWCs) as required, inner defense zone coordinator (IDZC), and outer defense zone coordinator (ODZC).
243	Designating Force Track Coordinator Air (FTC-A).
244	Designating link management units.
245	Establishing the requirements for shipborne/organic AAW air support and forwarding requests to AREC/HEC.
246	Assigning stations sectors and/or patrolling areas and designating control units (AEWCU or CAPCU) for AAW aircraft, keeping Air Coordinator (AC) informed.
247	Establishing and promulgating the Identification Safety Range (ISR) and safety sectors for all friendly aircraft and any special areas or zones established for aircraft safety and identification or to prevent mutual interference, in coordination with AC.
248	Establishing joining control procedures for AAW aircraft, keeping the AC informed.
249	Promulgating identification criteria, required recognition levels, and required recognition confidence levels.
250	Issuing criteria for weapon release and expenditure (a matrix if applicable).
251	**(NC) (NMM)** Establishing ZIPPO plan and defining ZIPPO area if other than a radius of 20 nm.

Table 1-2. OTC's Functions in AAW (Cont.)

NO.	FUNCTIONS
252	Exercising tactical control, including stationing and maneuvering of assigned surface AAW units in accordance with the OTC's policies and plans.
253	Coordinating and controlling air surveillance.
254	Coordinating and controlling use of all force sensors in AAW.
255	Designating and disseminating (as appropriate) all reported contacts and using all available information to maintain a complete air plot of the surveillance area.
256	Coordinating movements of friendly aircraft with the air surveillance area, in cooperation with the AC.
257	Issuing periodic AAW SITREPs (when required by the tactical situation) and other reports, including SITSUMs and daily AAWC intentions message.
258	Controlling AAW nets, especially with respect to procedural integrity and security in reporting (COMSEC). The AAWC may in turn assign some of this responsibility to sector AAWCs and/or FTC-A.
259	Coordinating with land-based air defense authorities.
260	Issuing threat warnings (AIR).
261	Issuing weapon restriction orders.
262	Coordinating and controlling employment of all force antiair weapons and resolving conflicts between tactical use of weapons and demands of aircraft safety.
263	Coordinating and ordering the launching and stationing of alert AAW aircraft.
264	Directing the employment of force CHAFF resources for AAW.
265	Exercising command by VETO over all AAW actions, initiated by other units of the force.
266	**(NC) (NMM)** Exercising control over ASMD by: (a) Ordering any ZIPPO restrictions. (b) Controlling ZIPPOs, force maneuver if required. (c) Relaying relevant ZIPPOs to other commands' groups.
267	Providing assets as available to assist other commanders in prosecution of the threat.
268 to 299	SPARE

Table 1-3. OTC's Functions in ASUW

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
320	Formulating and promulgating ASUW plans and, when necessary, specific guidance to the force.
321	Promulgating EW policy as it affects ASUW.
322	Formulating and promulgating policy for planned responses in ASUW.
323	Ordering ASUW degrees of readiness.
324	Stating requirements for nonorganic air support for ASUW, forwarding related requests.
325	Designating the ASUWC and standby ASUWC.
326	Establishing and promulgating the surface surveillance area.
327	Assigning units to ASUWC for detection/localization/identification/recognition and reporting surface contacts.
328 to 339	SPARE
	The following functions are normally delegated to the ASUWC, but may be retained by the OTC/CWC.
340	Developing and implementing the surface surveillance plan.
341	Dividing the ASUW area into sectors, if required.
342	Designating sector ASUWCs (SASUWCs).
343	Designating a Force Track Coordinator Surface (FTC-S).
344	Establishing the requirement for organic ASUW air support and forwarding requests to AREC/HEC.
345	Assigning sectors and/or patrol areas and designating control units for ASUW aircraft, keeping Air Coordinator (AC) informed.
346	In accordance with the AAWC's directives (see function 247), establishing joining and control procedures for ASUW aircraft, keeping the AAWC and AC informed.
347	Promulgating identification criteria, required recognition levels, and required recognition confidence levels.
348	Issuing criteria for weapon release and expenditure (a matrix if applicable).
349	Exercising tactical control, including stationing and maneuvering of assigned surface ASUW units, in accordance with the OTC's policy and plans.
350	Coordinating and controlling surface surveillance.
351	Coordinating and controlling use of all force sensors in ASUW.

Table 1-3. OTC's Functions in ASUW (Cont.)

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
352	Designating and disseminating (as appropriate) all reported contacts using all available information to maintain a complete surface plot of the surveillance area.
353	Issuing periodic ASUW SITREPs (when required by the tactical situation) and other reports, including SITSUMs.
354	Controlling ASUW nets, especially with respect to procedural integrity and security in reporting (COMSEC). The ASUWC may in turn assign some of this responsibility to sector ASUWCs and/or FTC-S.
355	Issuing threat warnings (SURFACE).
356	Coordinating and controlling employment of all force antisurface weapons.
357	Ordering aircraft launched and tasking aircraft attacks to counter hostile surface contacts (ASUWC establishes aircraft alert requirements, OTC retains alert launch authorization until specifically delegated).
358	Directing the employment of force CHAFF resources in ASUW.
359	Forming and detaching SAGs and HAGs, or in the event, directing screen commander in dispatching SAGs/HAGs, liaising with other Principal Warfare Commanders (PWCs) as required.
360	Providing assets as available to assist other commanders in prosecution of the threat.
361 to 399	SPARE

Table 1-4. OTC's Functions in ASW

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
420	Formulating and promulgating ASW plans and when necessary specific guidance to the force.
421	Formulating and promulgating EW policy as it affects ASW.
422	Formulating and promulgating acoustic emission policy.
423	Formulating and promulgating acoustic deception policy including the use of acoustic decoys.
424	Formulating and promulgating policy on planned responses in ASW.
425	Ordering ASW degrees of readiness.
426	Stating requirements for nonorganic air support for ASW and forwarding related requests.
427	Designating the ASWC and standby ASWC.
428	Establishing and promulgating the subsurface surveillance area.
429	Assigning air, surface, and subsurface ASW units to ASWC for detection/localization/identification/recognition and reporting subsurface contacts.
430	**(NC) (NMM)** Designating the Submarine Element Coordinator (SEC) and standby SEC (subject to concurrence of the Submarine Operating Authority (SUBOPAUTH)).
431 to 439	SPARE
	The following functions are normally delegated to the ASWC, but may be retained by the OTC/CWC.
440	Developing and implementing the subsurface surveillance plan.
441	Dividing the ASW area into sectors, if required.
442	Designating sector ASWCs (SASWCs) and local ASWCs (LASWCs), as required.
443	Designating a Force Track Coordinator Subsurface (FTC-SS).
444	Implementing the acoustic part of the EMCON plan.
445	Establishing the requirements for organic ASW air support and forwarding requests to AREC/HEC.
446	Assigning sectors and/or patrol areas and designating control units for ASW aircraft, keeping the AAWC and the Air Coordinator (AC) informed.
447	In accordance with AAWC direction (see Function 247), establishing joining and control procedures for ASW aircraft, keeping the AAWC and AC informed.
448	Promulgating identification criteria, required recognition levels, and required recognition confidence levels.
449	Issuing criteria for weapon release and expenditure (a matrix if applicable).

Table 1-4. OTC's Functions in ASW (Cont.)

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
450	In accordance with OTC/CWC directives (see Function 423), ordering measures to evade submarines, including tactical torpedo countermeasures (consequential maneuvering will normally be ordered by the screen commander).
451	Issuing specific instructions to all friendly units to prevent mutual interference between submarines in support, towed array surface ships, and all other friendly units.
452	Exercising tactical control, including stationing and maneuvering of assigned surface ASW units, subsurface ASW units (for submarines conducting direct support or Integrated Operations), and aircraft whose primary mission is ASW.
453	Coordinating and controlling subsurface surveillance.
454	Coordinating and controlling employment of all force ASW weapons and sensors, **(NC) (NMM)** taking into account the daily Waterspace Management (WSM) message.
455	Evaluating information and promulgating classification in the force when more than one ASW unit is reporting and classifying a contact.
456	Designating and disseminating (as appropriate) all reported contacts and using all available information to maintain a complete subsurface plot of the surveillance area.
457	**(NC) (NMM)** When submarines are assigned in support, maintaining a plot of the location and movement of friendly submarine havens, WSM areas, transit lanes, and NOTACK areas which may affect force operations in order to prevent mutual interference.
458	Issuing periodic ASW SITREPs (when required by the tactical situation) and other reports, including SITSUMs.
459	Controlling ASW nets especially with respect to procedural integrity and security in reporting (COMSEC). The ASWC may in turn assign some of these functions to sector ASWCs and/or FTC-SS.
460	Issuing threat warnings (SUBSURFACE).
461	**(NC) (NMM)** When designated as the SGSA Coordinating Authority by the OTC, positively controlling ASW weapon release within the Joint Action Area (JTAA) in order to prevent blue-on-blue engagements (see Function 141).
462	Ordering the launch and employment of alert aircraft to counter the submarine threat.
463	Coordinating contact prosecution, including coordination with the screen commander.
464	Forming and detaching SAUs, or, in the event, directing the screen commander to dispatch SAUs, liaising with other PWCs, as required.
465	Providing assets as available to assist other commanders in prosecution of the threat.
466	**(NC) (NMM)** Assigning AWSM duties and AWSM guards as appropriate.
467	Directing employment of force decoys according to the policy formulated by the OTC/CWC.
468	Promulgating plans to conduct acoustic deception in accordance with the policy formulated by the OTC/CWC.
469 to 499	SPARE

Table 1-5. OTC's Functions in Screening Operations

NO.	FUNCTIONS
	Functions which may be delegated to a CWC or Functional Commander.
520	Designating the screen commander(s) (SC) (in a small force he may also be the ASWC) and the standby screen commander.
521	Assigning to the screen commander(s) units to be employed in the inner screen(s).
522	Establishing the area in which the screen commander(s) accomplish(es) assigned duties.
523 to 539	SPARE
	The following functions are normally delegated to the Screen Commander(s), but may be retained by the OTC/CWC.
540	In accordance with guidance provided by the OTC and/or Principal Warfare Commanders (PWCs), establishing the type of inner screen best suited to the existing environmental conditions, forces assigned, and other factors.
541	Arranging inner screen design with the PWCs if separate from SC, to ensure compatibility with the overall employment.
542	Acting as local ASWC (LASWC) for inner screen.
543	Assigning necessary subsidiary duties to units assigned (plane guard, bathythermograph guard ships).
544	Stationing and employing ASW aircraft within the area of responsibility and designating control units, keeping the AAWC and the Air Coordinator (AC) informed.
545	Ordering torpedo countermeasures for use by units assigned in accordance with direction from ASWC.
546	Promulgating actions to be taken when submarine/surface contact is gained by a screen unit within the area of responsibility.
547	Promulgating the screen and screening stations to units assigned.
548	Exercising tactical control, including stationing and maneuvering, of units assigned within the area of responsibility.
549	Coordinating contact prosecution in conjunction with the ASWC.
550	Dispatching SAUs when directed by OTC/ASWC and SAGs/HAGs when directed by OTC/ASUWC and adjusting the screen accordingly.
551 to 599	SPARE

Table 1-6. OTC's Functions in Air Coordination

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
620	Promulgating air coordination policy.
621	Establishing (when this is not established by civil control authorities) and promulgating aircraft separation and aircraft coordination procedures in the Force Air Coordination Area.
622	Designating the Air Coordinator (AC) and standby AC.
623	Establishing and promulgating within the force and to relevant outside authorities the dimensions and location of force air coordination area.
624 to 639	SPARE
	The following functions are normally delegated to the Air Coordinator, but may be retained by the OTC.
640	Designating air control units (ACES) for aircraft not assigned to warfare commanders/coordinators in liaison with the Air Resource Element Coordinator (AREC)/Helicopter Element Coordinator (HEC).
641	Supporting the AAWC in establishing airspace coordination measures, such as special areas or zones for aircraft safety, identification, or prevention of mutual interference.
642	Supporting Principal Warfare Commanders (PWCs) in establishing joining and control procedures for aircraft, if required.
643	Ensuring safe coordination of all aircraft when they are under TF/TG units' tactical control.
644	Coordinating air traffic, controlling, and monitoring aircraft movements within the force air coordination area, ensuring altitude separation and traffic control, keeping AAWC and ACES involved informed.
645	Coordinating and monitoring tactical employment of all force aircraft.
646	Ensuring that available weather information, including the altimeter pressure setting in millibars and inches, is promulgated within the force air coordination area.
647	Support the AAWC in coordinating and reporting the movement of friendly aircraft.
648	Monitoring aircraft safety and coordination nets in conjunction with the ACU.
649	Maintaining up-to-date information on all national and international airspace information and reservations that are likely to affect the force, ensuring adequate clearance and non-violation by the force.
650	Promulgating restrictions on flying operations, due to meteorological conditions, keeping the OTC/PWCs informed.
651	Supporting the AAWC in resolving conflicts between tactical use of weapons and demands of aircraft safety.
652 to 699	SPARE

Table 1-7. OTC's Functions in Air Resource Coordination

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
720	Formulating and promulgating general employment policy for air resources.
721	Designating the Air Resource Element Coordinator (AREC) and Helicopter Element Coordinator (HEC).
722 to 739	SPARE
	The following functions are normally delegated to the AREC/HEC, as appropriate, but may be retained by the OTC.
740	Supplying and apportioning air assets in response to warfare commander's requirements, informing them of assets assigned to their tasking.
741	Tasking organic aircraft assigned to warfare commanders/coordinators.
742	Designating air control units (ACUs) for aircraft not assigned to warfare commanders/coordinators in liaison with the Air Coordinator (AC).
743	Passing orders and information to aircraft under his control to enable assigned tasks to be carried out.
744	Informing warfare commanders/coordinators of results obtained by air assets assigned to their tasking.
745	Sending aircraft availability reports.
746	Promulgating and updating flight schedules and aircraft readiness.
747	Planning and executing war-at-sea air operations when so directed by the ASUWC or OTC and power projection air operations.
748	Controlling aircraft operating against land targets (the controlling functions may be delegated to an AACU or FAC).
749 to 799	SPARE

Table 1-8. OTC's Functions in Electronic and Acoustic Warfare

NO.	FUNCTIONS
	Functions which may be delegated to a CWC.
820	Formulating and promulgating the force electronic and acoustic warfare (EAW) policy.
821	Formulating and promulgating the EW aspects of deception policy.
822	Formulating policy for decoy/jamming operations.
823	In peacetime or tension periods, formulating the EW aspects of anti-intruder policy.
824	Designating the Electronic Warfare Coordinator (EWC) and standby EWC.
825	Ordering EMCON plan in force and changes in response to the tactical situation.
826	Establishing COMSEC monitoring plan and designating on each net a Principal Warfare Commander (PWC), coordinator, or unit COMSEC monitor (e.g., AAWC is COMSEC monitor on AAWC net).
827 to 839	SPARE
	The following functions are normally delegated to the EWC, but may be retained by the OTC or CWC.
840	Formulating and promulgating force electromagnetic compatibility plan/radar frequency (RADFREQ) plan.
841	Assigning ESM duties and ESM guards as appropriate.
842	In accordance with the OTC's direction, formulating and promulgating force EMCON plans.
843	Establishing tactical cryptologic information requirements and means of dissemination.
844	Allocating, disposing, and tasking ESM, ECM, and EPM resources to ensure that threat and target emissions are covered.
845	Issuing the list of threat and target emitters and Electronic Order of Battle (EOB).
846	Tasking available units, including ESM and ECM capable aircraft, to detect and report emitter contacts (EWC establishes alert requirements, OTC retains alert reaction authorization until specifically delegated).
847	Coordinating with Air Coordinator (AC)/Air Resource Element Coordinator (AREC)/Helicopter Element Coordinator (HEC) for support aircraft.
848	Coordinating employment of ESM and cryptologic sensor equipment in support of the OTC's and warfare commanders' tactical intelligence requirements.
849	Collecting, evaluating, and classifying ESM and reporting evaluated information gained to the OTC and appropriate warfare commanders (to include bearings from jammed radars when appropriate).
850	Issuing EW SITREPs and SITSUMs as directed by the OTC in conjunction with the warfare commanders.

Table 1-8. OTC's Functions in Electronic and Acoustic Warfare (Cont.)

NO.	FUNCTIONS
851	Controlling and monitoring EW nets and force electromagnetic compatibility plan/RADFREQ plan and ensuring compliance with the EMCON plan and ELSEC policy. (ASWC monitors acoustic portions of EMCON plan).
852	Directing employment of force decoy and CHAFF resources in conjunction with the warfare commanders.
853	Exercising control of EW reactions to a threat, including planned responses.
854	Allocating force racket numbers.
855	Coordinating employment of active jamming and electronic neutralization devices according to the policy formulated by the OTC/CWC.
856	Promulgating plans to conduct electronic deception according to the policy formulated by the OTC/CWC.
857 to 899	SPARE

Table 1-9. OTC's Responsibilities and Functions in Convoy Operations

NO.	RESPONSIBILITIES AND FUNCTIONS
	OTC's RESPONSIBILITIES (Which cannot be delegated)
901	Formulate and promulgate policy for the defense of the convoy against all threats.
902	Establish close liaison with the Convoy Commodore for safe navigation of the convoy and instruct him to order emergency turns.
903	When required, designate appropriate warfare and functional commanders, including screen commander(s).
904	Detail the emission policy for both escorts and convoy.
905 to 939	SPARE
	FUNCTIONS (Which may be delegated to appropriate commanders)
940	Advising the Naval Control of Shipping Officer (NCSO) of the optimum convoy disposition.
941	Stationing of escorts and establishing intership spacing within the convoy.
942	Establishing and controlling communications.
943	Ordering evasive alterations of course.
944	Keeping the Operational Control Authority (OCA) informed (emission policy permitting) of: (a) Convoy's position, course, and speed. (b) Estimated time of arrival (ETA) at designated point. **(NC) (NMM)** (normally point Xray.) (c) Inability to adhere to route, comply with diversion, or reach a rendezvous within 1 hour of the appointed time. (d) Intended rendezvous and route when the convoy is scattered. (e) Time of detaching sections from the convoy, and whether they are escorted. (f) Names of escorts and merchant ships assigned to the convoy but not present on sailing. (g) Failure of escorts to meet the convoy within 8 hours of the appointed time. (h) Names of escorts detached if they are not expected to rendezvous within 24 hours. (I) Enemy reports. (j) Intercepts of D/F bearings of enemy emissions that provide the first indication of an enemy's presence. (k) Requests for replenishment within a rendezvous. (l) Ships sunk or damaged and aircraft lost. (m) Operational defects suffered by ships when advance knowledge will materially assist shore authorities. (n) Weather conditions.
945 to 999	SPARE

Table 1-10. OTC's Functions in Departure and Entry Operations

NO.	FUNCTIONS
	Functions which may be delegated to the CWC or a Warfare Commander)
1040	Promulgating departure or entry operation plan, ordering the time the plan is to be executed, and specifying whether a departure or entry screen is to be formed.
1041	For operations: (a) Ordering the time that the initial search is to commence. (b) Promulgating zero hour to the force and local authorities. (c) **(NC) (NMM)** Promulgating points Alfa and Xray, if not already done by local authority. For departure operations, ordering the time the first ship of the main body is to pass through point Xray. (d) **(NC) (NMM)** Promulgating the position of point Oscar. (e) **(NC) (NMM)** Ordering the time the first ship of the main body or the Guide is to pass through point Oscar. (f) **(NC) (NMM)** Promulgating the position of point Yankee, when applicable. (g) **(NC) (NMM)** Ordering the time that a specific unit or formation will pass point Yankee.
1042	Informing the force of the support by shore-based forces.
1043	Allocating forces for the initial search on departure operations.
1044	Informing the screen commander of the cruising formation to be formed and the type of screen required on passing a designated point. **(NC) (NMM)** (normally point Oscar.)
1045	Defining the area to be searched during the initial search and establishing, if required, the grid reference position.
1046 to 1099	SPARE

Table 1-11. OTC's Responsibilities and Functions in Mine Warfare

NO.	RESPONSIBILITIES AND FUNCTIONS
	OTC's RESPONSIBILITIES (Which cannot be delegated)
1120	Formulate and promulgate the force mine warfare policy.
1121	Designate the force Mine Warfare Coordinator (MWC).
1122 to 1139	SPARE
	FUNCTIONS (Which may be delegated to appropriate commanders/coordinators)
MCM FUNCTIONS	
1140	Acting as tasking authority in accordance with ATP 6 for MCM forces assigned to the OTC.
1141	Coordinating the efforts of supporting MCM forces.
1142	Coordinating with appropriate local commanders for response to enemy mining of choke points, safe havens, or operating areas.
1143	Coordinating with appropriate local commanders for the execution of MCM plans.
1144	Requesting appropriate subarea commander to issue subarea navigation warnings resulting from MCM operations by forces assigned to the OTC.
1145 to 1169	SPARE
MINING FUNCTIONS	
1170	Coordinating the laying of minefields in support of the force.
1171	Planning and conducting tactical mining operations by assigned forces against targets of opportunity.
1172	Coordinating with appropriate area commanders for the laying of tactical minefields.
1173	Coordinating with appropriate area commanders for the execution of mining plans.
1174	Requesting appropriate subarea commander to issue subarea navigation warnings for minefields executed by assigned forces.
1175 to 1199	SPARE

(3) To report operational information between commanders and from subordinate to higher formations.

(4) To notify organizations of impending and actual operations of units engaged in maritime warfare.

b. Method of Use. MTMS messages are to be used as shown in Table 1-12. Detailed instructions and the message structures are found in APP-11.

c. Ships Should Receive All Relevant MTMS Messages Before Joining a Force. Cooperating aircraft should receive the relevant MTMS messages at such a time that the information is available at the preflight briefing. Sections that are not required or applicable should be omitted. Whenever possible it is advisable to issue standing MTMS messages covering the total period of operation. Changes are then only necessary for individual items which change.

1322 (NC) (NMM) RAINFORMS AND ALLIED TACTICAL AIR MESSAGES (APP-11) — PURPOSE AND TYPES

a. Purpose. The RAINFORM System consists of standardized message forms and is used for the following:

(1) To convey operational instructions or intentions from commanders to subordinates.

(2) To pass operational information to tactical commanders at sea.

(3) To report operational information and intelligence between commanders and from subordinates to higher authorities.

(4) To notify air defense organizations of impending and actual movements of aircraft engaged in maritime operations.

b. Types. The following types of RAINFORM are used in the reporting system:

FORM GREEN — Task assignments for aircraft operations; notification of planned aircraft movements to appropriate air defense organizations and naval forces.

FORM BROWN — Movement report of own aircraft sorties; notification to air defense authorities.

FORM BROWN DEVIATION — Report of any deviation from FORM BROWN.

FORM RED (INTREP) — Relay of enemy contact reports issued by controlling authority of task unit, group, or force commander at sea.

FORM GOLD — Reporting method used to input contacts and enemy contact reports into automatic data processing systems that are not configured to handle FORM RED.

FORM PURPLE — Immediate report of aircraft sortie results (or other task operation results).

FORM BLACK — Periodic summary of enemy activity.

FORM WHITE — Report of own (friendly and neutral) forces.

FORM TAN — Aircraft availability and airfield state.

Table 1-12. MTMS Messages – Use

MESSAGE	TYPE OF INFORMATION	ADDRESSEES	ORIGINATOR	OCCASION
OPGEN	General Policy and detailed instructions for retained responsibility	All TF/TG units, cooperating TF/TG commanders, appropriate shore authorities	OTC	As Required
OPTASK AAW	Detailed AAW instructions	All TF/TG units, appropriate shore-based authorities, cooperating force commanders and units, including adjacent TF/TG commanders	OTC/AAWC/ SOC/CRC	As Required
OPTASK ASW	Detailed ASW instructions	All units in force, cooperating force commanders and units	OTC/ASWC	As Required
OPTASK ASUW	Detailed ASUW instructions	All units in force, cooperating force commanders and units	OTC/ASUWC	As Required
OPTASK AIR	Detailed tasking and instructions for organic aircraft	All units in force, cooperating force commanders and units, including shore authorities if required	OTC/HEC/ AREC/Air Coordinator	If required by 2000Z daily
OPTASK EW	Detailed tasking and EW instructions	All units in force and participating shore-based commands or units	OTC/EWC	As Required
OPTASK COMMS	Promulgation of Comm Plan and related instructions	All units in force, cooperating force commanders and units	OTC/delegated commander	As Required
OPTASK LINK	Detailed tasking and instructions for link operations	All units in force, cooperating force commanders and units	OTC/delegated authority or appropriate shore command or designated unit	Presailing and As Required
OPTASK AMPHIB	Promulgate essential instructions and information to conduct amphibious operations	Amphibious task force, landing force, and support forces	CCATF/CATF	As Required no later than 72 hours preceding amphibious operations

Table 1-12. MTMS Messages – Use (Cont.)

MESSAGE	TYPE OF INFORMATION	ADDRESSEES	ORIGINATOR	OCCASION
OPTASK MINE WARFARE	Detailed instructions for lead-through minelaying and MCM operations	OTC covering forces, OTC naval forces, convoy commodore, units in TF/TG/convoy as appropriate	OTC of MCM or minelaying force	As Required
OPTASK RAS	Promulgate replenishment program	All units involved	OTC/delegated authority	As Required
OPSTAT UNIT	Promulgate operational and administrative information	OTC/appropriate commanders	Unit	Presailing, on joining, and as changes occur
OPSTAT RAS REQ	Signal RAS requirements	Supplying ships or OTC	Units	As Required
OPSTAT CARGO	Signal remaining cargo	OTC/URG commander	Supply Ships	On completion of RAS
OPSTAT DAMAGE	Signal information regarding damage sustained	OTC/appropriate authorities	Unit or appropriate commander	As Required
(NC) (NMM) Waterspace Allocation and Status	Promulgate waterspace allocation and status information required for coordination and deconfliction of friendly ASW and submarine operations	Area/subarea commanders (surface/air), OTC, ASWC, SOCA, convoy commodore, and maritime air units as appropriate	SUBOPAUTH	At least every 24 hours and as required. Serialized amendments to this daily message can be issued; however, each amendment must list all previous amendments. A new “daily” message should be issued any time that potential for confusion exists.
(NC) (NMM) Support Submarine Force Summary	Tailored tactical and coordinating information for SUBOPAUTH and assigned submarines	SUBOPAUTH, assigned submarines, others (as required	OTC/SOCA	Daily or as Required

c. The following Allied Tactical Air Messages (APP-11) could be used:

(1) ATO (Air Tasking Order).

(2) MISREP (Mission Report).

d. Message Formats. RAINFORM message formats, with examples, are in APP-11.

1323 TACTICAL DATA LINK SYSTEMS

Tactical data links can be used by the OTC to make real-time amendments to tactical instructions, command and control arrangements, and threat warning levels. These systems have an inherent capability for exercising tactical coordination using contact reporting messages, weapons and platform status messages, and command messages. Amplifying information can be found in ADatP 11 and ADatP 16.

1324 — 1329 SPARE

SECTION IV — READINESS

1400 SCOPE

This section establishes common procedures for organizing, ordering, and reporting the readiness of a force.

1401 — 1409 SPARE

1410 READINESS TO GET UNDERWAY

1411 NOTICE TO GET UNDERWAY

The order for number of hours notice for readiness to get underway is issued by the senior officer present. If, because of weather conditions or operational requirements, the senior officer present shortens this notice, ships are to report via the chain of command as soon as possible at what time they expect to be at the new notice. Commanding officers are authorized to shorten their notice for getting underway if they consider it necessary.

1412 PREPARING FOR SEA

When ships are ordered to have power for a specified number of knots (operational speed) by a certain time, they are to be ready for sea in all respects by that time.

1413 GETTING UNDERWAY

Because there are many different conditions that may be met in getting underway, no attempt is made here to provide definite instructions that will be applicable in all circumstances. The following paragraphs should, therefore, be considered of general application only.

a. Navigation and Pilotage. Each commanding officer is responsible for the navigation and pilotage of his own ship, and should take action as necessary to avoid endangering his own or other ships.

b. Preserving True Bearing and Distance. When ships of a unit in separate berths have weighed anchor together, or slipped from buoys together, they are, until further orders are received, to preserve the same true bearing and distance from the senior officer of their unit as existed before getting underway.

c. Casting Ship. When ships are leaving harbor in company, the senior officer may order them to cast to port or starboard or to cast to a particular course. In each case, ships should do so without gathering headway or sternway and should turn at the same rate as the senior officer of their respective units. In a confined harbor, it may be unsuitable for all ships to cast in the same direction or to gather headway at the same time. In such a case, the senior officer should then indicate the direction in which he intends to cast, at the same time ordering remaining ships to cast as required.

d. Sequence in Leaving.

(1) An OTC will normally indicate in advance the sequence in which his ships are to leave harbor. After consultation with the local authority, he will promulgate the departure sequence, taking into consideration:

(a) Threat.

(b) Navigational situation and harbor facilities.

(c) Required time/distance intervals.

(d) Which berths his ships occupy.

(e) Number of ships.

(f) Ship types and their characteristics.

(g) Weather conditions.

(2) Should a unit be delayed, the unit commander is to inform the OTC, the unit commanders of succeeding units, and the local authority of the time at which his unit will be ready to proceed. In the absence of further orders from the OTC, the unit commanders are to adjust their times of proceeding accordingly. At night or by day, when not in direct visual touch, each unit commander should when necessary keep the unit commander of the succeeding unit informed of his progress.

1414 — 1419 SPARE

1420 READINESS FOR ACTION

1421 OPERATIONAL CAPABILITIES

a. The operational capabilities of any combatant unit can generally be considered to consist of three components: warning, evaluation, and action. Normally any engagement will develop in the following sequence:

(1) Warning. The indication by any tactical information source of the presence of a threat.

(2) Evaluation. The appraisal of threat information to determine the type and degree of threat.

(3) Action. The employment of one or more weapon systems to counter the threat.

b. The rules governing degrees of readiness allow that, with a lowering of the warning, there follows a more rapid lowering of the evaluation and a marked lowering of the action components. In addition, the desired readiness for action is influenced by:

(1) Capabilities of tactical information sources, weapon systems, and communications.

(2) Effects of environmental factors (e.g., dawn or dusk, fog, sonar conditions, afternoon effects, etc.).

(3) Training status of personnel.

(4) Command organization.

1422 INOPERABLE EQUIPMENT

When a unit is unable to assume or keep the ordered degree of readiness (or alert state), this inability shall be reported to the OTC, including in the report the reason and the time at which the ordered degree of readiness (alert state) will be assumed or resumed. Permission shall be obtained from the OTC before

equipment essential for warning, evaluation, or action is made inoperable for maintenance. Daily performance checks are to be carried out on such equipment to ascertain its readiness for effective use.

1423 COMMAND RESPONSIBILITIES

a. Degree of Readiness. The OTC will order the degree of readiness to be assumed. Commanding officers may order a higher degree of readiness for their own ship if they consider it necessary.

b. Alert State. In a degree of readiness the OTC may order the alert state. Commanding officers may order a higher state for their own systems. The OTC may assign this responsibility to one of the commanders.

c. Notice. The OTC will order the notice for the force.

d. Threat Warnings. The OTC will normally promulgate threat warnings. He may assign this responsibility to commanders.

e. Emergency Signals. Emergency signals may be made by any commanding officer, coordinator, commander, or the OTC, but their use requires caution because of the action/responses that will be taken in the force.

f. Readiness in Harbor/Anchorage. The OTC or commanding officer will order the degree of readiness in consultation with local authorities.

1424 ORGANIZATION

a. Ships. One general degree of readiness is normally ordered to meet all types of threat; however, a particular degree of readiness may be ordered when the situation so justifies. Particular degrees may concern antisurface warfare (ASUW), antisubmarine warfare (ASW), antiair warfare (AAW), mine warfare (MW), NBCD, or engineering. A modification of the degrees of readiness may be assumed by amphibious forces as necessary to provide for the embarkation or disembarkation of troops and equipment.

b. Guard Ships. The OTC may detail certain ships to assume a higher degree of readiness than the remainder. Ships so detailed are known as guard ships.

c. Readiness in Harbor/Anchorage. Readiness in harbor will be organized in accordance with local orders or on order of the OTC or commanding officer after consultation with local authorities. For readiness of ships against terrorist or underwater swimmer attack, see Chapter 14.

1425 JOINING

a. When a ship joins a force, the joining unit will provide the following information to the OTC:

(1) Messages OPSTAT UNIT and OPSTAT HELLO, stressing the restrictions to operational readiness.

(2) National restrictions to the Rules of Engagement (ROE).

(3) Messages and updated OPGEN, OPTASKs, and OPSTATs received to date.

b. The OTC will provide:

(1) Updated OPGEN, OPTASKs, and OPSTATs as necessary.

(2) Last status of EMCON, COMPLAN, and link net.

(3) A frequency and a geographic position to rendezvous if joining fails.

(4) A list of relevant signals in force.

1426 — 1429 SPARE

1430 GENERAL DEGREES OF READINESS

This article states the aim of the several general degrees of readiness. When only a general degree of readiness is ordered, each department shall comply in accordance with the appropriate particular degree of readiness.

a. First. The aim is to employ the full operational capability of the unit involved. All stations are fully manned and can therefore be put into operation in the shortest time. Commanding officers may order temporary relaxation from the first degree of readiness to permit designated personnel to draw and distribute meals at their action stations.

b. Second. The aim is to employ the best operational capability that can be maintained for a prolonged period (e.g., 2 to 3 weeks) with up to one-half of the personnel on duty. Emphasis is to be laid on the warning component.

c. Third. The aim is to have weapons available to counter an unexpected threat and to retain sufficient warning time to assume a higher degree of readiness, while relaxing equipment, with up to one-third of the personnel on duty. This degree can be maintained for an indefinite period.

d. Fourth. The aim is to have all systems operational. Sufficient systems are to be manned to achieve adequate warnings required.

e. Fifth. The aim is to allow for rest and relaxation within the limitations imposed by the notice ordered. It is the lowest degree of readiness and is used only when in port or at anchor.

1431 — 1439 SPARE

1440 PARTICULAR DEGREES OF READINESS

When ordering a general degree of readiness, the OTC may order a higher degree of readiness for a particular type of warfare, NBCD, or engineering, should the situation so demand.

1441 NUCLEAR, BIOLOGICAL, CHEMICAL, AND DAMAGE DEGREES OF READINESS

a. First. All NBC stations are manned; a maximum degree of watertight integrity is maintained; all additional N, B, or C protective measures are imposed as the situation requires; the widest diversity of sources of power is available; all NBCD equipment and systems are ready for immediate use.

b. Second. Up to one-half of the NBCD stations are manned; all additional N, B, or C protective measures are as the situation requires; a maximum degree of watertight integrity is maintained within the

ship, compatible with the health and comfort of the crew; all NBCD equipment and systems and a limited number of sources of power are ready for immediate use.

c. Third. Up to one-third of the NBCD stations are manned; a maximum of watertight integrity is maintained below the waterline; all NBCD integrity is maintained below the waterline; all NBCD equipment and systems and a limited number of sources of power are ready for use.

d. Fourth. Sufficient NBCD warning systems are manned; the maximum degree of watertight integrity is maintained below the waterline.

1442 ENGINEERING DEGREES OF READINESS

a. First. Propulsion machinery is fully manned and power is available for maximum speed.

b. Second. Propulsion machinery is manned and ready for operational speed, with full power available at 2 hours' notice.

c. Third. Propulsion machinery is manned and ready for operational speed, with full power available at 4 hours' notice.

d. Fourth. Propulsion machinery is manned and ready for operational speed, with full power available at 8 hours' notice.

1443 — 1449 SPARE

1450 WEAPON ALERT STATES

a. The readiness of force systems can be ordered by the OTC or his delegate or be reported by a unit carrying force weapons.

b. When ordered, the weapon alert state expresses the time (in minutes) in which the weapon system has to be ready. The alert state READY orders the immediate readiness of the indicated force weapon system.

c. When reported, the weapon alert state expresses the time (in minutes) in which the weapon system can be available. When the system is available it is reported READY.

1451 — 1459 SPARE

1460 AIRCRAFT ALERT STATES

a. The OTC orders an aircraft alert state to prescribe readiness requirements for aircraft within the force. Alert states are:

(1) AIRBORNE ALERT — Combat equipped aircraft are airborne and ready for immediate action.

(2) DECK ALERT — The OTC specifies the number and type of aircraft and the time in minutes that they are to be airborne after the order to launch is given.

b. A deck alert requires more warning than an airborne alert. The OTC should bear in mind that the presence of aircraft on the flight deck may hamper freedom of maneuver and that deck alerts on board small ships may restrict the use of other weapon systems. The OTC may use OPTASK AIR (see APP-11) ▌ to order alert states for helicopters on all ships in the formation.

-EXAMPLES-

2 fighter aircraft Alert 5 . . . Two fighter aircraft ready to become airborne 5 minutes after the order to launch has been given.

1 ASW helicopter Alert 20 . . . One ASW helicopter ready to become airborne 20 minutes after the order to launch has been given.

1461 — 1469 SPARE

1470 THREAT WARNINGS

A threat warning is informative only. Force or individual unit actions are not therefore linked to it automatically. An OTC may sometimes order measures of a temporary nature (including those for use with ASMD) when a threat warning is promulgated (e.g., changing the EMCON plan). In many cases, however, such actions are more appropriately linked to detections and enemy reports (emergency signals).

a. Color Code. The color code applied to a threat warning denotes the severity of the evaluated threat:

Color Code	Evaluation
WARNING WHITE	ATTACK IS UNLIKELY WITHOUT ADEQUATE WARNING
WARNING YELLOW	ATTACK IS PROBABLE
WARNING RED	ATTACK IS IMMINENT, OR HAS ALREADY COMMENCED

b. Type of Threat. The following plain language words are to precede the color code to denote the type of threat:

AIR

MINES

NBC

SURFACE

SUBMARINES

NOTE

For promulgation of mine threat, see also AHP 1.

1471 — 1479 SPARE

SECTION V — RAPID AMENDMENT OF TACTICS AND PROCEDURES

1500 GENERAL

It is recognized that in actual operations during wartime some tactics will prove more or less effective than others and, in certain crucial cases, it is essential that a clearly defined method for rapidly changing or perhaps canceling a current tactic or procedure should exist.

1510 PROCEDURE

a. Proposed Tactical (PROTAC) Amendment Message. Any operational unit observing significant failure in the use of a NATO tactic is to report the fact to the OTC by message. The message should take the form of a proposed tactical (PROTAC.) amendment message, in accordance with APP-11, designed to:

(1) Improve the effectiveness of a currently unsatisfactory tactic, or

(2) Replace an unsatisfactory tactic with a more effective one, or

(3) Cancel an ineffective tactic.

b. OTCs Receiving a PROTAC Message Should:

(1) Where it improves the safety or operational efficiency of their force and is of immediate operational concern,

(a) Implement the PROTAC immediately for their own forces,

(b) Forward it by message to the Major Subordinate Commander (MSC) for action,

(c) Send information copies to appropriate authorities including, where applicable, the commanders of adjacent areas/forces.

OR

(2) Where it is not of immediate operational concern, forward the PROTAC to the area MSC by message.

OR

(3) Where the PROTAC is found to be invalid, cancel it by means of a message to the originating unit.

c. Corrected Tactical (CORTAC) Procedure Message. MSCs or delegated headquarters receiving a PROTAC message are to act as coordinating agency for implementing the change to, or cancellation of, a tactic throughout their area. As controlling agencies, MSCs or delegated headquarters shall, if they approve the content of a PROTAC, promulgate a corrected tactical (CORTAC) procedure message, in accordance with APP-11, to all appropriate forces in their area, with an action copy to their Strategic Commander (SC).

CHAPTER 2

Position, Movement, and Maneuvering

SECTION I — POSITION AND MOVEMENT

2100 POSITION/REFERENCE SYSTEMS

a. Position can be expressed by any of the following means:

(1) Latitude and longitude. Latitude is expressed before longitude; e.g., 14° N 47° W.

(2) World geographic reference system (Georef).

(3) Grids — Universal Transverse Mercator (UTM), Cartesian Coordinate Grid (CCG), or other grid promulgated by an appropriate commander.

(4) Bearing and distance in miles, or bearing and range in hundreds of yards.

(5) Station occupied (e.g., Station 3.)

(6) Quick Reference System (QRS).

b. The position may be further defined by an accuracy suffix and/or an altitude or depth indication.

2101 WORLD GEOGRAPHIC REFERENCE SYSTEM

a. Georef is not a true grid; it is merely a convenient means of expressing latitude and longitude for the purposes of rapid plotting and reporting. Georef may be used whenever a UTM or CCG grid is not suitable; it shall not be used for naval gunfire support, close fire support, direct air support, or in any other application where positional information must be reported with accuracy. The system is intended primarily for inter-Allied use in air operations and in air aspects of antiair warfare operations.

b. Description. Georef is based on a division of the globe into 24 longitudinal zones of 15° each, lettered from A through Z (omitting I and O) eastward from the 180th meridian; and 12 latitudinal zones of 15° each, lettered from A through M (omitting I) northward from the South Pole. See Figure 2-1.

(1) While relatively few charts have Georef overprints, the lettering system can easily be added on existing charts by labeling the zones accordingly. Labeled in this manner, any basic 15° area can be located by first reading right to the desired alphabetical column, and then up to the desired alphabetical row. The reference symbol for any 15° area in the world consists of only two letters.

-EXAMPLE-

MK indicates a 15° rectangular area with its SW corner at latitude 45° N, longitude 15° W.

(2) Each 15° area is further divided by 15 lettered degree units eastward, and 15 lettered degree units northward, using in each direction the letters from A through Q (omitting I and O). A 1° area can be located by the right-up process, and the two-letter designator listed immediately after the two-letter designator for the 15° area. The reference symbol for any 1° area consists of only four letters.

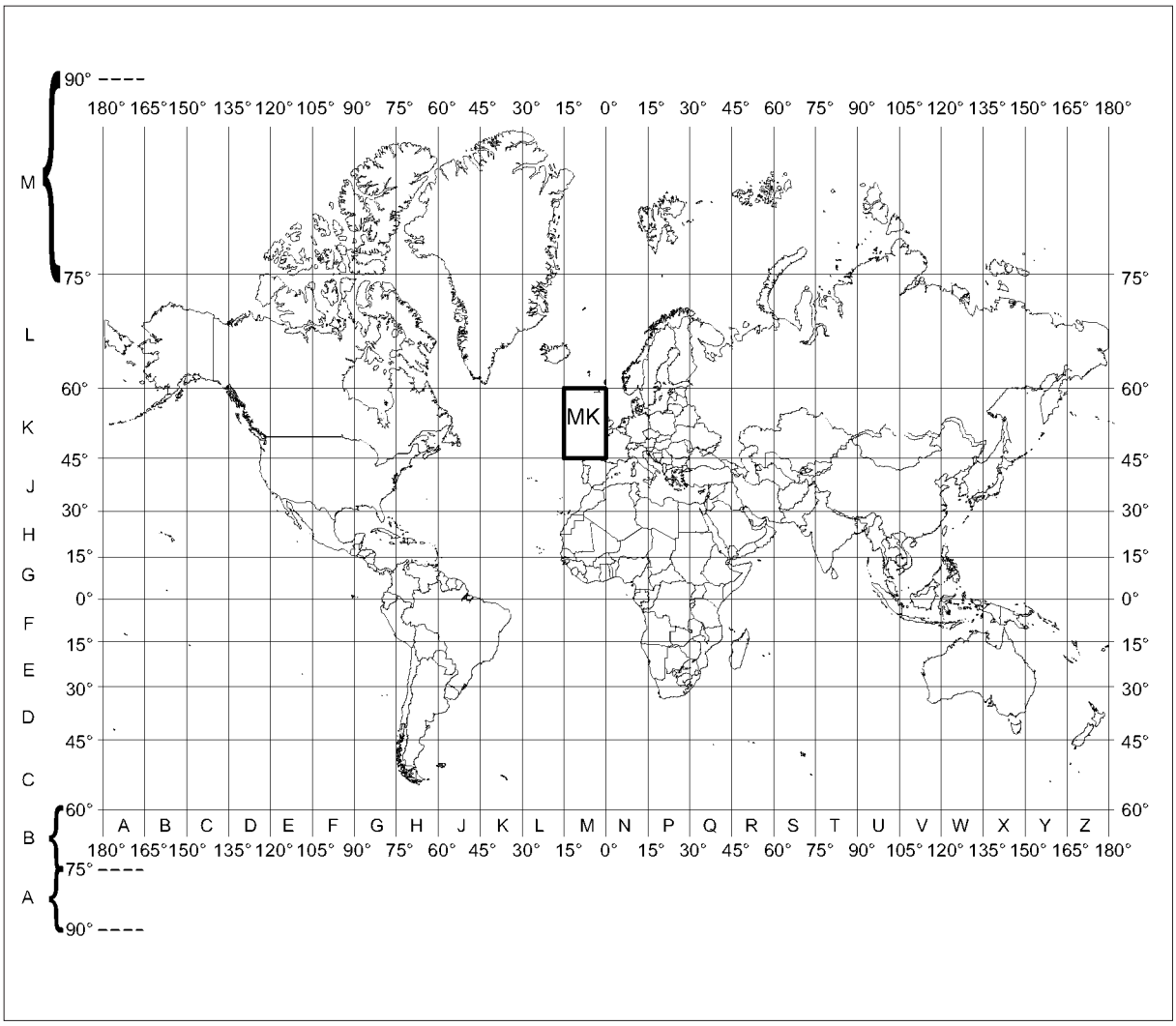

Figure 2-1. Sample Georef Chart

-EXAMPLE-

GJPJ indicates a 1° area with its SW corner at latitude 38° N, longitude 77° W.

(3) Each 1° area is divided into sixty 1-minute units eastward and sixty 1-minute units northward. These 1-minute units are designated by numbers, reading right-up from the SW corner of each 1° area. A Georef report composed of four letters and four numerals is all that is required to locate any 1-minute area in the world.

-EXAMPLE-

WGAN 5630 indicates a 1-minute area with its SW corner at latitude 12°30’ N, longitude 120°56’ E.

(4) Further accuracy, if desired, can be obtained by reporting each 1-minute unit in tenths (or hundredths) of a minute eastward and northward. This requires a six (or eight) numeral reference. For example, WGAN 56503060 indicates a point at latitude 12°30’36" N, longitude 120°56’30" E. (Note that

numerical position references will always have an even number of digits, in which the first half will indicate the right direction and the second half will indicate the up direction.) The 15° designator may be omitted from reports, but care must be taken to ensure that the omission will not cause ambiguity. For example, NG 1720 identifies a location on the western side of Leipzig and NG 1720 (in UTM grid) identifies an aerodrome south of Skrydstrup in Denmark.

c. Size of Rectangle. To designate the size of any rectangular area, the standard Georef coordinates used to indicate the SW corner of the area followed by the letter S (denoting length of sides) and by digits giving the eastward and northward dimensions of the area in nautical miles. The digits are separated by the letter X.

-EXAMPLE-

GJQJ 0207S6X6 indicates a rectangle with 6-mile sides and its SW corner at latitude 38°07' N, longitude 75°58' W.

d. Size of Circle. To designate the size of a circular area, the standard Georef coordinates for the center of the circle are followed by the letter R (denoting radius) and by digits giving the nautical mile radius of the circle.

-EXAMPLE-

EDBL 2743R12 indicates a circle with a 12-mile radius with its center at latitude 34° 17' S, longitude 118°33' W.

e. Altitude. To designate altitude, the standard Georef coordinates for the geographic location of the aircraft are followed by the letter H (denoting height) and by two digits giving altitude in units of thousands of feet.

-EXAMPLE-

VFKC 1509H15 indicates aircraft at 15,000 feet at latitude 12°51' S, longitude 114°15' E.

2102 UNIVERSAL TRANSVERSE MERCATOR GRID

The UTM grid (the Army square grid) is used for naval bombardment purposes and for other purposes where applicable. When using this grid, the Military Grid Reference System (MGRS) will be used in communications between ground forces and other forces jointly engaged; specifically when air forces including naval aviation are acting in close air support of ground forces, and when landing force operations are supported by all supporting forces. In such operations, latitude and longitude will be used when use of MGRS is impractical.

2103 CARTESIAN COORDINATE GRID

The Cartesian Coordinate Grid (CCG) is designed for limited security, rapid reporting of geographic positions in a system compatible with tactical data systems. Grid positions are reported using X and Y coordinates in relation to the grid origin (center). This grid origin is based on a geographic reference point, and contact positions are measured in units east/west (X axis) followed by units north/south (Y axis). The unit of distance is known as the data mile (2,000 yards). The four quadrants of the grid, reading clockwise from the northwest, are each identified by a color — red, white, blue, and green (see Figure 2-2).

a. Establishing the Grid. The grid origin is established by the OTC. Selection of the grid origin at a position containing whole or half degrees of latitude or longitude will result in a less secure grid and should be avoided when possible.

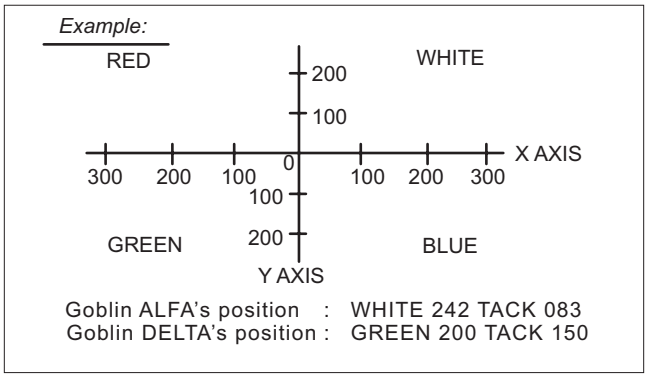

Figure 2-2. Sample CCG

b. Method of Reporting. In reporting a position, the quadrant is first identified by color. Position relative to grid origin is then reported by transmitting the number of miles along the X axis as a three-figure group, followed by the number of miles along the Y axis as a three-figure group. The X and Y coordinates are separated by the word "TACK."

2104 ASW GRID

An ASW grid is designed to provide area commanders and ASW forces a common grid to facilitate ASW operations. This grid incorporates areas sized and oriented to provide reasonable probability of detection by sensors, to allow target pursuit and attack, and to accommodate topographical and environmental conditions.

2105 BEARING AND DISTANCE

a. When Reporting Bearing and Distance in Miles, the order of reporting will be: bearing in degrees from reference point — the reference point — distance in miles. The nautical mile (2,000 yards) is the unit of distance. All bearings are reporting as true unless otherwise specified.

-EXAMPLES-

(1) From a point on the earth's surface given in specific double letters or a code name:

125KK45
140 Point Holly 50

(2) From a point of land or a navigational mark:

112 Hatteras 12
237 Finisterre 21

(3) From a standard position in the force:

310ZZ7

(4) From a ship of own force, using the call sign of the ship:

273 HOT-SHOT 12

b. When Reporting Bearing and Range in Hundreds of Yards, the order of reporting is the same as that for bearing and distance, except that the word "RANGE" must be spoken (reports in RANGE should normally be limited to less than 10,000 yards).

-EXAMPLES-

(1) From a standard position, range 9,500 yards:

165 TT RANGE 95

(2) From a sonobuoy, range 1,700 yards:

230 KINGPIN RANGE 17

2106 QUICK REFERENCE SYSTEM

a. Purpose. The QRS is designed for rapid exchange of positions and tactical information between units operating in coastal waters (e.g., a fjord environment). The QRS is suitable for exchange of combat information, disposition of own forces, area allocation, TASMO control, enemy update, RECCE operations, SITREPs, etc.

(1) The QRS sheet is a see-through plastic overlay in A-4 format (21.0 cm x 29.7 cm) with 176 numbered squares. An example of the overlay is provided in Figure 2-6 at the end of the chapter.

b. Establishing the QRS. Any chart may be chosen, but all participants must use the same scale. Upper left and upper right corners are given by geographic positions. If the overlay is north-south oriented, only the upper left corner position should be given. When more than one QRS is in use, each overlay is identified as QRS ALFA, QRS BRAVO, etc.

c. Ordering the QRS. The geographic positions of the QRS overlays should be signaled by the OTC well in advance by an OPGEN, OPTASK, etc. Information should contain:

(1) Chart number and scale.

(2) QRS identifier (when more than one overlay).

(3) Upper left corner position (and upper right corner position if not north-south oriented).

(4) Period.

-EXAMPLE-

X1/REPINST/QRS/NORWEGIAN CHART 322/1:200000//
QRS ALFA/7025.0N-1800.0E/23100-UFN//
QRS BRAVO/7025.0N-1906.2E/231600-232000//
QRS CHARLIE/7020.0N-2010.0E/7031.4N-2106.1E/232000-240200//

d. Procedures. Normal raid-reporting procedures are used, but position is reported as a numbered square. The square number may be passed in NUCO. If it is necessary to specify position within a square, add direction from square center (see example 2). When aircraft and helicopters are participating, brevity words in APP 7/MPP 7 apply:

-EXAMPLES-

(1) Contact report:

SMUGGLER 2634 - SQUARE 27 BRAVO - TRACKING SOUTH - SPEED 20 - TIME 1645Z

(2) Movement report:

NA22 DESIG SQUARE 35 WEST - M CORPEN 045 - TACK 30

(3) Command message:

TA88 - 11 DESIG SQUARE 31 ALFA

2107 POSITION/BEARING ACCURACY SUFFIXES

To indicate the probable accuracy of a position or bearing, an accuracy suffix may be added. These suffixes are particularly important when reporting an area of probability derived from two or more passive bearings. The suffixes are:

a. Position:

Within a 2-mile radius — XRAY
Within a 10-mile radius — YANKEE
Outside a 10-mile radius — ZULU
From NAVSTAR GPS unit — GOLF PAPA

NOTE

There is no appreciable error unless otherwise stated.

b. ESM bearings:

Within 2° — ALFA
Within 5° — BRAVO
Within 10° — CHARLIE
Outside 10° — DELTA

NOTE

(1) Bearing accuracies are CHARLIE, unless otherwise stated.

(2) The word "CLASS" is inserted before A, B, C, and D.

2108 ALTITUDE OR DEPTH

When reporting positions, it may be appropriate to include an altitude or depth report.

a. Altitude. If an accurate altitude of any air track cannot be determined, estimated altitude is to be reported using the appropriate APP 7/MPP 7 brevity code words (i.e., VERY LOW, LOW, MEDIUM, HIGH, VERY HIGH).

(1) Friendly Air Tracks. The altitude of friendly aircraft can be reported using the words ANGELS (in thousands of feet; e.g., ANGELS 1 DECIMAL 5 is 1,500 feet) or HEIGHT (in feet, e.g., HEIGHT 400 is 400 feet) or using the International Civil Aeronautical Organization (ICAO) term FLIGHT LEVEL (e.g., FLIGHT LEVEL 250 is 25,000 feet).

(2) Other Air Tracks. The altitude of other air tracks can be reported using the word ALTITUDE (in hundreds of feet; e.g., ALTITUDE 151 is 15,100 feet) or using the ICAO term FLIGHT LEVEL.

NOTE

FLIGHT LEVEL is only to be used when altitude is reported by the aircraft (secondary surveillance radar, IFF, or voice).

b. Depth. If an accurate depth of a submerged track cannot be determined, an estimated depth may be reported using the appropriate APP 7/MPP 7 brevity code words (i.e., SHALLOW, DEEP), or if an accurate depth can be determined, it may be reported as DEVILS (in tens of feet; e.g., DEVILS 30 is 300 feet).

NOTE

NATO publications are in the process of being amended to the following standard units of measurement:

(1) Range — yards.

(2) Distance — nautical miles.

(3) Altitude — feet.

(4) Depth of all objects in water, including bottom depth and thermal features, in meters with feet or fathoms (as appropriate) in brackets using conversion of 1 meter = 3.28 feet and rounded off to the nearest meter when exact figures are required. When using only approximate figures the conversion may be rounded off accordingly (e.g.: 250 fm should be rounded off to 450 m rather than 457 m).

(5) Thickness of ice — centimeters and/or meters.

(6) Temperatures — degrees Celsius.

The standard units above are not to be confused with the code words RANGE and ALTITUDE. For safety purposes during the transition period, the depth of all objects will be in meters followed by feet or fathoms in brackets.

2109 CHECK-SUM DIGITS

a. To avoid confusion caused by error in transmission, check-sum digits may be used in structured and free text messages, and where available in formatted messages for positions, courses, speeds, and times. Check-sum digits may also be used for ranges, frequencies, etc.

b. To derive the check-sum digit, the numbers in the position, course, speed, or time are to be added together and the total put after the appropriate element. Only the last figure of the summation is to be used; that is, if the total comes to “19,” only the “9” is used.

-EXAMPLES-

(1) Position — 5004N9 15642W8. (The 9 and 8 are the check-sum digits.)

(2) Course — 225T9 degrees true or 225M9 degrees magnetic. (The 9 is the check-sum digit.)

(3) Speed — 15KT6. (The 6 is the check-sum digit.)

(4) Time — 281030Z4. (The 4 is the check-sum digit.)

2110 STANDARD POSITIONS/REFERENCE POINTS/POSITION REPORTING

The standard positions in the force are:

a. QQ — The center of the front of the main body or convoy when not in circular formation.

b. TT — Originator's present position.

c. XX — The standard position established by the OTC on which a search, enemy reporting and so forth is to be based.

d. YY — Addressee's present position.

e. ZZ — The center of the force.

NOTE

Whenever possible, XX should be coincidental with the DLRP.

2111 DATA LINK REFERENCE POINT

a. The data link reference point (DLRP) is the common point from which all positional information on data link is derived. The DLRP is established by the OTC, in a geographic position, before commencing link operations, but may be changed for operational and/or security reasons. In principle, the DLRP should be the same position as the CCG origin, thus ensuring that picture compilation is derived from using the same origin by TDS and non-TDS units when cooperating.

b. The force track coordinator(s) is (are) responsible for an accurate tactical (data link) picture and for raid reporting within the force or in a sector, using voice compilation nets. The grid reference unit (GRU) is responsible to the OTC for maintaining the accurate position of the DLRP and the CCG origin. The GRU holds by definition the correct position of the DLRP and/or grid origin.

c. Establishing the DLRP. Although more than one DLRP can be established for consecutive periods and/or for geographic areas, only ***one*** DLRP per data link should be effective during a certain period. The geographic positions of DLRPs and the times of change are to be established well in advance by the OTC through means of OPORD, OPGEN, etc.

d. Initiating the DLRP. When commencing link operations, all PUs insert the DLRP in their TDS. On completion, the GRU executes a grid lock.

e. Maintaining the DLRP. The accurate position of the DLRP is maintained by the GRU. When necessary, the GRU executes a grid lock check to assist in updating PUs.

f. Changing the DLRP. Changing the DLRP causes disruption of the tactical picture for a short period and should therefore only be executed when the tactical situation permits. On completion of changing the DLRP and when all PUs have entered the DLRP in their TDS, the GRU executes a grid lock. Non-TDS fitted ships are to shift the CCG accordingly.

2112 HELICOPTER REFERENCE POINT

In order to facilitate position reports from and to helicopters, an HRP may be established. Several types of helicopters are equipped with tactical navigation systems optimized for passing positional information as a bearing and range from a reference point. The HRP can also be used for updating the helicopter's navigation system. With the use of an HRP, position reports can be passed in the clear, enabling ships and helicopters to process information quickly.

a. Establishing the HRP. The HRP is a geographically fixed position issued by either the Air Coordinator (AC) in an OPTASK AIR or by the helicopter control unit (HCU) prior to a mission. Due to navigation system design, the HRP should be as close to possible to the area in which the helicopter will operate. Preferably targets or contacts to be reported should not be outside 50 nm of the HRP. When an operation requires more than one HRP, subsequent points can be established and designated with a suffix (e.g., HRP ALFA, HRP BRAVO) or a code word. For transits, more than one HRP can be established by the AC or HCU for a limited period of time.

b. Position Reports To and From Helicopters. The HRP can be used to pass geographic position information, such as an air plan search origin ("DATUM 315 HRP 5 DECIMAL 5"), or as the common reference when using method B2 in accordance with Table 8-2. When the helicopter initiates a "Request update," navigation updates may be passed using the "Standby, mark" procedure.

2113 HARBOR REFERENCE POINTS

a. (NC) (NMM) In wartime, ships leave or enter harbor by a swept channel. The channel, which varies in width, usually starts at the harbor entrance or boom gate and extends to seaward. Reference points A, X, O, and Y (if required) are used to facilitate leaving and entering a harbor; reference times used are estimated time of arrival (ETA) or departure (ETD) and zero time. Should multiple swept channels be established, points A1, A2, X1, X2, etc., may be used. The Q-message system and area warnings will provide the OTC with the necessary information on swept channels and mined areas.

b. (NC) (NMM) Harbor reference points are defined as follows:

(1) (NC) (NMM) Point A. In an open approach, point A may be right at the mouth of the harbor or just to seaward of the gate; in a harbor with a long approach, it would be at the seaward end of the approach. Point A should be promulgated by the local authority and is to be signaled to forces at sea as soon as possible. In the absence of a local authority, the OTC will establish point A.

(2) (NC) (NMM) Point X. Point X is the reference point at the seaward end of a swept channel. The local authority will establish point X and promulgate the position to the forces at sea. In the absence of a local authority, the OTC will establish point X.

(3) (NC) (NMM) Point O. On leaving, the various units of the formation that is to be formed should be in or nearly in station when the Guide passes through point O. This maneuver should be accomplished so as to minimize the mining threat. The protective efforts of the screen should not be lost and sufficient maneuvering room should be provided. On entry, the reverse of the foregoing process is started at point O (i.e., the formation starts to break up in execution of the entrance plan, which normally starts at this point). The OTC of the force entering or leaving harbor shall designate point O and inform the local authority of the position of point O if EMCON permits.

(4) (NC) (NMM) Point Y. Large dispositions should form at point Y when there is insufficient area at point O. The component formations form at point O, and the disposition forms at point Y. On entry, the reverse of this process is started at Point Y. The position of point Y will be promulgated by the OTC.

2114 SHIP AS ANCHORING REFERENCE

When a ship is ordered to anchor with reference to another ship, the reference ship is to identify herself to the incoming ship.

a. Providing Identification.

(1) By day, her visual call sign is to be used.

(2) At night, she is to show a white light as high on the foremast as possible. This is in addition to normal anchor lights.

(3) At darken ship, directional lights are to be used.

b. Providing Other Data.

(1) If at single anchor, she is to signal the bearing and distance of her anchor from her foremast.

(2) If moored with two anchors, she is to signal the direction of the ship's head and the line of direction between her anchors.

2115 ROUTES AND REFERENCE POINTS

Routes and reference points are established for the purpose of facilitating control of surface, air, and subsurface traffic so as to reduce interference between forces making passage in the same area. Routes and reference points are established by commanders in chief and such other commanders as may be specifically designated. Common routes and reference points should be promulgated when necessary in order to ensure understanding between forces operating in adjacent areas. Information concerning common routes and reference points should be disseminated to forces about to enter or leave an area as well as to appropriate commands in adjacent areas. When no conflict with establish routes and reference points would result, commanders subordinate to those mentioned above may promulgate additional routes and reference points for the temporary use of their own forces.

2116 (NR) (NMM) CONVOY ROUTE POSITION DESIGNATORS

Convoys or independent Merchant Ships under Naval Control may be allocated routes using two-letter designators for each prescribed position on those routes. These designators are chosen by the Routing Authority, normally the OCA, at random for the first position on the route, and then sequentially after that (avoiding I and O), and are changed for every sailing. Reference Diversion Points are similarly ordered for each sailing to facilitate the ordering of subsequent diversions while retaining some simple security between the Routing Authority and the merchant ships being diverted. For other methods of prescribing Merchant Ships routed, see ATP 2, Vol. I.

2117 REPORTING AND EXCHANGING DATA ON POSITIONS

a. Navigational Danger. Ships sighting or detecting land are to report immediately if the formation may be running into navigational danger or if the position thus obtained differs materially from that based on the OTC's reference position.

b. Doubt of Position. Ships should exchange data on navigational positions if there is any doubt of their positions, especially when approaching land or after a period in which a fix has not been obtained. Large ships should also assist small ships and craft by passing their own positions to them.

c. Position Reports. All large ships and the screen commander(s) will make position reports to the OTC at 1200 (or 15 minutes after noon position) or when called for. The method by which the position was determined will be indicated. Position reported will be the formation center.

d. Movement Reporting System. When it is required on a need-to-know basis that information be exchanged between commanders, individual ships (less submarines) or formations are to report in peace, and may be directed in war, their positions, routing, changes thereto, and intended CHOP by means of Movement Reports (MOVREPs). These MOVREPs may also include other intentions (see ACP 176). Additional details are contained in APP-11.

2118 — 2119 SPARE

2120 COURSE AND SPEED

a. Ships are ordered to proceed by course and speed. In formations, the Guide is ordered to proceed at the signaled speed on the signaled course. Signaled speed is attained by using the normal number of revolutions for the ordered speed and adjusting as necessary for foul bottom and damage; signaled course requires correction of the compass course for gyro error or variation and deviation. When evasive steering, such as zigzagging, is ordered, a base course and a base speed are to be ordered. Subsequent course alterations do not change the base course unless the change is specifically signaled.

b. Ships may also be ordered to proceed at a specific speed, such as maximum speed, operational speed, stationing speed, normal speed, or steerageway. When no stationing speed has been ordered, operational speed is to be substituted for stationing speed in the description of certain maneuvers. Normal speed should be previously established if its use is expected to be required by the type or unit commander. Speeds may also be ordered with reference to specific equipment performance requirements, such as optimum or maximum sonar speed, or with reference to the requirements of specific operations, such as replenishment speed.

2121 COURSE AND SPEED MADE GOOD

a. It is necessary to distinguish clearly between signaled (or base) course and signaled (or base) speed and:

(1) Course and speed made good through the water (CSW).

(2) Course and speed made good over the ground (CSG).

b. CSW includes the effect of weather on course made good through the water (CTW) and speed made good through the water (STW), but not the effect of current or tidal stream. CSG includes the effect of current or tidal stream on course made good over the ground (COG) and speed made good over the ground (SOG). It is CSG that is normally used when routing ships; in this case, the speed component is indicated as speed of advance (SOA).

2122 POSITION AND INTENDED MOVEMENT

a. Purpose. The OTC establishes position and intended movement (PIM) to assist the return of aircraft, to aid outlying surface units in maintaining station, to keep adjacent commands informed of his

intentions, and for rendezvous purposes. It is particularly important to keep all units in a dispersed formation informed of PIM.

b. Signal. The OTC shall signal PIM as follows: position — time of position — course — speed — period in hours (if required) for which course and speed are in force. If, during the period, several changes of course and speed will be in effect, course, speed, and period in force should be repeated as necessary for each change. The OTC shall signal PIM to detached units, or those about to be detached, which are scheduled to rejoin later, in sufficient time to permit these units to take suitable action. PIM is normally signaled one hour prior to flight operations. EMCON permitting, the OTC must advise his area commander and maritime headquarters of the force's PIM.

c. PIM of Independent Unit. Commanders of units acting independently may establish their own PIMs.

d. When Position of Force Differs From PIM. After PIM has been issued, unforeseen circumstances may cause the position of the force to differ from PIM. For example, a new operational requirement or a shift in the wind may affect the course and/or speed made good by a carrier force. Under such circumstances, the OTC will issue a new PIM.

e. Task Group PIM. Signaling the PIM assists aircraft and ships to return to the force after operating beyond visibility distance. Ordinarily PIM is signaled by the OTC at least one hour before aircraft are launched. As soon as it is known, PIM is to be promulgated for flight planning purposes; in any case, it must be furnished to pilots before takeoff.

2123 ENDURANCE

Endurance is normally the hours fuel will last at indicated speed.

2124 — 2129 SPARE

2130 ARRIVAL AND DEPARTURE

2131 REPORTING TIME OF ARRIVAL

The local authority is to be previously informed of the estimated time of arrival (ETA) of the unit wishing to enter harbor. Ships should not enter harbor until permission is granted.

2132 ENTRY INTERVALS

The number and types of the ships entering harbor may be such that the situation is complex. In this event, signals are provided to specify the sequence in which units are to enter and whether the units are to be separated by time or distance intervals. To allow time for berthing, these intervals should normally be greater than those for the same ships when leaving harbor.

2133 ANCHORING IN FORMATION

When ships are to anchor in formation they will be conducted to the anchorage by the formation commander. Accurate station-keeping is particularly necessary.

2134 BERTH NUMBERS

Ships proceeding independently to assigned berths, or shifting berths in a harbor or anchorage where berths have been established, are to hoist the numbers of the berths to which they are proceeding.

When proceeding to berths in formation, berth numbers are not to be hoisted unless ordered by the unit commander.

2135 — 2139 SPARE

SECTION II — RULES FOR MANEUVERING

2200 PRINCIPAL RULES FOR MANEUVERING

A summary of principal rules for maneuvering is provided in ATP 1, Vol. II.

2201 UNIT OF DISTANCE

The nautical mile (approximately equal to the data mile, i.e., 2,000 yards) is the unit of distance. In circular formations, 1,000 yards is the unit of distance for circle spacing, unless otherwise ordered.

2202 DISTANCE AND INTERVAL

a. Standard Distance. The distance between adjacent ships in a line is measured between foremasts, or between navigation bridges of ships without foremasts. For the sake of uniformity, the standard distance between two adjacent ships when formed in a line will be 1,000 yards between large ships (ships over 450 feet in length) and 500 yards between small ships (ships 450 feet long or less) and submarines, unless otherwise ordered. The distance between a large ship and a small ship or submarine will be 1,000 yards or the distance ordered for the large ship. (See Figure 2-3.)

b. Maneuvering Interval. The interval between line guides will be the sum of the standard or ordered distances of the longest line, plus the longest single distance in any one line. (See Figure 2-3.)

c. Extended Maneuvering Interval. Unless otherwise ordered, extended maneuvering interval, which allows for station-keeping errors, will be maneuvering interval plus 500 yards.

2203 STANDARD AND REDUCED TACTICAL DIAMETER

a. Tactical Diameter. Figure 2-4 illustrates the turning distances for a ship on a turning circle using a constant rudder angle. Tactical diameter is the transfer for a turn of 180°.

b. Size of Diameter. When ships of dissimilar type/size maneuver in the same formation, tactical diameters will be as follows:

Type/Size	Tactical Diameter Standard (yards)	Tactical Diameter Reduced (yards)
Carrier present.	2,500	1,500
More than one cruiser or large ship present; logistic or large amphibious ship present.	1,200	1,000
Only one cruiser or large ship present	1,000	800
Only small ships and submarines present	800	600

NOTE

Reduced tactical diameter will be used for turns of unspecified amount and emergency turns.

c. Changing Size of Diameter. A type or unit commander may, however, order a different standard tactical diameter or a different reduced tactical diameter for his ships.

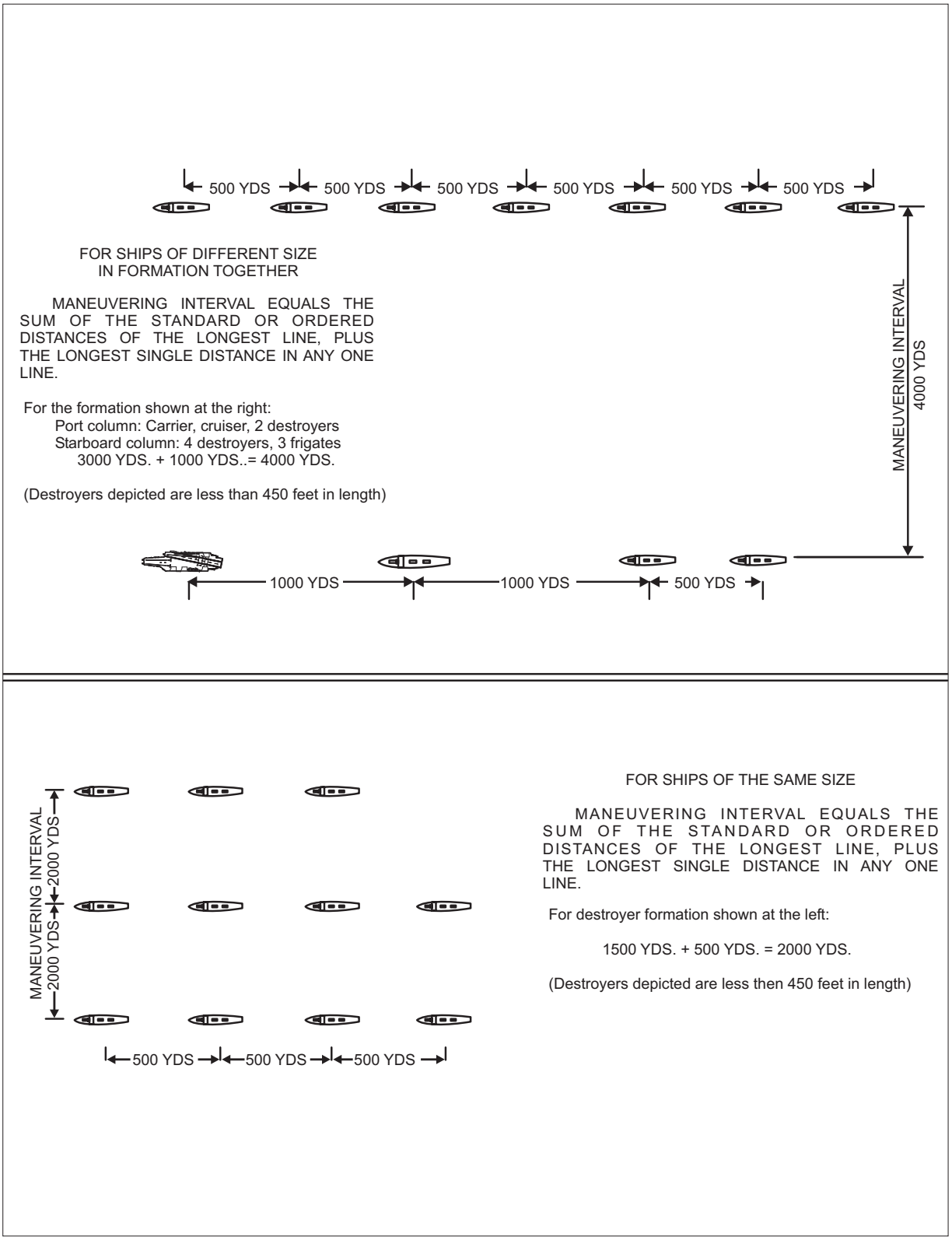

Figure 2-3. Standard Distances and Maneuvering Intervals

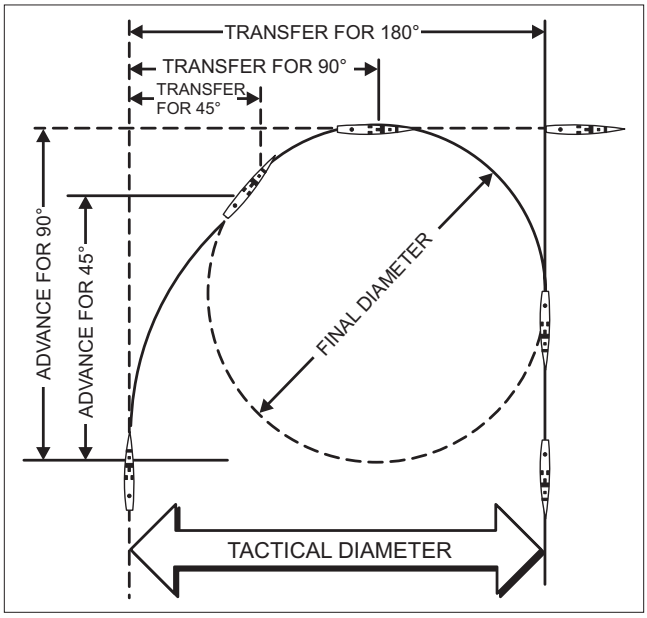

Figure 2-4. Turning Distances

d. Amount of Rudder Used. For precision in maneuvers, the amount of rudder used by individual ships must be adjusted so that they turn as nearly as possible with the same turning circle as their Guide.

e. Diverse Forces. When diverse ship types of different nationalities are present and confusion could arise, the OTC is to order the size of standard and reduced tactical diameters to be used.

f. Aircraft Carriers. Turns by aircraft carriers may not conform to listed tactical diameter due to flight deck heel constraints during periods of aircraft operations.

2204 ACCELERATION AND DECELERATION

a. Changing Speed. Ships operating together should normally employ uniform acceleration and deceleration rates when changing speed. This is necessary for smoothness of maneuver and to facilitate station-keeping.

b. Tables. The OTC or type commander may prescribe acceleration and deceleration tables as a guide. Figure 2-5 is an example for use by a formation containing one or more aircraft carriers.

c. Emergency Acceleration. Emergency acceleration is to be at double the normal rate prescribed by the OTC; that is, accomplished in one-half the time.

2205 SPEEDS WHILE MANEUVERING

a. Method of Ordering. Operational and stationing speed will be ordered by signal or issued in orders to the formation. They will also be signaled to any unit joining.

b. Reserve Speed for Station-Keeping. When ships are maneuvering, the signaled speed should be appreciably less than the operational speed, so as to leave a reserve of power for taking up and keeping station. On other occasions one knot less than the operational speed leaves a sufficient margin for station-keeping.

	KNOTS		MINUTES		RATE
	CHANGE OF SPEED		TIME REQUIRED FOR CHANGE	TOTAL ELAPSED TIME	KNOTS PER MINUTE
	FROM	TO			
FASTER	ZERO	15	3	3	5
	15	19	2	5	2
	19	24	5	10	1
	24	29	10	20	1/2
	29	31	6	26	1/3
	31	33	8	34	1/4
SLOWER	33	30	7 1/2	7 1/2	2/5
	30	29	2	9 1/2	1/2
	29	27	3	12 1/2	2/3
	27	23	4	16 1/2	1
	23	20	2	18 1/2	1 1/2
	20	18	1	19 1/2	2
	18	15	1	20 1/2	3
	15	ZERO	3	23 1/2	5

Figure 2-5. Acceleration-Deceleration

c. Establishing Station Speed. The use of a speed slower than operational speed normally enables changes of station to be completed within an acceptable time. This speed, known as stationing speed, should be previously established, either by signal or in operation orders, particularly when substantial economy of fuel will result. Ordering stationing speed does not restrict the OTC from signaling any speed up to operational speed.

d. Speed When Taking or Changing Station. When a unit being maneuvered in formation by its unit commander needs to increase speed to take or change station, the speed ordered for that unit is normally to be one knot less than stationing speed. Ships needing to increase speed when taking or changing station independently should normally proceed at stationing speed.

e. Change in Signaled Speed. When the speed of the Guide is changed by signal during a maneuver involving units taking station on the Guide, ships in the unit being maneuvered are not to change to the Guide's new speed until so ordered by their unit commanders.

f. Rough Weather. In rough weather, commanding officers are to report to their unit commander the inability to maintain the signaled speed without damage and are authorized to reduce speed as necessary.

2206 SPEED FLAGS

In order to facilitate station-keeping, the speed at which a ship is proceeding may be indicated by small-size numeral flags displayed from the navigation bridge or by regular-size numeral flags at the dip

from an outward signal halyard. Speed flags are normally used only when entering or leaving harbor in formation, when minesweeping, or when ordered by the unit commander. They are not to be used for ordering changes in speed, which are always to be signaled.

2207 — 2209 SPARE

2210 STATIONING

To station a unit is to order it to proceed to a position with reference to the Guide, a geographic position, or an indicated unit. Station is expressed by one of the following methods.

a. A true bearing and distance; e.g., "Take station bearing 170° from the Guide, distance 5 miles."

b. A relative bearing and distance; e.g., "Take station 30° on the starboard bow of (call sign), distance 5 miles."

c. A general relative area, such as the van or rear; an approximate distance may be included.

d. A numbered or lettered station on a diagram; e.g., "Take Station 14."

e. The circular method (see Chapter 3).

f. The sector method (see Chapter 3).

g. The skeleton screen diagram (see Chapter 3).

2211 JOINING AND LEAVING

a. Units Closing or Rejoining.

(1) Meaning of Order to Close or Rejoin. An order to close or rejoin means that the unit addressed, except a screen unit (see Chapter 3), is to come closer to receive further orders. It does not in itself order the unit to take up any particular station. A unit ordered to close or rejoin is not to enter the formation without further orders.

(2) Resuming Previous Station. Should the OTC desire a unit to resume its previous station, a signal to this effect is available.

b. Units Temporarily Detached. A unit temporarily detached is not to act on or to answer maneuvering signals made by the OTC unless its own call sign is specifically included in the address of the maneuvering signal.

c. Units joining. The OTC will normally apprise the force of the expected time and general direction of approach of approach of a unit joining. When within range, a unit joining is to establish communications (EMCON permitting) and identify itself to the OTC, who will pass tactical information as required. Information to be exchanged between warships joining a formation and the OTC is given in Chapter 1. During radio silence, the first ship to sight a unit joining is to inform the OTC and pass any required tactical information as directed by the OTC, using a system within the EMCON plan in force.

2212 — 2219 SPARE

2220 THE GUIDE

a. OTC's Ship.

(1) The ship in which the OTC is embarked is the Guide unless otherwise ordered or unless the Guide changes automatically.

(2) The OTC's ship may hoist the Guide flag temporarily for identification when the force is forming up or when a unit joins.

b. Designated Ship. A ship (not the OTC's) designated as the Guide is to hoist the Guide flag and keep it flying until the Guide is changed. When a formation or disposition diagram indicates the station designated as the Guide's, the ship in that station automatically assumes duty as the Guide and, if she is not the OTC's ship, hoists the Guide flag.

c. Designation of New Guide. The designation of a new Guide does not in itself order a shift in stations; ships must, therefore, maintain their present positions but keep station on the new Guide.

d. Further details are described in ATP 1, Vol. II.

2221 AUTOMATIC CHANGES OF THE GUIDE

The Guide does not automatically change when a new task or type organization is ordered or with a change of tactical command. The Guide changes automatically only on the following occasions:

a. SHIP BEING FORMED ON becomes the Guide.

b. LINE GUIDE OF THE LINE BEING FORMED ON becomes the Guide.

c. SHIP BECOMING THE PIVOT SHIP for a maneuver becomes the Guide.

d. WHEN REVERSING THE ORDER OF SHIPS IN COLUMN FROM THE REAR, the rear ship automatically becomes the Guide.

e. WHEN FORMING A LOOSE LINE OF COLUMN, COLUMN OPEN ORDER, OR DIAMOND FORMATION, the leading ship becomes the Guide.

f. WHEN A WHEEL SIGNAL IS EXECUTED:

(1) WHEN IN SINGLE COLUMN, the leading ship will be the Guide.

(2) WHEN IN DIAMOND FORMATION, the leading ship will be the Guide.

(3) WHEN IN MULTIPLE COLUMNS, the leading ship of the pivot column will be the Guide.

g. WHEN WHEELING LINES SIMULTANEOUSLY, the leading or pivot ship of the Guide's line becomes the Guide and the leading or pivot ships of the other lines become line guides.

h. WHEN ALTERING COURSE BY SEARCH TURN, the wing ship on the side away from the direction of the new course will turn to the course indicated and become the Guide.

i. WHEN THE GUIDE HAULS OUT, the new guide of that line is to become the Guide.

2222 — 2229 SPARE

2240 SPECIAL MANEUVERING RULES

2241 INDIVIDUAL ACTION TO AVOID DANGER

Ships, whether acting independently or in formation, must take such individual action as may be required to avoid danger. When necessary, ships may leave their stations to avoid risk of collision or to avoid navigational hazards.

2242 SPECIAL RULES OF THE ROAD

The following rules are applicable to Allied naval ships and overrule the International Regulations for Preventing Collisions at Sea in the circumstances described.

a. Right of Way. Priority is in the following order.

(1) Helicopters when hovering with sonar in the water are to be considered as ships not under command. A helicopter in the dip or hover is not to be approached by ships within 500 yards.

(2) Mine Countermeasures Units, which includes helicopters operating tethered MCM equipment, have the right of way when showing the appropriate signal over ships engaged in replenishment or ships engaged in the launching or recovery of aircraft. MCM helicopters with gear streamed are not to be approached by ships within 1,000 meters.

(3) Ships Engaged in Replenishment (other than VERTREP) have the right of way over carriers and other ships engaged in flight operations.

(4) Ships Engaged in Launching or Recovery of Landing Craft Utilities have the right of way except over ships or formations showing the appropriate signals and are to be regarded as described at the above stated priority configurations (1), (2) and/or (3).

(5) Ships Engaged in Launching or Recovery of Aircraft have the right of way except over ships or formations showing the appropriate signals that are engaged in replenishment (other than VERTREP) or mine countermeasures operations; other ships are to keep clear (see Chapter 6).

(6) Ships Engaged in Launching or Recovery of Arrays have the right of way except over ship or formations showing the appropriate signals and are to be regarded as described at the above stated priority configurations (1), (2), (3), (4), and/or (5).

b. Screen Ships. When a formation consists of a main body and screen, ships of the screen are to keep clear of those of the main body. When, from any cause, a ship of the main body finds herself so close that collision cannot be avoided by action of the screen ship alone, she also shall take such action as will best avoid collision. Rule 15 of the International Regulations for Preventing Collisions at Sea is not to apply between screen ships and ships of the main body (but see Chapter 3 for instructions for individual screening units).

2243 SEA MANNERS AND CUSTOMS

With the exceptions stated in Article 2242, the International Regulations for Preventing Collisions at Sea are to be observed by ships in formation. However, in order to facilitate maneuvering, the instructions in this article are to be observed, but in each case where one ship is directed not to hamper the other, the ship required to keep clear of the other is so to conduct her movements throughout that her heading and/or proximity to the other are not such as to introduce any doubts whatsoever as to her intentions. She should also, if possible, indicate her intentions by signal. However, if doubt does arise, the

International Regulations for Preventing Collisions at Sea (or, where applicable, any local port rule) are to apply, except as in Article 2242.

a. General Conduct of Ships in the Presence of Formed Units. Ships joining, leaving, approaching, or passing through a formation must not hamper ships already in formation.

b. Mine Countermeasures Units.

(1) Vessels or Formations engaged in mine clearance operations (as described in Rule 27f of the International Regulations for Preventing Collisions at Sea 1972 (modified 1983)) are not to be approached nearer than 1,000 meters. Under no circumstances is a ship to pass through a mine clearance formation.

(2) Helicopters engaged in mine countermeasures operations are to be considered as ships not under command when operating tethered countermeasures equipment (see Article 2242a(2)).

c. Ships Not in Station. Ships that are not in station are not to hamper those in station. However, ships in station should not stubbornly maintain their course and speed if danger of collision exists.

d. Passing Between Ships in a Line. No ship is to pass between ships in a line without (in the case of a junior) asking permission, or (in the case of senior) indicating her intention to do so. It then becomes the responsibility of the ship passing through the line to avoid hampering the other ships.

e. Passing Through a Formation. If ships are required to pass between ships in a formation or between lines, it is the responsibility of the ships passing through the formation to avoid hampering the movements of the other ships. No ship is to attempt to pass through a formation of minesweepers with sweeps streamed.

f. Senior Officer's Orders to Keep Clear. If a senior officer wishes a junior officer who has the right of way to keep clear of him, the senior officer is to issue timely orders.

g. Restricted Waters. In restricted waters, a small ship must not hamper the movements of a large ship.

2244 EXECUTING MANEUVER AT PREARRANGED TIME

a. Ordering the Maneuver. Maneuvers, such as altering course and speed or changing the formation, can be ordered to be executed at a specific time or on arrival in a prescribed position; in these cases no further signal to execute the maneuver will be made by the OTC, though unit commanders may have to make signals to their units.

b. When Signaling Is Restricted. When it is desired to restrict signaling during a particular period in the future, such as during darkness or when nearing the enemy's coast, the OTC can use the following signal: "The maneuver ordered to be carried out at ___ is to be executed at that time without further signaling. Unit commanders are to issue necessary instructions in advance."

2245 SCOUTING UNITS

Special maneuvering rules for scouting units will be found in Chapter 6.

2246 SHIPS TOWING ACOUSTIC ARRAYS OR OTHER DEVICES

Ships towing acoustic arrays or other devices do not have complete freedom of maneuver. They will not normally display lights or day shapes indicating conduct of special operations and are responsible for informing any unit closing them of any special restrictions.

2247 — 2249 SPARE

2250 MAN OVERBOARD — STANDARD PROCEDURES

a. The ship from which a man falls overboard is to use the following procedure:

(1) Use the rudder and engines as appropriate to avoid the man.

(2) Drop a lifebuoy; in peacetime, also drop a day/night pyrotechnic marker.

(3) Mark the plot.

(4) In peacetime, the above information is to be passed regardless of the EMCON plan in force.

(5) Sound at least six short blasts on the whistle.

(6) Maneuver according to rules set forth in Articles 2251 or 2252, as appropriate.

(7) Secure active sonar if tactical situation permits.

(8) By day, hoist flag OSCAR where it can best be seen; by night in peacetime, display two pulsating red lights arranged vertically (see Article 2254) or fire one white rocket (or one white Very light).

(9) In peacetime, any ship may use searchlights as necessary.

b. Whenever a man has been reported missing overboard, the ship shall immediately inform the OTC. The OTC shall determine the advisability of initiating a search. If a search is conducted, the OTC shall designate the search plan and participating units. Ships towing acoustic arrays or other devices will normally require the assistance of another unit to recover a man overboard. The commanding officer of a ship steaming independently shall determine the search procedures for a crewmember who may have been overboard for an undetermined period. In each case, the commander shall inform appropriate authorities and recommend the duration of the resulting search.

2251 PEACETIME RECOVERY MANEUVERS

a. When in Column.

(1) The ship from which the man falls overboard shall stop engines temporarily and hold course, unless it is the rear ship of the column, in which case, it shall maneuver as required to recover the man. The rudder may be used to throw the stern away from the man slightly; the ship is then brought back to the course.

(2) Ships ahead of the one losing the man, stand on at the prescribed speed and hold course.

(3) Ships astern of the one losing the man, stop engines and maneuver as necessary to keep clear by hauling out of line: odd-numbered ships, counting from the leading ship of the column, turning to starboard and even-numbered ships turning to port. All ships then resume the course and signaled speed.

(4) The rear ship should always prepare to recover the man overboard; however, any ship in position safely to recover the man should do so as soon as possible, informing other ships of her intentions.

b. When in Line Abreast or Line of Bearing.

(1) The ship from which the man falls overboard is to maneuver as required to recover the man, avoiding a turn toward other ships unless they can safely be cleared.

(2) Other ships are to maintain the course and speed.

c. When in Any Other Formation.

(1) If a man falls overboard from a large ship, the nearest small ship, or the man-overboard recovery ship when designated by the OTC, is to proceed to recover the man. If, however, it is clearly safe for the ship losing the man to maneuver to recover him, it may do so. In either case, other ships are to maneuver as necessary to stand clear of rescue operations and, if possible, maintain formation integrity.

(2) If a man falls overboard from a small ship, it is to maneuver as necessary to recover the man. Other ships are to maneuver as necessary to stand clear of rescue operations and, if possible, maintain formation integrity.

(3) In a close formation, a ship of the van should not maneuver to recover a man overboard if risk of a collision exists. It should maintain course and speed unless otherwise directed by the OTC, who may designate a man-overboard recovery ship to make the recovery.

d. When Engaged in Replenishment at Sea. During transfer at sea or replenishment exercises, the following precautionary measures shall be taken for the purpose of rescuing anyone who should fall overboard.

(1) If a rescue helicopter is available, it should be at a minimum deck alert during daylight hours. However, if bad weather or special hazards demand, the helicopter should be airborne in a suitable position.

(2) If a man-overboard recovery ship is designated, it should be stationed 500 to 1,000 yards astern of the delivery ship.

(3) The customer ship is the designated man-overboard recovery ship when no other ship nor a suitably equipped helicopter is available. In this case, both the supplying and customer ships shall ensure that each is prepared to execute emergency breakaway quickly and safely throughout the replenishment.

(4) Should either the supplying or customer ship lose a man overboard, life preservers with markers shall be dropped by both ships as close to the man as possible.

(5) The OTC shall be informed immediately.

2252 WARTIME RECOVERY MANEUVERS

a. If a man falls overboard from a large ship the nearest small ship, or the man overboard recovery ship when designated by the OTC, is to proceed to recover the man if the tactical situation permits. Other ships are to maintain the course and speed. If no small ship is present, the OTC will issue the necessary orders but large ships should not stop in areas where enemy submarines may be encountered.

b. If a man falls overboard from a small ship, it is to maneuver clear of the formation and recover the man if the tactical situation permits. Other ships are to maintain the course and speed but are to keep clear.

2253 RESCUE HELICOPTER

If a man falls overboard and the tactical situation and flying conditions permit, a ship equipped with a suitable rescue helicopter, as designated by the OTC, is to launch such a helicopter to assist in the rescue. Surface ships are cautioned to keep clear when a helicopter is actually engaged in rescuing personnel.

2254 MAN OVERBOARD LIGHTS

a. If a man falls overboard during darkness, the emergency may be indicated by man overboard lights. These are two red pulsating lights in vertical line, with the following characteristics:

(1) Visible two miles.

(2) Visible all around.

(3) Pulsating rate 50 to 60 pulses per minute.

b. During wartime, man overboard lights will be used only upon direction from the OTC.

2255 — 2259 SPARE

2260 BREAKDOWN AT SEA

a. Avoiding Danger to Other Ships. Should a breakdown occur, such as loss of steering control or failure of main engines, the first requirement is to avoid endangering others in company. As a means to this end, signals and information to other ships should be given as nearly concurrently with the orders to the wheel and engines as is possible.

b. Signals From Disabled Ship. The following steps must be taken by a disabled ship:

(1) Sound at least six short blasts.

(2) By day, hoist flag 5; hoist two black balls. By night in peacetime, show two red lights in accordance with Rule 27 of the International Regulations for Preventing Collisions at Sea.

(3) If a turn is being made, indicate the direction by sounding one short blast if the turn is to starboard and two if to port.

(4) Inform the OTC of the nature of the breakdown, giving estimated time of its repair and of return to station.

c. Maneuvering to Avoid Disabled Ship.

(1) When in Column: Ships ahead of the disabled vessel stand on. Ships astern of the disabled vessel maneuver as necessary to keep clear and indicate their intentions by the appropriate sound signal. When clear, all ships resume signaled course and speed.

(2) When in Any Other Formation: Ships maneuver to remain clear of the disabled vessel.

2270 NIGHT AND FOG

2271 NAVIGATION LIGHTS ON DARKENED SHIPS

a. Any Ship Endangered by Others. When ships are darkened, and any ship considers herself endangered by another, she is to switch on navigation lights using dimming feature if installed. Other ships, in the immediate vicinity sighting such lights, using dimming feature, if installed.

b. When Maneuvering in Formation. When it is necessary to change the formation, formation axis, or course of a screened unit, navigation lights may be switched on if it is not certain that ships will clear each other.

2272 WHISTLE SIGNALS WHILE MANEUVERING

The following signals from the International Regulations for Preventing Collision at Sea may be used by ships in a formed state when maneuvering in fog or at night, even though the regulations require that the ships be in sight of one another:

One short blast . . . . . I am altering my course to starboard

Two short blasts . . . . . I am altering my course to port

Three short blasts . . . . My engines are going astern

Five or more blasts . . . To be used in accordance with International Regulations

2273 STANDARD FOG SIGNALS

a. In Wartime. The standard fog signals, for example, one prolonged blast for a ship under way, are not to be sounded in wartime unless otherwise ordered.

b. In Peacetime. Fog signals by ships in formation are to be sounded in the manner ordered by the OTC, who will take into consideration the confusion that may be caused both to themselves and to other shipping by too strict adherence to the International Regulations when large numbers of ships in company are all sounding fog signals.

2274 ENTERING FOG

a. No Change Without Signal. No change in the formation, disposition, course, or speed of the force is to be made without a signal from the OTC. However, when evasive steering is not being carried out, unit commanders may change the arrangement of their units to a compact and more suitable formation. If evasive steering is being carried out, it is to continue until stopped by a signal from the OTC.

b. Units Closing the Force. Units closing the force should maneuver so as to make their final approach from well abaft of the beam of the rear ships of the force. If unable to operate radar, they are not to attempt to join but are to assume the course and speed of the force until otherwise directed.

c. Use of Radar. If EMCON plan permits, ships are to man surface radar and the primary tactical circuit.

d. Lookouts. Fog lookouts are to be stationed.

e. Lights. In peacetime, navigation lights are to be shown.

f. Fog Buoys. Ships in column, except the rear ship, should be prepared to stream a buoy at four-fifths of standard distance and to direct a strong light on the ship astern.

2275 — 2279 SPARE

2280 WARTIME CRUISING PRECAUTIONS

2281 DARKENING SHIPS

a. Completely Darken Ship. Unless otherwise ordered, all ships are to be completely darkened from sunset to sunrise, while at sea. A ship is to inform any ship whose lights are visible. Navigation lights are not to be used when ships are darkened except in emergency to avoid collision. Article 2271 explains this point more fully.

b. Modified Darken Ship. To improve habitability, the OTC may order modified darken ship. Under this condition, doors, hatches, and ports may be opened but no direct white lights or red standing light shall be permitted to show outside the ship.

c. Special Conditions. When authorized by the OTC, dimmed side lights and stern light may be permitted during screen maneuvers, when ships join the formation, when individual ships maneuver within the formation, or during coordinated operations. The OTC may authorize ships controlling aircraft at night during darken ship conditions to identify their ship to the aircraft by use of Grimes light or pulsating red truck lights. Ships involved in launching and recovering helicopters may show additional lights at minimum brilliance consistent with safety.

2282 GENERAL PRECAUTIONS

Ships are to take precautions to avoid disclosure of own forces to the enemy. These should include measures to avoid excessive external noises and smoke emission, including blowing of boiler tubes. Waste is to be disposed of by sinking or retained on board. Use of electromagnetic, electro-optic, and acoustic emitters is subject to the instructions in Chapter 5.

2283 — 2289 SPARE

SECTION III — EVASIVE STEERING

2300 SCOPE

This section describes antisubmarine evasion and torpedo countermeasures for main body, convoy, and screen units as well as anti-FPB maneuvers against a missile- or torpedo-firing FPB.

(NR) (NMM) Specific plans and instructions for antisubmarine evasive steering are contained in ATP 3.

2301 GENERAL INSTRUCTIONS

a. Main Body or Convoy. The main body or convoy will normally carry out evasive steering.

(NC) (NMM) If units of the main body are stationed by the sector method, only the Guide and the slowest units will carry out evasive steering in accordance with ATP 3. Other main body units should patrol their sectors at random and as vigorously as the speed of advance (SOA) allows.

The screen should be fully informed about the type and/or plan of evasive steering in order to be able to adjust patrolling.

b. Screen Units. If screen units are stationed by the skeleton diagram and are ordered not to patrol stations, evasive steering must be ordered separately.

(NR) (NMM) (per ATP-3).

2310 (NC) (NMM) ANTISUBMARINE EVASION AND TORPEDO COUNTERMEASURES

a. **(NC) (NMM)** Measures to evade submarines are designed to prevent a submarine from reaching a firing position and normally will be ordered by the OTC.

b. (NC) (NMM) Torpedo Countermeasures for Formations and Single Units.

(1) Torpedo countermeasures (TCMs) fall into two broad categories, tactical and material, and are designed to:

(a) Confuse the submarine's fire control solution.

(b) Avoid a torpedo or torpedo salvo once fired.

(2) The OTC is to order countermeasures which are applicable to ships in formation. Countermeasures to be employed by ships engaged in ASW screening, or on search or patrol, are the responsibility of the OTC or appropriate commander (if delegated). The policy for the use of towed decoys must be promulgated by the OTC.

c. (NC) (NMM) Antisubmarine Evasion by Surface Units Transiting a Submarine Threat Area.

(1) Main Body Units.

(a) All units use evasive steering as advised in ATP 28 and ATP 3 (a summary of maneuvering during evasive steering is provided in Table 2-1), the highest speed is compatible with the aim, and have degaussing on.

Table 2-1. (NU) (NMM) Maneuvering Formation When Using Evasive Steering

ON EXECUTE OF THE SIGNAL FOR	❶ WHEN ZIGZAGGING					❷ WHEN WEAVING		
➔	Cease Auto-matic-ally	Return to Base Course	Make Maneuver Relative to	Resume on Signal	Applicable to	Cease Auto-matic-ally	Resume Without Signal	Applicable to
TURN TOGETHER	Yes	No	Present Leg of Zig-zag	Yes	1. Combatant Formation 2. All Screens	Yes	Yes	1. Combatant Formation 2. All Screens
	Yes	No	To True Course In-dicated	Yes	Mercantile Convoys			
WHEEL	Yes	Yes	Base Course	Yes	1. Combatant Formation 2. All Screens	Yes	Yes	1. Combatant Formation 2. All Screens
	No	Yes	To True Course In-dicated	Yes	Mercantile Convoys			
CHANGE OF BASE COURSE OF 10° OR LESS	No	No—Adjust to New Base Course			1. Combatant Formation 2. Convoy 3. All Screens 4. Independent	No—Adjust to New Base Course		1. Combatant Formation 2. All Screens 3. Independent
CHANGE OF AXIS	Yes	No—See Note	Present Leg of Zigzag	Yes	1. Combatant Formation 2. All Screens	Yes	Yes	1. Combatant Formation 2. All Screens
CHANGE OF FORMATION OR DISPOSI-TION	Yes	No—See Note	Present Leg of Zigzag	Yes	1. Combatant Formation 2. All Screens	Yes	Yes	1. Combatant Formation 2. All Screens
CHANGE IN TIME ZONE	No	No			1. Combatant Formation 2. Convoy 3. All Screens 4. Independnt	No		1. Combatant Formation 2. All Screens 3. Independent
SEARCH TURN	Yes	Yes	Base Course	Yes	Search Line	No	Yes	Search Line

NOTE: If the signal “CEASE ZIGZAG, RESUME BASE COURSE” is ordered concurrently with either a change in formation or disposition, or a rotation of axis, ships may proceed to their own station and resume base course when in station if it is safe and quicker to do so.

(NATO-CONFIDENTIAL) (NMM)

(b) Employ towed decoys in accordance with current employment doctrine for the decoy in use.

(c) Spacing between units of a formed main body should be a minimum of 2,000 yards.

(2) Screen Units, in addition to the measures in subparagraph (1), should:

(a) Patrol their sector or station.

(b) Remain no longer than 3 minutes on a steady course.

(c) Proceed with sufficient speed advantage over the unit being screened to ensure a thorough patrol of their sectors.

(d) The speed advantage of escorts should be between 3 and 6 knots. However, escorts should not exceed maximum sonar speed and should ideally patrol at optimum sonar speed.

d. (NC) (NMM) Torpedo Countermeasures To Be Executed When a Submarine Is Detected Within the Torpedo Danger Zone.

(1) Single Ship Main Body, at a range less than 10,000 yards, should follow the rules in subparagraph e; at a range over 10,000 yards, it should turn away and clear the torpedo danger area, increasing to maximum speed.

(2) Multiship Main Body should report and wait for the OTC to maneuver the force clear; however, any ship of the main body which assesses a contact to be within 10,000 yards of herself should carry out the maneuvers laid down in subparagraph e.

(3) Surface Escorts should take account of the requirements to maintain contact, attack the submarine and defend the main body, then:

(a) Alter course between 60° and 90° if possible to place the contact on the opposite bow and, if the tactical situation permits, displace ship 1,000 yards across the bearing of the submarine. Use limited wheel as necessary to avoid loss of contact in the turn.

(b) If possible, units should simultaneously change speed with the alteration of course by an increase or decrease of at least 3 knots.

(c) Units should not be steady with the contact within 15° of the bow if towed decoys are streamed and activated.

(d) If towed decoys are not streamed, they should be streamed and employed in accordance with current employment doctrine for the decoy in use.

e. (NC) (NMM) Torpedo Countermeasures To Be Executed When a Torpedo Is Detected.

(1) Torpedo Detected By Own Units. On detecting a torpedo, units should increase to maximum speed, except that escorts should not exceed maximum sonar speed, and activate decoys.

(a) If the Ship Is Not Turning, units should alter course as follows:

i. If a torpedo is detected within 30° of the bow, alter course to comb the track and when the torpedo has passed, make a bold course alteration to clear a possible torpedo pattern.

ii. If a torpedo is detected between 30° and 70° on the bow, alter course toward and steady 30° beyond the initial bearing.

iii. If a torpedo is detected on a bearing more than 70° but less than 150° on the bow, alter course away and steady 30° short of the reciprocal of the initial bearing.

iv. If a torpedo is detected more than 150° on the bow, alter course away and steady 30° beyond the reciprocal of the initial bearing.

(b) If the Ship is Turning, the turn should be continued or increased. Course should be steadied 30E beyond the initial bearing of the detection if turning toward, or 30° short of the reciprocal of the initial bearing if turning away.

(c) In Both of the Above Cases, maintain new course until the ship is at least 1,000 yards clear of its original track when torpedoes were first detected. This will take the ship clear of a possible torpedo pattern.

(2) Torpedo Reported by Other Units.

(a) If the position of the firing submarine is not known, a single ship should normally turn stern towards the reporting unit and increase to maximum speed to clear the torpedo danger area; escorts should not exceed maximum sonar speed. If the position of the firing submarine is known and it is not clear whether or not the reporting unit is the target, then a single ship should carry out torpedo countermeasures in accordance with paragraph 2310d(1).

(b) The OTC of a multiship main body is to maneuver the force clear of the threat.

NOTE

- The torpedo countermeasures above are based on the assumption that the threat is a straight-running torpedo with limited or no programmable logic.
- Increasing speed is not always the best way to avoid a torpedo. A silent speed can be defined on modern ships, which can be combined successfully with an evasive course, especially if the ship is fitted with a torpedo detection device. This tactic will be ineffective against wire-guided torpedoes.

2320 (NC) (NMM) ANTI-FPB EVASION

Whenever possible, a force should keep well clear of areas in which FPBs are probable, such as fishing fleets and groups of islands, and should maintain at least 40 nm of sea room, preferably more, in all directions. When such areas cannot be avoided, they should if possible be transited in daylight. When a threat is located, the force should turn away to increase the time available for countermeasures using high speed and short-leg zigzag. In addition, a long-leg zigzag may be considered in order to mislead enemy FPBs in calculating their interception.

2321 (NC) (NMM) MANEUVER

a. (NC) (NMM) Against Missile-Firing FPBs.

(1) Keep FPBs at as great a range as possible from the main body.

(2) Main body units should turn away from the threat.

(3) Escorts should carry out countermeasures between the main body and the threat.

(4) Once missiles are detected, ships should maneuver considering weapon arcs while providing least radar target and optimizing chaff and decoy employment.

b. (NC) (NMM) Against Torpedo-Firing FPBs.

(1) Maneuver to keep FPBs on the quarter when a contact is evaluated as hostile or possibly hostile to keep the weapon system arcs clear, reduce the closing range rate, and prevent FPBs from closing within 4,000 to 5,000 yards forward of the beam.

(2) Maneuver by TURN or CORPEN to keep the line of ships close to the normal threat axis for as long as possible; keep ships closed up for mutual support and ease of maneuver. When the threat could be different from straight-running torpedoes, the torpedo countermeasures (maneuvers and decoy employment) will be based on threat assessment and carried out in accordance with respective national doctrines.

(3) Maneuvering should be aimed at:

(a) Keeping FPBs within destructive range of aircraft.

(b) Evading until all ship's weapons are ready.

(c) Upsetting the enemy's fire control solution.

c. (NC) (NMM) Assigned Mission. Maneuvering is also subject to the assigned mission. A surface unit should complete its assigned mission while simultaneously combating the FPB. A surface unit screening large combatants should place itself between the main body and the threat. A surface unit operating alone should maneuver to keep the FPB at maximum effective gun range and to minimize the rate of closing.

d. (NC) (NMM) Other Factors. Whenever possible, a surface unit should attempt to get up-sea of an FPB, as the latter cannot sustain at a high speed into the wind and sea. If FPBs attempt a pincer's movement, a surface unit may maneuver to engage both pincers, or only one pincer at a time, depending on the tactical situation and firepower available. Use of a smoke screen should be considered. Use of illuminants at night between a surface unit and the threat may reduce the enemy's visual capability. See also Chapter 8.

(This page is NATO-UNCLASSIFIED)

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10	21	32	43	54	65	76	87	98	109	120	131	142	153	164	175
9	20	31	42	53	64	75	86	97	108	119	130	141	152	163	174
8	19	30	41	52	63	74	85	96	107	118	129	140	151	162	173
7	18	29	40	51	62	73	84	95	106	117	128	139	150	161	172
6	17	28	39	50	61	72	83	94	105	116	127	138	149	160	171
5	16	27	38	49	60	71	82	93	104	115	126	137	148	159	170
4	15	26	37	48	59	70	81	92	103	114	125	136	147	158	169
3	14	25	36	47	58	69	80	91	102	113	124	135	146	157	168
2	13	24	35	46	57	68	79	90	101	112	123	134	145	156	167
1	12	23	34	45	56	67	78	89	100	111	122	133	144	155	166

Figure 2-6. (NU) Quick Reference System (QRS) Overlay

CHAPTER 3

Disposition of Forces

SECTION I — FORMATIONS

3100 SCOPE

This section describes types of formations for operational use. Basic rules for ordering are in ATP 1, Vol. II. Where special rules and procedures are necessary (e.g., for replenishment), these are detailed in following articles.

3105 BASIC SYSTEM OF FORMATIONS

In the interests of flexibility and simplicity, this section prescribes certain basic "ready" formations and provides tables with each that list station assignments for varying numbers and types of ships.

a. Numbering. Operational purpose formations are allocated formation numbers from 20 to 99, with formations designed for similar purposes allocated numbers from the same block.
(NC) (NMM) (see Table 3-1).

The purpose of a formation is indicated by appending the appropriate purpose and identification letter(s) as required to the formation number.
(NC) (NMM) Numbers not allocated in this chapter may be used as desired by appropriate authority.

b. Basic Types. Formations 50 and 51 are basic "ready" formations.
(NC) (NMM) They are designed so that antiair warfare (except for 50) and nuclear defense formations can be assumed with minimum delay. The appropriate antiair warfare and nuclear defense formations are indicated by the suffixes "V" and "Z" respectively. Other basic formations (circular destroyer, replenishment, amphibious group sector, and departure and entry formations) are also included in this chapter.

c. (NC) (NMM) Additional Types. Additional type formations may be specified by type commanders for use by ship types not included in the main allocations above. These are indicated by prefixing ship type indicator letters to the number of the formation (see Table 3-1). The number used in this way is in no way related to the block numbers prescribed in subparagraph a. above.

d. Signaling. An operational purpose formation is signaled by using the FORM pennant.
(NC) (NMM) This is followed by the formation number and purpose letter(s). The use of the purpose letter(s) simplifies the procedure when reforming because of the rule that when shifting from a basic "ready" formation to an antiair warfare or nuclear defense formation there is usually no change in the Guide, course, speed, or axis. A signal is also available to facilitate forming the type formations described in subparagraph c. above.

3106 FORMING

The OTC specifies the appropriate formation for the existing tactical and operational situation, the Guide, course, speed, axis, and ships' station assignments. The OTC may direct subordinate commanders to assign stations to their respective ships. Upon execution of the signal to form an operational formation, ships shall move to their new stations independently, hoisting station numbers by day when ordered (see

Table 3-1. (NU) (NMM) Table of Formations

Formation Numbers	
20 to 29	Destroyer Formations
30 to 39	Large Combatant Formations
40 to 49	Spare
50 to 59	Transport/Logistic Formations
60 to 69	Replenishment Formations
70 to 79	Amphibious Formations
80 to 89	Surface Action Formations
90 to 99	Miscellaneous Formations (including Departure and Entry Formations)
Purpose Identification Letters	
C Cruising	Q Normal
D Departure	R Ready
E (Sortie) Entry	S Antisubmarine
F Fueling (Replenishment)	T Column
	U Screening
G Gunnery	V Antiair Warfare
H Bombardment	W Special
J Approach	X Exercise
K Attack	Y Assault (Amphibious)
L Low Visibility	Z Nuclear Defense
M Minelaying or Sweeping	
Principal Ship Type Indicator Letters	
A Auxiliary	M Minesweeper
C Large Combatant	N Minelayer
D Destroyer	R Aircraft Carrier
L Amphibious	S Submarine

(NATO-RESTRICTED) (NMM)

ATP 1, Vol. II). Units already formed will be maneuvered by order of their unit commanders when the formation ordered is linear in nature and the new formation can be achieved by a unit maneuver.

3107 MANEUVERING

a. Course and Axis Changes. Formation axis changes are indicated and illustrated in Article 3115. Disposition course and axis changes should for simplicity ordinarily be given in multiples of 5°. When the disposition axis is rotated, the OTC of each formation is to maneuver his formation to resume the station relative to the old axis. Unless the rotation is a small one, the maneuver will take a long time to complete.

b. Change in Organization or Composition of the Force. When any change in the listed type or task organization is issued by the OTC or when units join or depart, the formation does not automatically change. No ship is to move from its present station until a signal is made ordering a new formation or, in the case of a single ship, a signal ordering the ship concerned to move to its new station. Screen units may adjust station to cover gaps. When dissolving a formation, the OTC will ensure that the formation is oriented to permit units to proceed on a safe course when detached. Normally, the OTC will detach screen units first; when these units are clear, the main body will be dissolved in an orderly manner.

3108 — 3109 SPARE

3110 GENERAL TYPES

Formations are formed by linear or circular methods. Line formations consist of single and multiple line formations and are described in ATP 1, Vol. II. Formations are listed in Table 3-2.

3115 CIRCULAR FORMATIONS

a. Formation Center and Axis. The direction of a formation axis is signaled as a true bearing; however, if there is any doubt as to the position of formation center, the OTC is to indicate it by true bearing and distance from the Guide or an indicated ship.

b. Circular Stationing. The circular method of stationing is shown in Figure 3-1. The station in the center is called station zero and the circles are numbered consecutively outward from the center. Circle spacing is 1,000 yards, unless otherwise ordered; thus the circle of radius 5,000 yards is known as Circle 5 and that of 7,300 yards as Circle 7.3. The location of a station is described by the number of the circle on which it lies followed by its direction relative to the formation axis measured clockwise from 000° to 359°.

c. Taking Station. Upon execution of the signal to form a circular formation, ships move to their new stations independently and, when ordered, are to hoist station numbers by day.

d. Stationing Units of More Than One Ship. A unit stationed in a circular formation is normally a single ship, but exceptions will occur when it becomes necessary for a unit consisting of more than one ship to occupy a station. Unit(s) so stationed shall not be of such size as to hamper adjacent units(s) and shall take station according to tactical requirements (see ATP 1, Vol. II).

Table 3-2. Table of Allocated Formations

Type	Number	Purpose
Single Line	1, 2, 3, 4	Maneuvering in Close Company
Multiple Line	5, 6, 7, 8, 9, 10, 11, 12	Maneuvering in Close Company
(NR) (NMM) Destroyer Type	20,21, 22,23,24	Circular (20) and Special Formations
Transport/ Logistic	50 50V **(NR) (NMM)** 51 51V **(NR) (NMM)** 51Z **(NR) (NMM)**	Rectangular, Ready Rectangular, Antiair Warfare Circular, Ready Circular, Antiair Warfare Circular, Nuclear Defense
(NR) (NMM) Replenishment	60 61 62	Circular Circular Ready With Skeleton Screen
Departure and Entry	90D 90E	Departure/Sortie Entry

e. Rotating Formation Axis. The direction of a formation axis is rotated by signaling a new direction; the axis then rotates by the shortest way to the new direction. A formation axis is not to be rotated more than 60° in one step. Figure 3-2 illustrates rotation of the axis when the Guide is in station zero and Figure 3-3 illustrates rotation when the Guide is not in station zero. (For ease of comparison, ships are in the same initial stations and the formation axis is rotated 30° in both figures.)

3120 OPERATIONAL FORMATIONS

Formations more complex than linear and circular formations are used to fulfill operational purposes, such as carrier or amphibious operations, surface action, and replenishment at sea, and must provide for effective action in a multithreat environment. Because of the inherent element of surprise, submarines, FPBs, guided missiles, and aircraft are predominant threats.

3121 BROAD OPERATIONAL CATEGORIES

a. Cruising (C) ASW Formations. These provide the best protection against the subsurface threat by making the most effective use of ASW units.

b. Ready (R) Formations. These provide a compromise between optimum subsurface and optimum air protection. They may be readily shifted to either a cruising or antiair warfare formation. They retain acceptable protection against all threats while permitting maximum offensive operations.

c. (NC) (NMM) Antiair Warfare (V) Formations. These provide protection against medium-speed, medium-altitude aircraft, when there is little likelihood that nuclear weapons will be employed; defense against higher performance aircraft can best be achieved by employing AAW dispositions (such as 2V) which combine the advantages of dispersion (to reduce the effectiveness of nuclear attack) with decentralization of control and defense in depth (to obtain warning and time in which to act with CAP and missiles). These principles are covered in Chapter 7. Antiair warfare formations are assumed when an air attack is probable, but plans for assuming them should be made in advance to ensure electromagnetic compatibility of ships with missile systems.

d. (NC) (NMM) Nuclear Defense (Z) Formations. These are designed to minimize nuclear blast damage by dispersion. The mutual support afforded by surface-to-air missiles replaces that formerly afforded by antiaircraft guns in close formations; random steering and higher speeds compensate for the reduction in effectiveness of close ASW measures. Nuclear defense formations are assumed when nuclear attack is probable and are ordered as a passive measure or as one of the antiair warfare (V) dispositions described in paragraph c.

e. (NC) (NMM) Formations Containing Surface-to-Surface Missile Capable Ships. Formations containing surface-to-surface missile capable ships should optimize missile strike capability while minimizing mutual interference between force AAW posture and antisurface ship missile capabilities.

3122 — 3124 SPARE

3125 TYPICAL OPERATIONAL FORMATIONS

3126 (NC) (NMM) DESTROYER TYPE FORMATIONS

a. The formations in this article are appropriate for use by destroyer type ships when operating in separate formations.

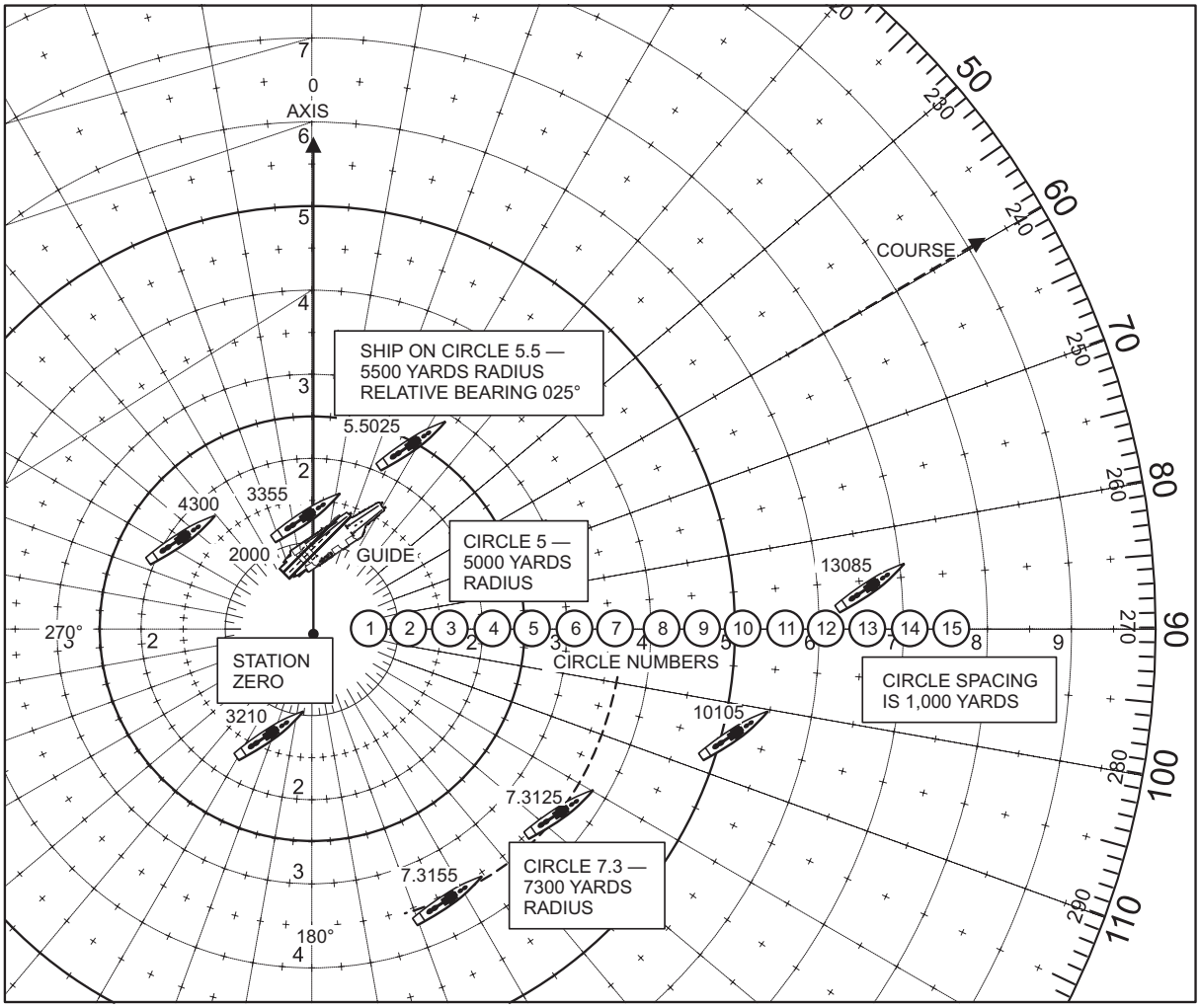


Figure 3-1. Stationing Ships in Formation by Circular Method

b. Formation 20 — Destroyer Type Circular Formation is designed for use when operating in an area where air attack is probable (for example, on picket station). The course and formation axis coincide upon forming, the axis passing from formation center through station one. Upon execution, the ship which will occupy station one will become the Guide. While the formation is forming, the Guide maintains course and speed, unless otherwise directed, and indicates course and speed by information signal. Station assignments are normally the same as the ship's allocated sequence number.

The commander ordering the formation should assign stations whenever there is any question. Station coordinates are read from Figure 3-4 opposite the station number and under the number of ships in the formation.

3127 TRANSPORT/LOGISTIC FORMATIONS

a. Principles. The typical transport/logistic formations provided in this article are based on the following principles:

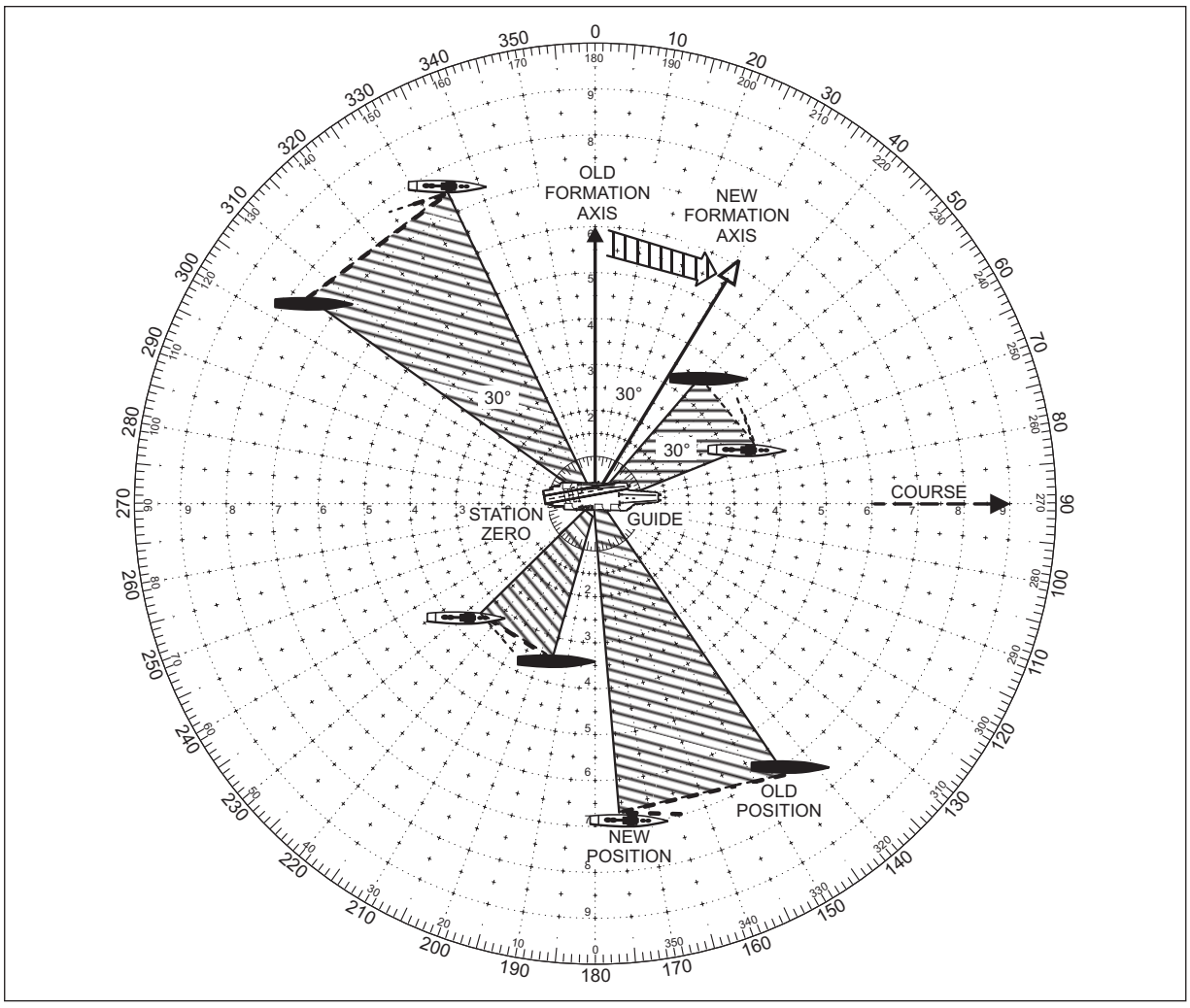


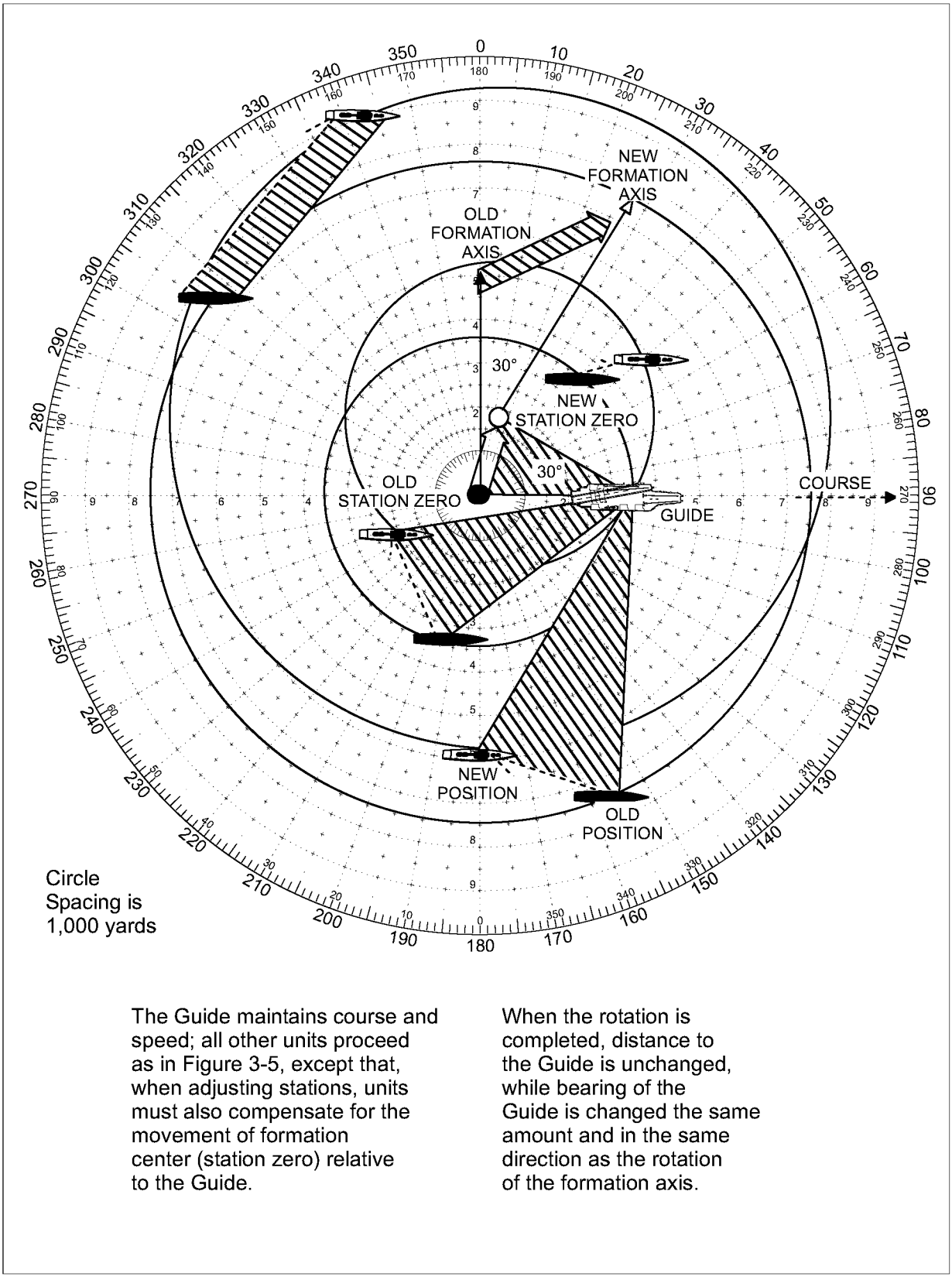
Figure 3-2. Rotating Formation Axis, Guide in Station Zero

(1) Construction. Because transport/logistic ships have limited maneuverability characteristics, a linear formation is suitable for simplicity of station-keeping. Formation 50, a multiple line, rectangular formation, is suitable in areas in which the subsurface threat is primary; when the air threat is primary, use Formation 51, a combination circular and columnar formation.

(2) Distances and Intervals of about 1,000 yards each for transport/logistic ships will provide sufficient maneuvering space for conventional threats. Unless otherwise ordered, distances and intervals in Formations 50 and 51 are 1,000 yards for transport/logistic ships. Support ships present take stations 1,500 yards outboard of transport/logistic ships on bearings relative to the axis. Distance and intervals, for both support ships and transport/logistic ships, are increased to 3,500 yards for nuclear defense.

(3) Formation Axis and Course normally coincide.

(4) Screen Units are stationed in accordance with Chapter 3.



The Guide maintains course and speed; all other units proceed as in Figure 3-5, except that, when adjusting stations, units must also compensate for the movement of formation center (station zero) relative to the Guide.

When the rotation is completed, distance to the Guide is unchanged, while bearing of the Guide is changed the same amount and in the same direction as the rotation of the formation axis.

Figure 3-3. Rotating Formation Axis, Guide Not in Station Zero

FORMATION 20		DESTROYER TYPE SHIPS PRESENT						
		3	4	5	6	7	8	9
STATION	1	0.5000	0.6000	0.7000	0.8000	1000	1.1000	1.2000
	2	0.5240	0.6270	0.7288	0.8300	1309	1.1315	1.2320
	3	0.5120	0.6090	0.7072	0.8060	1051	1.1045	1.2040
	4	.....	0.6180	0.7216	0.8240	1257	1.1270	1.2280
	5	.....	.....	0.7144	0.8120	1103	1.1090	1.2080
	6				0.8180	1206	1.1225	1.2240
	7	STATION COORDINATES			.....	1154	1.1135	1.2120
	8				.....	.....	1.1180	1.2200
	9				.....	.....	.....	1.2160

(NATO-CONFIDENTIAL) (NMM)

Figure 3-4. (NU) (NMM) Destroyer Type Ship Formation 20

b. Formation 50 — Transport/Logistic Rectangular Ready Formation, suitable for day or night cruising (Figure 3-6), provides excellent protection against submarines and yet permits a rapid shift into an antiair warfare formation. The OTC may either specify station assignments prior to ordering the formation or may direct transport/logistic and support ship type commanders to do so for their respective ships. For best protection from submarines, two or three transport/logistic ships should be formed in a line abreast; formations with larger numbers of transport/logistic ships should conform to the station designator table (Table A) in Figure 3-6. Support ships present are stationed using Table B.

c. (NC) (NMM) Formation 50V — Transport/Logistic Rectangular Antiair Warfare Formation uses the same large ship stations as Formation 50.

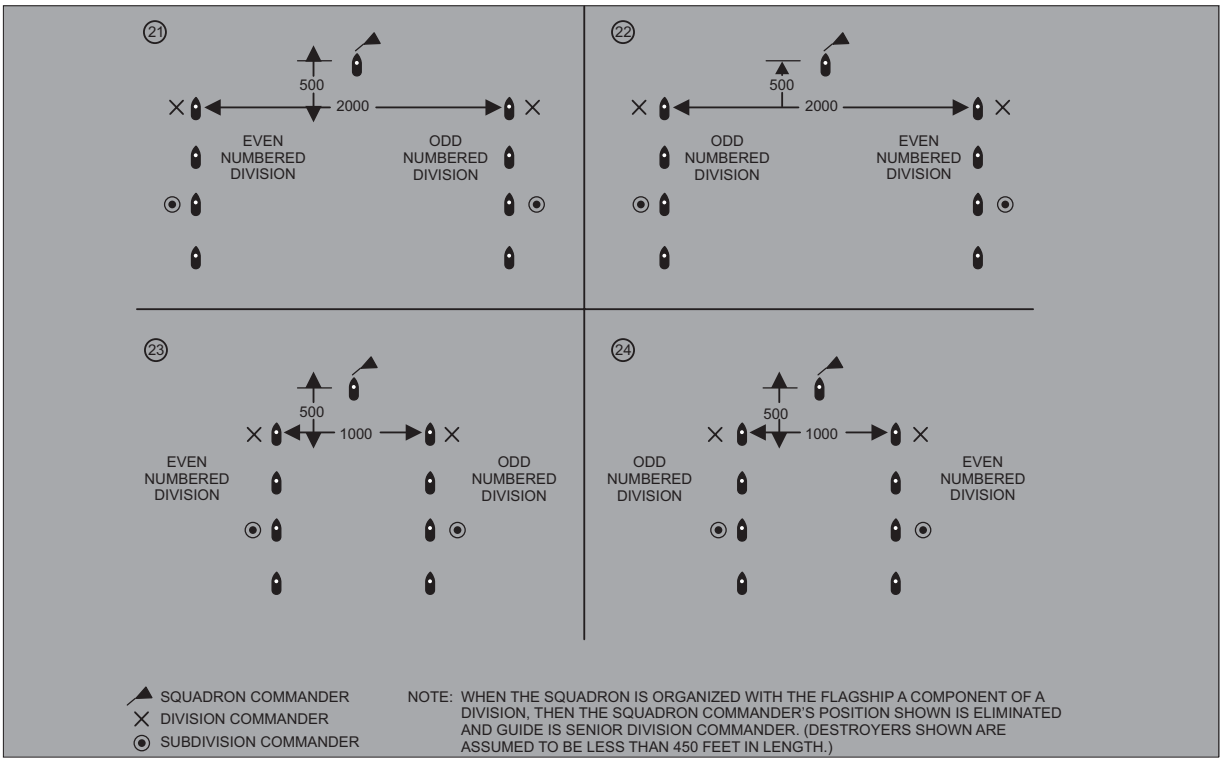
d. Formation 51 — Transport/Logistic Circular Ready Formation provides for excellent tactical control (Figure 3-7), and offers the compactness that is essential to ASW and AAW gunnery protection. It is flexible in that it permits a rapid shift into an antiair warfare formation or an orderly shift into a nuclear defense formation when radial expansion from the Guide is required. The OTC may direct transport/logistic and large support ship commanders to assign stations to their respective ships. Transport/logistic ship stations are determined by referring to the station designator table (Table A) and diagram in Figure 3-7; large support ship stations are given in Table B.

e. (NC) (NMM) Formation 51V — Transport/Logistic Circular Antiair Warfare Formation uses the same large ship stations as Formation 51.

f. (NC) (NMM) Formation 51Z — Transport/Logistic Circular Nuclear Defense Formation is formed by radially expanding Formation 51. Transport/logistic ships expand radially on the same bearings as in Formation 51 until a distance of 3,500 yards is established between them — thus stations on ring A will form on circle 3.5, those on ring B on circle 7, and those on ring C on circle 10.5; support ships form on the same bearings as in Formation 51, but 3,500 yards outboard of the transport/logistic ship formation. If the threat of nuclear attack is the primary threat and extends over long periods, formations of more than 19 transport/logistic ships should be separated into two or more formations (see Disposition 1AF in Figure 3-18).

3128 REPLENISHMENT FORMATIONS

a. Typical replenishment formations are based on the principles outlined below. **(NC) (NMM)** (See figures 3-8, 3-9, and 3-10).



(NATO-CONFIDENTIAL) (NMM)

Figure 3-5. (NU) (NMM) Destroyer Formations 21, 22, 23, and 24

(NC) (NMM) If the threat of nuclear attack is the primary threat and it extends over long periods, protection through dispersion may be obtained by assuming Replenishment Disposition 1AF.

b. Principles. The following principles apply when establishing a replenishment formation.

(1) Supplying ships should be stationed in one or more lines, known as service lines, with ships in line-abreast not less than 1,000 yards apart and with service lines 2,000 yards apart.

(2) The main body of the force should be stationed in waiting lines astern of the service lines, but, if enemy air attack is possible, ships of the main body should be stationed to meet the requirements of AA weapons defense.

(3) When practicable, areas should be made available in which carriers engaged in flight operations can maneuver inside the screen.

(4) **(NR) (NMM)** Typical replenishment formations are shown in Figures 3-8 through 3-10.

(5) When conducting vertical replenishment and alongside replenishment simultaneously, the supplying ship will be assigned a station in the service line.

(6) When a replenishment ship is conducting vertical replenishment only, it may be ordered to move to a special VERTREP station in close proximity to the customer ship. Unless otherwise ordered, this station will be 500 yards on the unengaged beam of the customer ship.

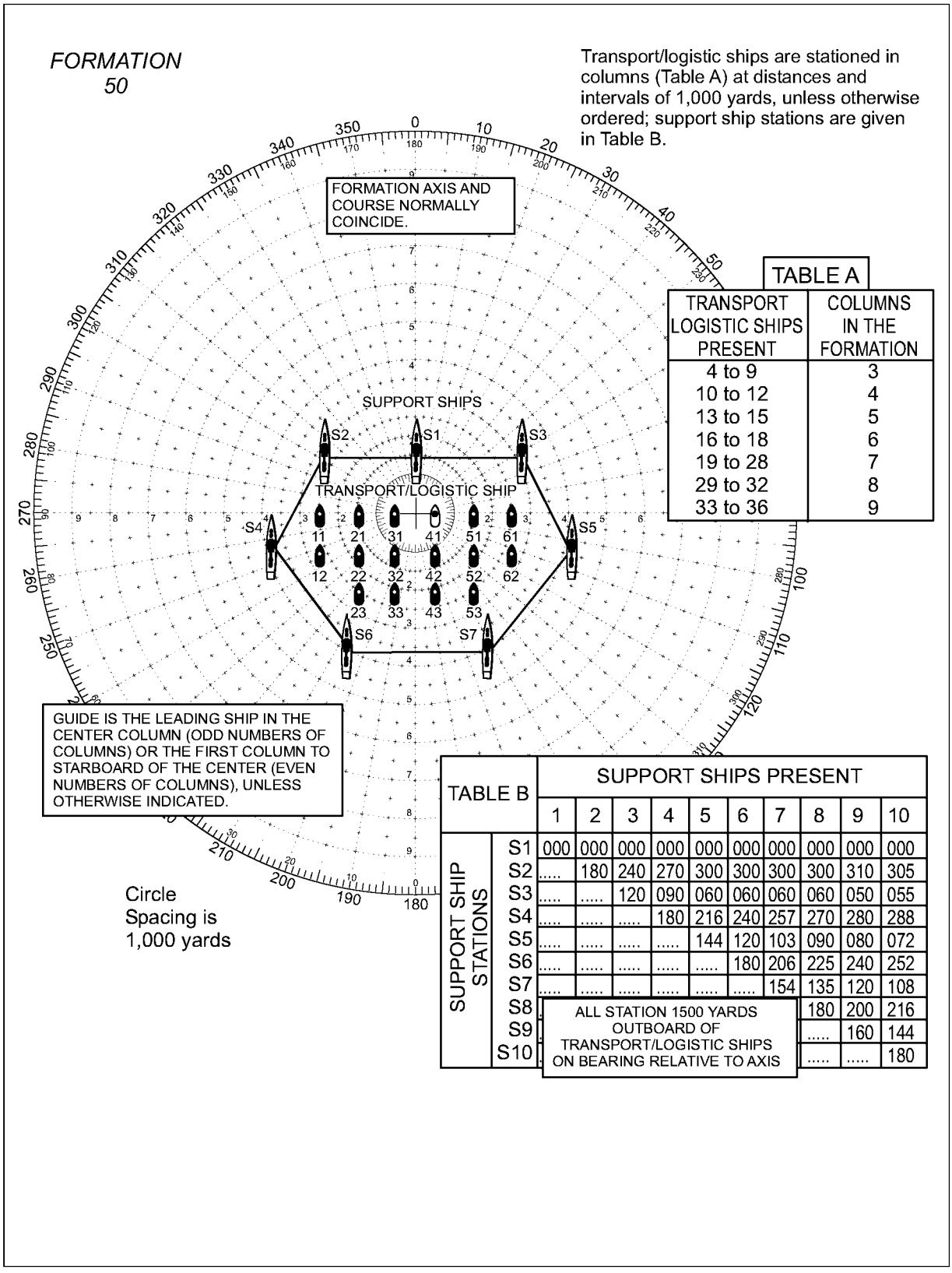


TABLE A

TRANSPORT LOGISTIC SHIPS PRESENT	COLUMNS IN THE FORMATION
4 to 9	3
10 to 12	4
13 to 15	5
16 to 18	6
19 to 28	7
29 to 32	8
33 to 36	9

TABLE B

SUPPORT SHIP STATIONS	SUPPORT SHIPS PRESENT 1	2	3	4	5	6	7	8	9	10
S1	000	000	000	000	000	000	000	000	000	000
S2	.....	180	240	270	300	300	300	300	310	305
S3	.....	.....	120	090	060	060	060	060	050	055
S4	.....	.....	.....	180	216	240	257	270	280	288
S5	.....	.....	.....	.....	144	120	103	090	080	072
S6	.....	.....	.....	.....	.....	180	206	225	240	252
S7	.....	.....	.....	.....	.....	.....	154	135	120	108
S8								180	200	216
S9								.....	160	144
S10								.....	.....	180

ALL STATION 1500 YARDS OUTBOARD OF TRANSPORT/LOGISTIC SHIPS ON BEARING RELATIVE TO AXIS

Figure 3-6. Transport/Logistic Rectangular Ready Formation 50

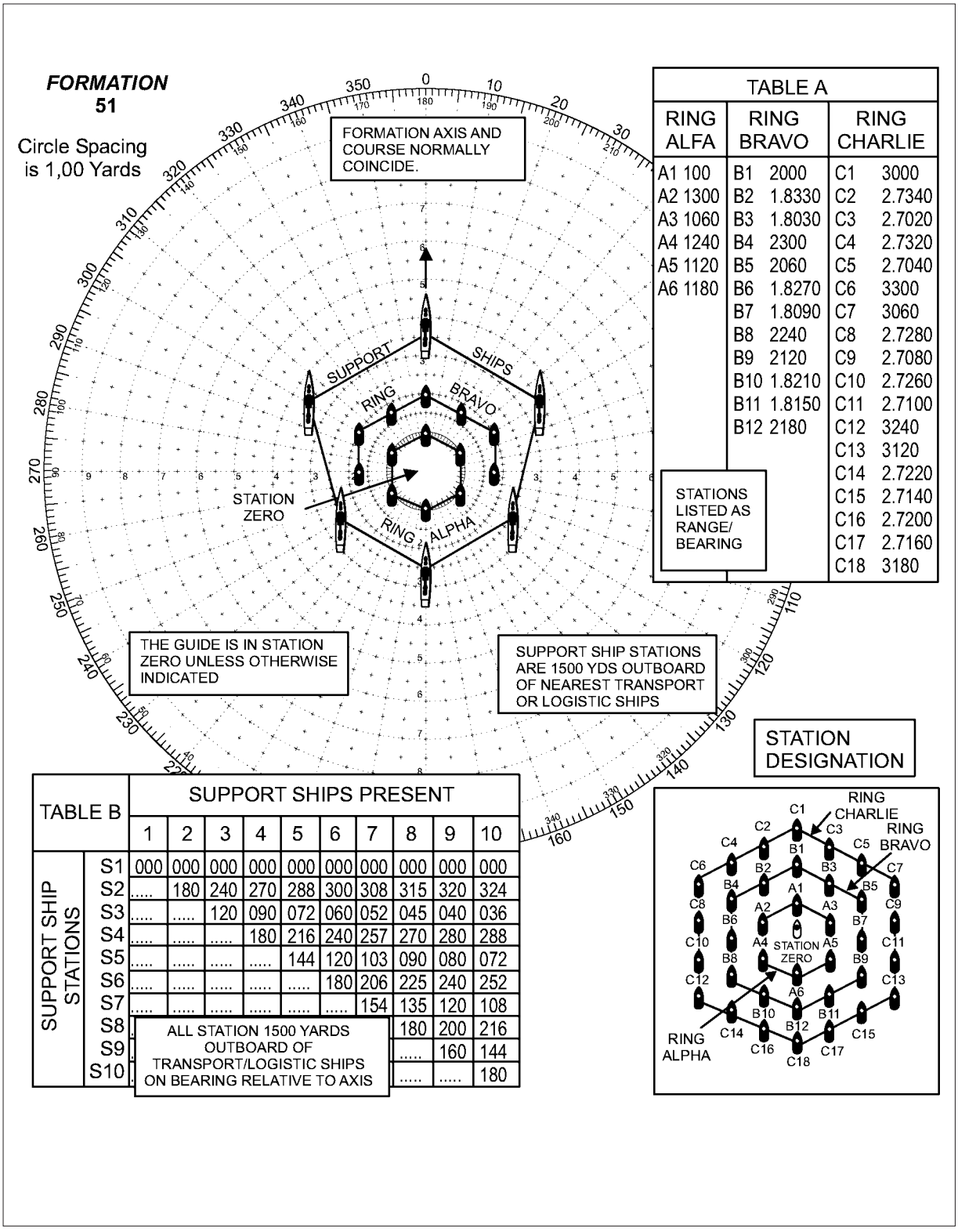


Figure 3-7. Transport Logistic Circular Ready Formation 51

(7) Should carriers need increased maneuvering room when proceeding from the second to the first service line, the OTC may change the distance between service lines as desired.

c. Guide.

(1) Unless otherwise ordered, the Guide is the center ship of the leading service line. If there is an even number of stations in this line, the first ship to starboard of the center of the line on the replenishment course is the Guide.

(2) When a carrier is present, it is normal for the OTC to designate the Guide of the supplying unit alongside the carrier as the unit guide. When two or more carriers are replenishing simultaneously, the OTC must designate the most appropriate ship as Guide.

d. Replenishment Course and Axis.

(1) Selecting the Course. Tactical requirements will normally dictate the replenishment course but some operational factors that need to be considered when selecting the replenishment course are water depth including potential shallow water effect along the course, carrier aircraft launch and recovery operations, and weather.

(2) Conditions Under Normal Weather. For normal weather conditions, the optimum course for replenishment is with the wind and sea within two points of dead ahead; if the wind and sea are from different directions, it is preferable to head more nearly into the sea to reduce rolling.

(3) Conditions Under Rough Weather. Under some conditions of rough weather, consideration may be given to replenishing on a downwind course, to reduce the amount of water coming aboard ships with low freeboard. The controlling factor under these conditions is the ability of the ships to hold the replenishment course without excessive yawing.

e. Replenishment Speed. Operational considerations influence the selection of the speed; for instance, if the replenishment course is away from the area of subsequent operations, a low speed might be desirable; this, however, conflicts with the need for a high speed as an ASW measure.

(1) Speed During Fueling Operations. The power required by the cargo fuel pumps limits the speed of many oilers to about 13 knots during fueling operations. The alongside steering control of some ships is unduly affected at speeds below 8 knots. When not limited by this condition, replenishment speed should be 10 to 18 knots.

(2) Fueling Destroyers. With good sea conditions, destroyers may be fueled from heavy ships or fast oilers at speeds up to 20 knots.

(3) Transferring Mail And Personnel. Under good sea conditions, light mail can be transferred between ships at speeds up to 25 knots and heavy materials and personnel at speeds up to 16 knots.

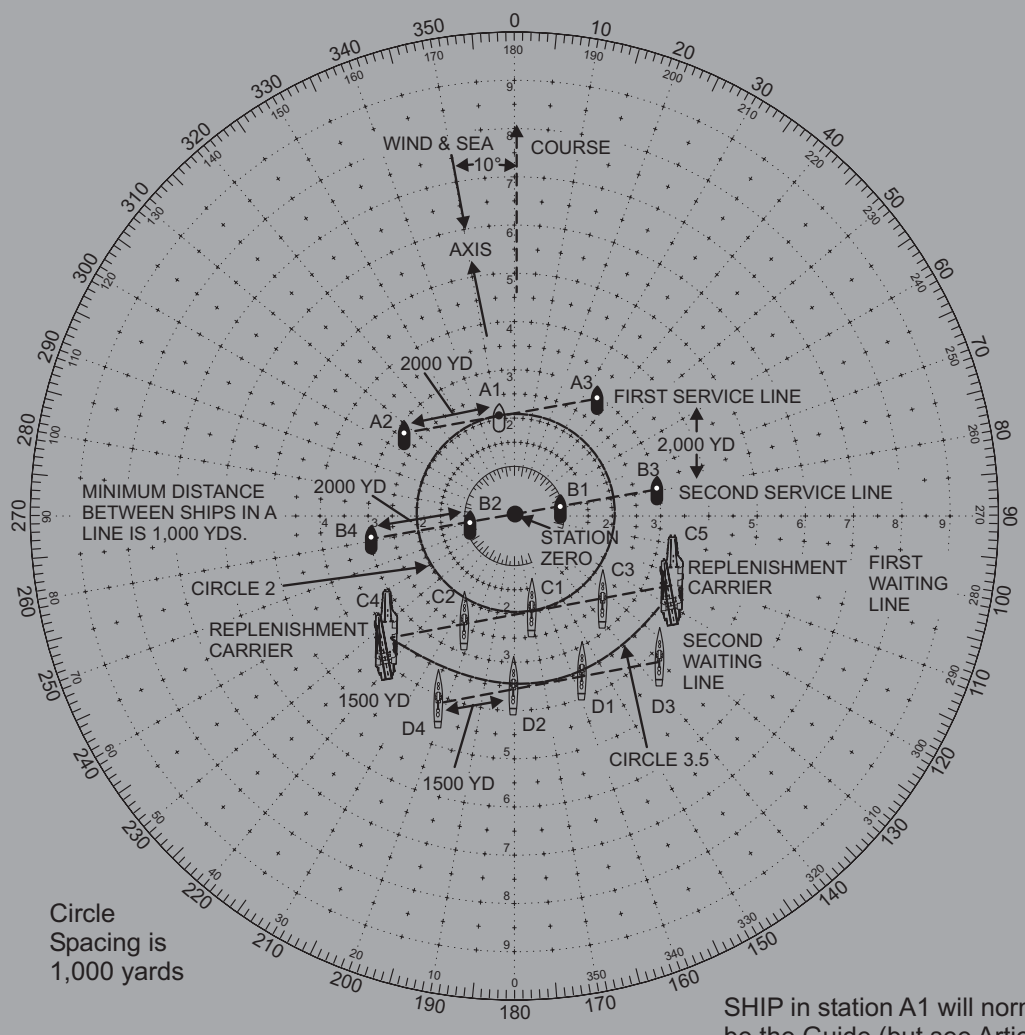
f. Ordering the Replenishment Formation.

(1) The OTC will inform the commander of the other force, in advance, of:

(a) The replenishment formation to be adopted, and the direction of the formation axis.

(b) The replenishment course and speed.

(2) Even though the force commander may be junior to the RAS force commander, the former's desires should determine the course and speed of the formation under normal circumstances.



Service and waiting lines are at right angles to formation axis.

Service Lines

A Provisions, store and ammunition ships on a line tangential to circle 2.

B Oilers on a line through formation center.

Waiting Lines

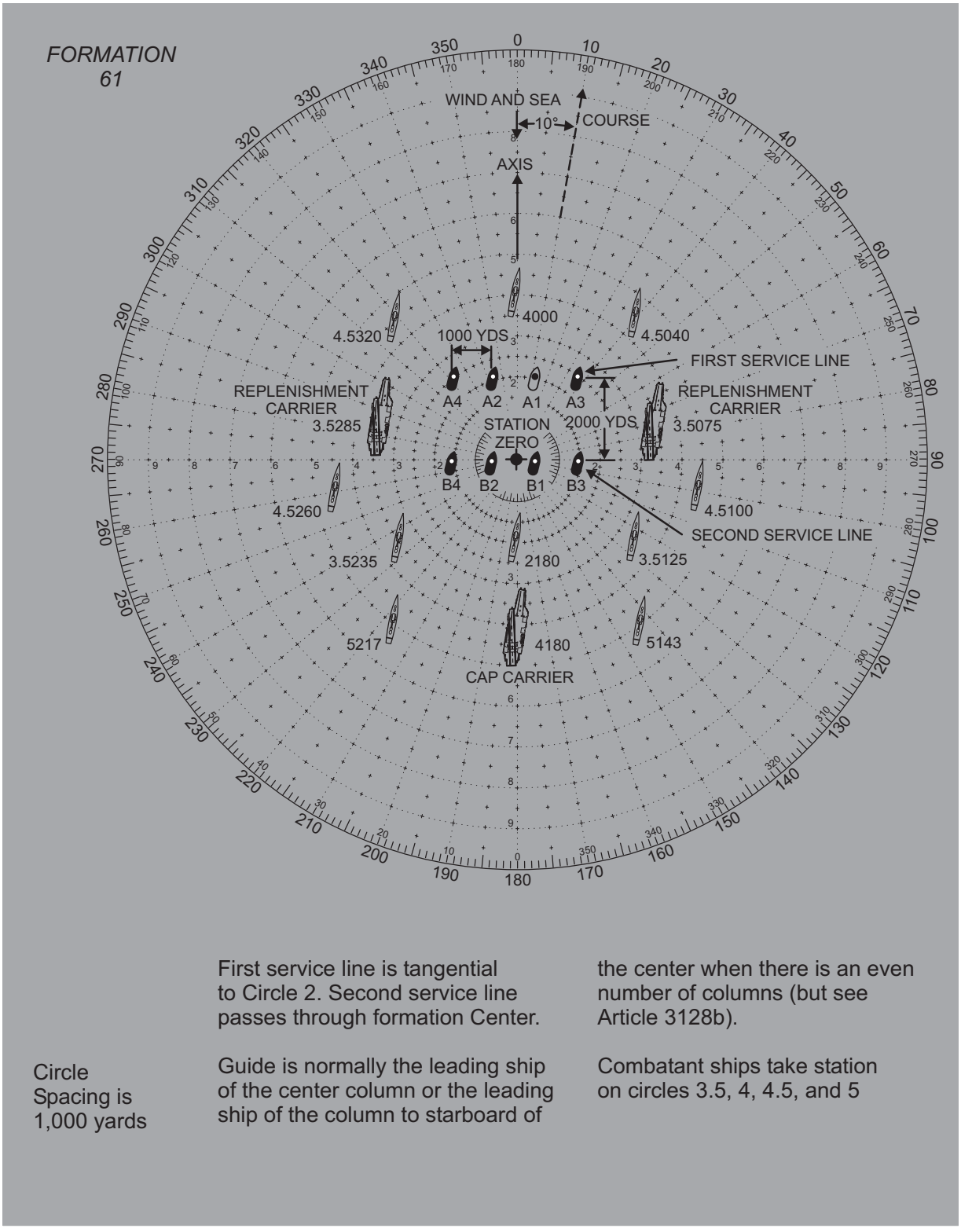
C Line tangential to circle 2.

D Line tangential to circle 3.5.

SHIP in station A1 will normally be the Guide (but see Article 3128b). All lines may be extended by one more station on each side. Note that station A1 falls on the axis, station C1 on the reciprocal, and B1 and D1 to starboard of the axis, irrespective of whether there is an odd or even number of stations in a given line.

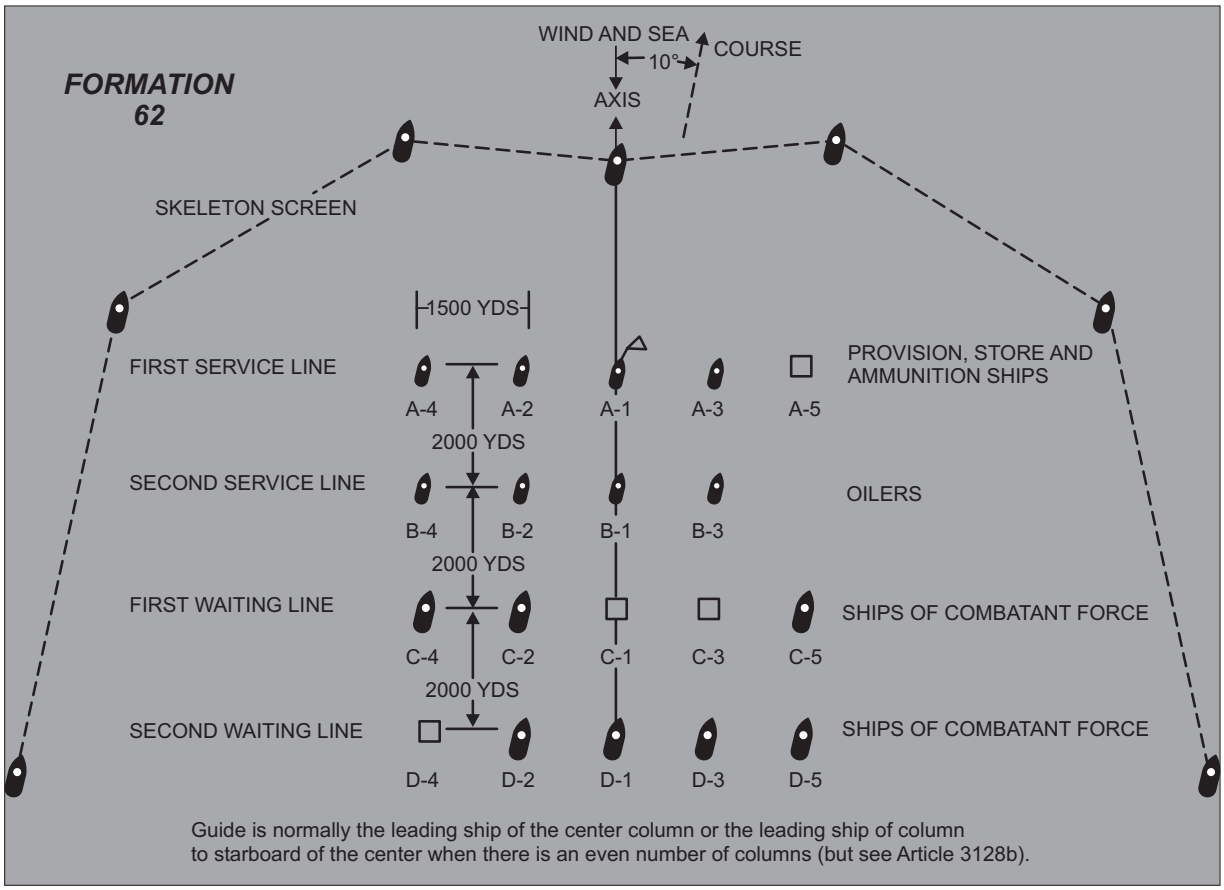
(NATO-CONFIDENTIAL) (NMM)

Figure 3-8. (NU) (NMM) Replenishment Formation — Circular Type



(NATO-CONFIDENTIAL) (NMM)

Figure 3-9. (NU) (NMM) Replenishment Ready Formation — Circular Ready



(NATO-CONFIDENTIAL) (NMM)

Figure 3-10. (NU) (NMM) Replenishment Formation — With Skeleton Screen

g. Underway Replenishment of Escorts. These procedures provide for the orderly replenishment of ships, making optimum use of the delivering/supplying ship, and maintaining maximum antisubmarine protection of the replenishment formation.

(1) Normal replenishment speeds are in the range of 12 to 15 knots. When a sufficient number of escorts are available, it is desirable to employ pickets to provide defense in depth. Usually, however, when all round coverage is required, the scarcity of escorts permits only the establishment and maintenance of a main screen.

(2) The first approach units and an initial lifeguard are to be designated.

(3) If one side of the delivering/supplying ship is in use (Figure 3-11), escorts from the wing station on the engaged side of the service unit proceed to the lifeguard station, to the alongside station, then to the wing station on the unengaged side of the delivering/supplying ship.

(4) If both sides of the delivering/supplying ship are in use (Figure 3-12), escorts from the port (even) side of the screen rotate in succession from the port wing station, to the lifeguard station, to the port alongside station, then to station number 2 in the screen. Escorts from the starboard (odd) side of the screen rotate in succession from the starboard wing station, then to station number 1 in the screen.

(5) Refer to Figure 3-13 for example of replenishment procedures when two delivering ships are used.

(6) Screen units are to rig the appropriate side before commencing the approach. They must be alert to the progress of the units engaged in replenishment. They should also be prepared in advance for rapid rigging of the opposite side of the ship to preclude any delays due to rerigging should the receiving side be changed immediately prior to going alongside.

(7) Ships alongside must be meticulous in the use of PREP. All signals will be repeated by flashing light or voice transmission addressed to the next ship to follow alongside.

(8) Screen ships are to proceed when relieved at screen stations unless otherwise ordered.

(9) In some tactical situations, it may be advantageous to assign one ship as lifeguard for the replenishment. If so, the procedures shown in Figure 3-14 will be used when only one side of the delivering/supplying ship is rigged. When both sides of the delivering/supplying ship are rigged, procedures shown in Figure 3-15 are used.

3129 SPARE

3130 (NR) (NMM) CONVOY FORMATIONS

Details of convoy formations are contained in Chapter 10.

3140 MISCELLANEOUS FORMATIONS

Departure (Sortie) and Entry Formations 90D and 90E provide for the orderly and expeditious movement of ships leaving or entering harbor while protected against enemy threats. They provide maximum protection for vulnerable units against the threat of mines or submarine attack and as much protection against air attack as is possible. The order of ship types and the intervals and distances between ships are given in Figure 3-16. The OTC may specify the sequence of ships within types or delegate such authority to the senior commander of each type in the formation

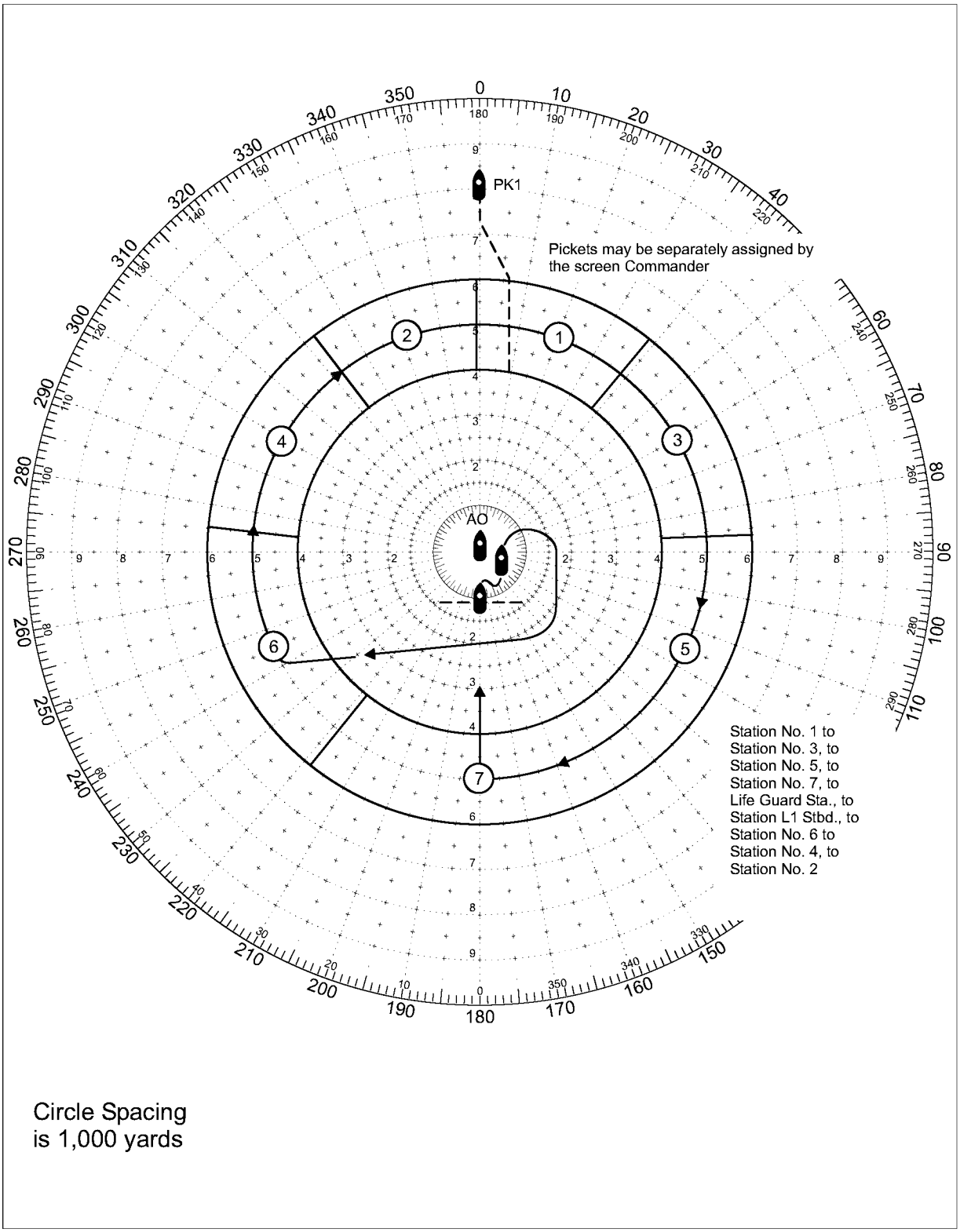


Figure 3-11. Replenishment of Escorts — One Side of Delivery/Supplying Ship in Use (Lifeguard Next Alongside)

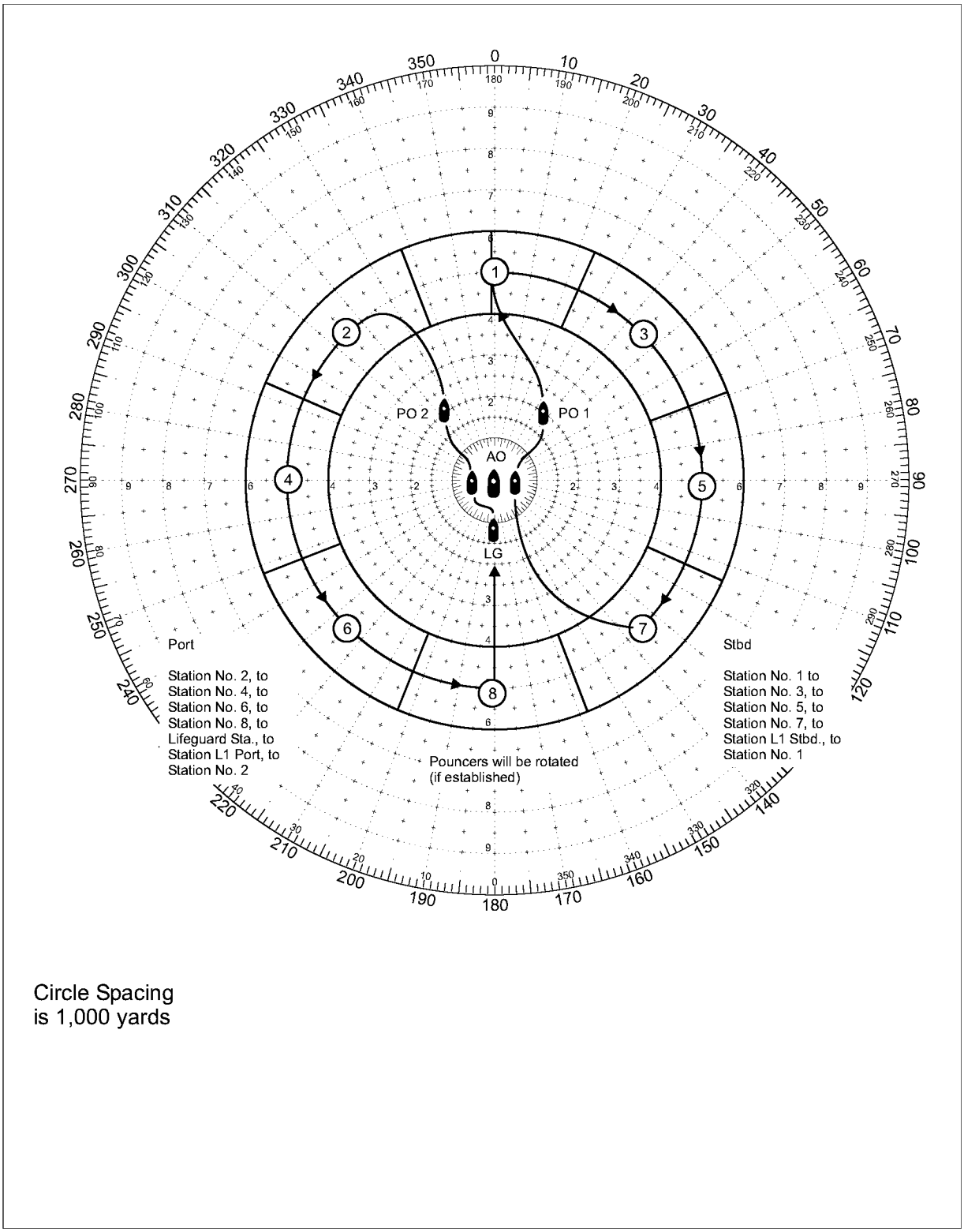
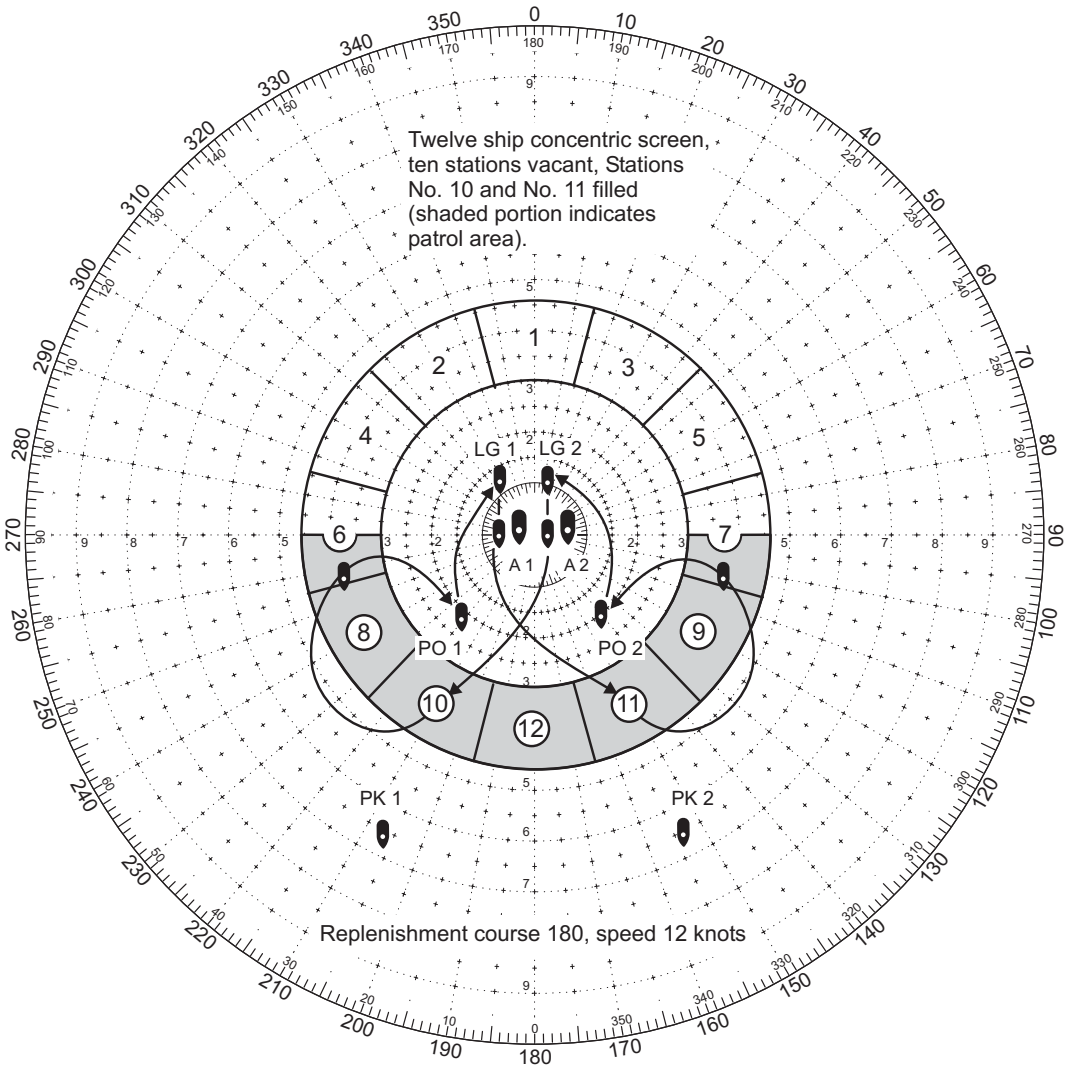


Figure 3-12. Replenishment of Escorts — Both Sides of Delivering/Supplying Ship in Use (Lifeguard Next Alongside to Port)



ROTATION:

1. When PREP at dip, pouncer station and screen station, that side, take lifeguard and pouncer station respectively.

2 Ship alongside A1 to Station No. 11, to PO 2, to LG 2, to alongside A2. Ship alongside A2 to Station No. 10, to PO 1, to LG 1, to alongside A1.

3. Upon completion of replenishment, last ships alongside take picket station—ship alongside A 1 to PK 1, ship alongside A2 to PK 2.

4. LG 1 and LG 2 for last scheduled ships take Station No. 6 and Station No. 7 respectively.

Figure 3-13. Replenishment of Escorts — Two Delivering/Supplying Ships Used

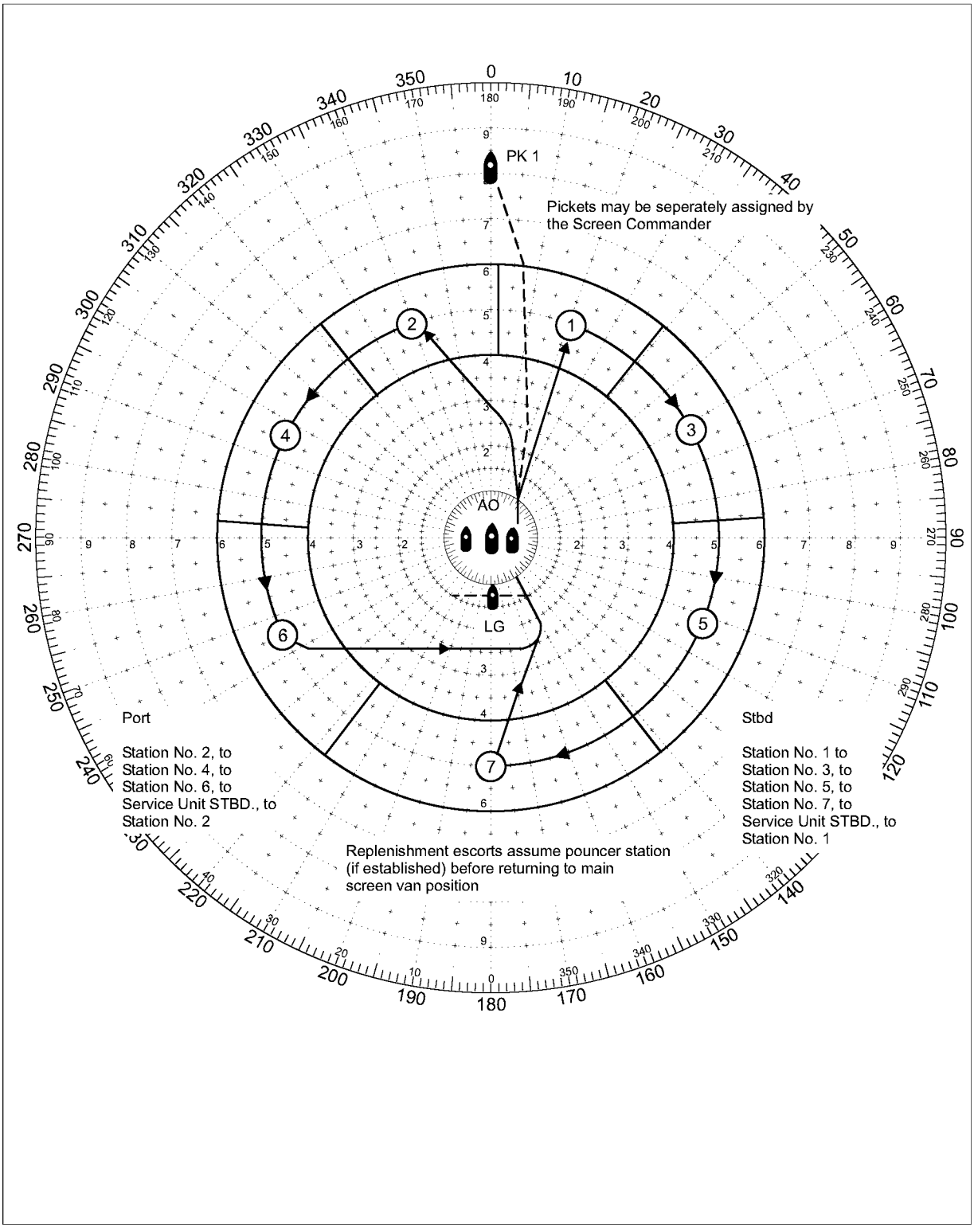


Figure 3-14. Replenishment of Escorts — One Side of Delivering/Supplying Ship in Use (Lifeguard Not Replenishing)

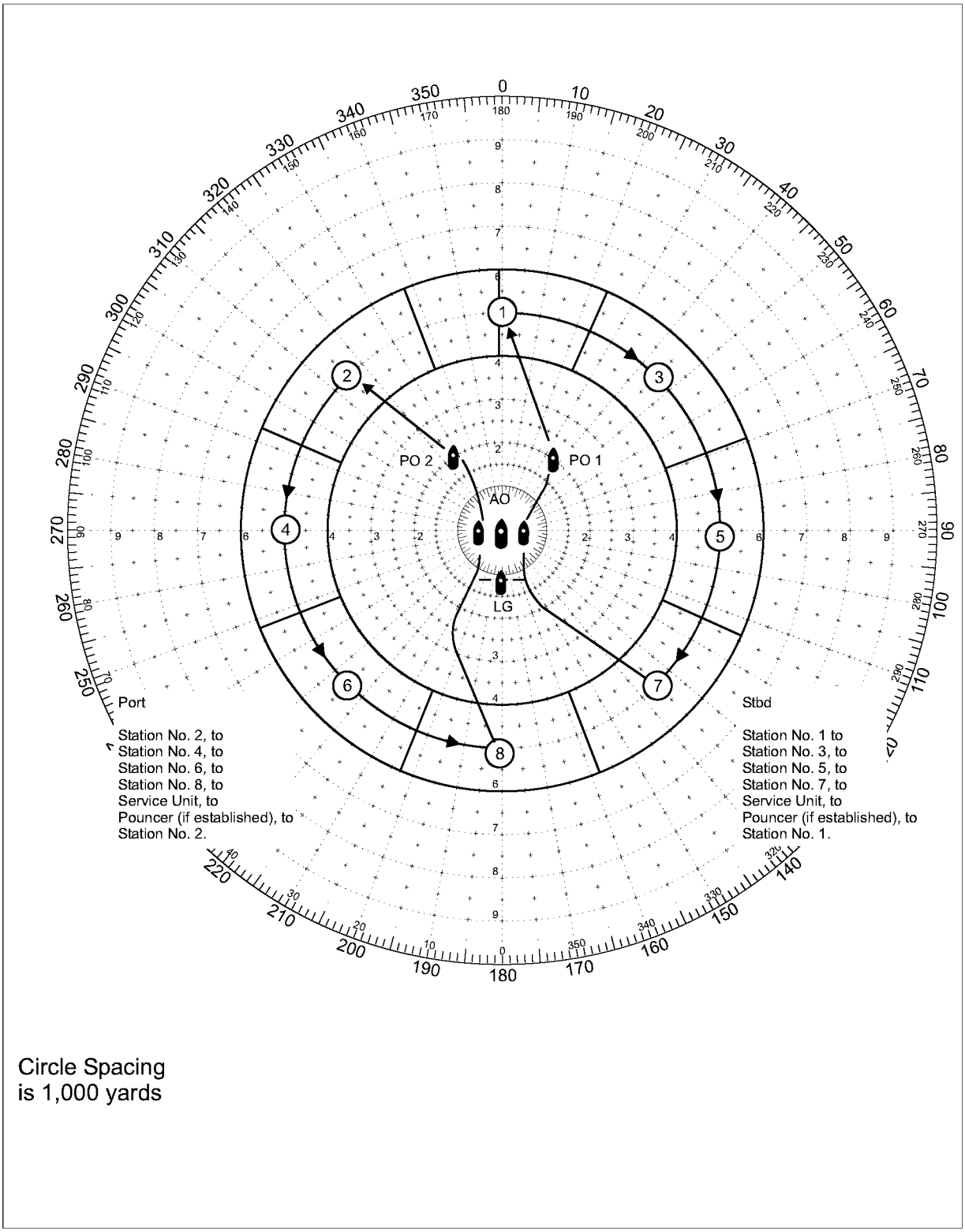


Figure 3-15. Replenishment of Escorts — Both Sides of Delivering/Supplying Ship in Use (Lifeguard Not Replenishing)

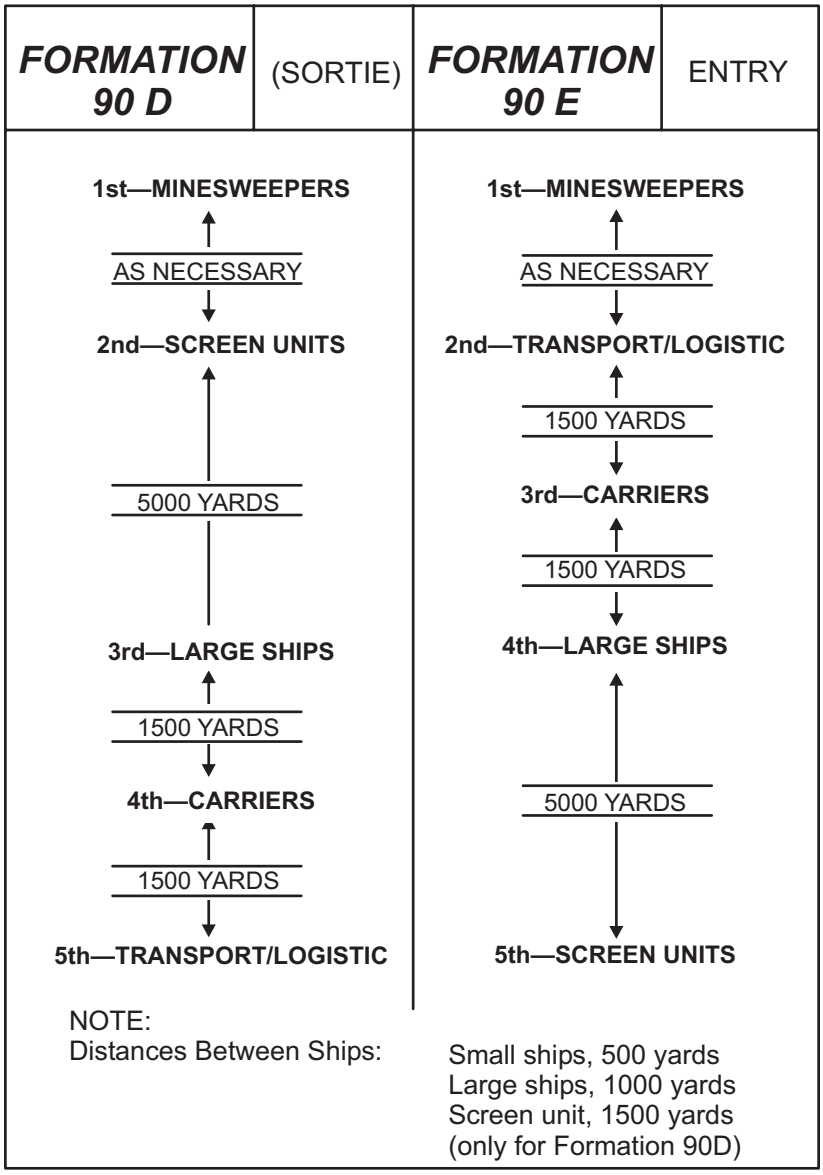


Figure 3-16. Departure and Entry Formations

SECTION II — DISPOSITIONS

3200 GENERAL TYPES OF DISPOSITION

A disposition is a combination of two or more formations, and may be formed by linear or circular methods. Certain specific operational dispositions are prescribed in this section.

(NC) (NMM) Dispositions are ordered using FORM M (see ATP 1, Vol. II) and are assigned number-letter designations based on the number of the disposition and a purpose-letter suffix(es). A type indicator letter may be inserted between the number and purpose-letter if desired. (See Table 3-3.)

3201 FORMING A DISPOSITION

The disposition OTC specifies the disposition, guide group, course, speed, axis, and group intervals and station assignments. In a disposition, a formation axis need not be oriented in the same direction as the disposition axis. If the threat warrants stationing pickets, the disposition OTC specifies the picket disposition, axis, stations to be filled, and interval from disposition center; he also designates which groups provide pickets for each station. Unless otherwise directed, each group commander will station linkin units to maintain voice radio or visual communications with the next inboard adjacent group whenever his movements within the disposition make it necessary.

3202 MANEUVERING A DISPOSITION

Instructions for maneuvering dispositions are in relevant articles.

3203 — 3209 SPARE

3210 TYPICAL OPERATIONAL DISPOSITIONS

3211 CARRIER DISPOSITIONS

In a carrier disposition, carrier formations are normally spaced about 12 to 15 miles apart to permit voice communication and mutual support for the disposition as a whole. The formations are generally stationed on a line of bearing at right angles to the disposition axis, which is usually kept near to the wind direction. The formations thus have freedom of movement upwind and downwind, without interfering with one another.

3212 SPECIAL DISPOSITION 2W

a. Description. Special Disposition 2W is a multi-purpose disposition which may be used during the run-in or strike phase of carrier task group operations. It is designed to satisfy the following requirements:

(1) Dispersal of forces to protect against air attack.

(2) Disguise of the exact positions of valuable heavy units.

(3) Use of random courses or speeds by units of the disposition in order to confuse attack aircraft, search and submarines.

(4) Mutual support.

b. Disposition Axis. Disposition axis is always 000°.

Table 3-3. (NU) (NMM) Table of Dispositions

Type	Number	Purpose
Carrier	2W	Run-in and Strike Phase of Carrier Task Group Operations
Replenishment	1AE	Nuclear Defense
Antiair Warfare	2V	Threatened Sector Protection
	3V	Threatened Sector Protection (Using Missile Ships)

(NATO-CONFIDENTIAL) (NMM)

c. Stations. Each station is a circular area of radius equal to disposition circle spacing unless otherwise ordered. A change in the radius of a station does not affect the overall arrangement of stations. Disposition center is at the center of station zero and should preferably be marked with a ship. The centers of other stations lie on concentric hexagons separated by twice disposition circle spacing, and stations are numbered to the right and left of the disposition axis (see Figure 3-17). Additional stations can be made available as required by the use of additional concentric hexagons.

d. Disposition Movement. The disposition and speed of advance of the disposition is to be the course and speed of the PIM unless otherwise ordered. Disposition center corresponds to the PIM unless otherwise ordered.

e. Selection of Stations. Stationing of units depends on:

(1) Number of escorts available.

(2) Number of major ships to defend.

(3) Relative subsurface, air, and surface threats. (As a submarine threat normally exists, compromise may result in escorts being stationed at ranges other than the optimum for antiair warfare.)

(4) Types of gun or missile systems fitted in the forces.

(5) Types of air attack expected.

(6) Degree of deception required.

(7) Electronic emission policy desired.

(8) For close-in stationing, consideration should be given to electromagnetic compatibility of the missile ships.

(9) Predicted sensor performance under existing or expected environmental conditions.

f. (NC) (NMM) Stationing of Carriers, Command Ships, and Other Heavy Ships. These ships are assigned to selected stations by the following criteria:

(1) Carriers occupy stations not on the boundaries of the disposition and should not normally be placed on adjacent stations.

DISPOSITION 2W

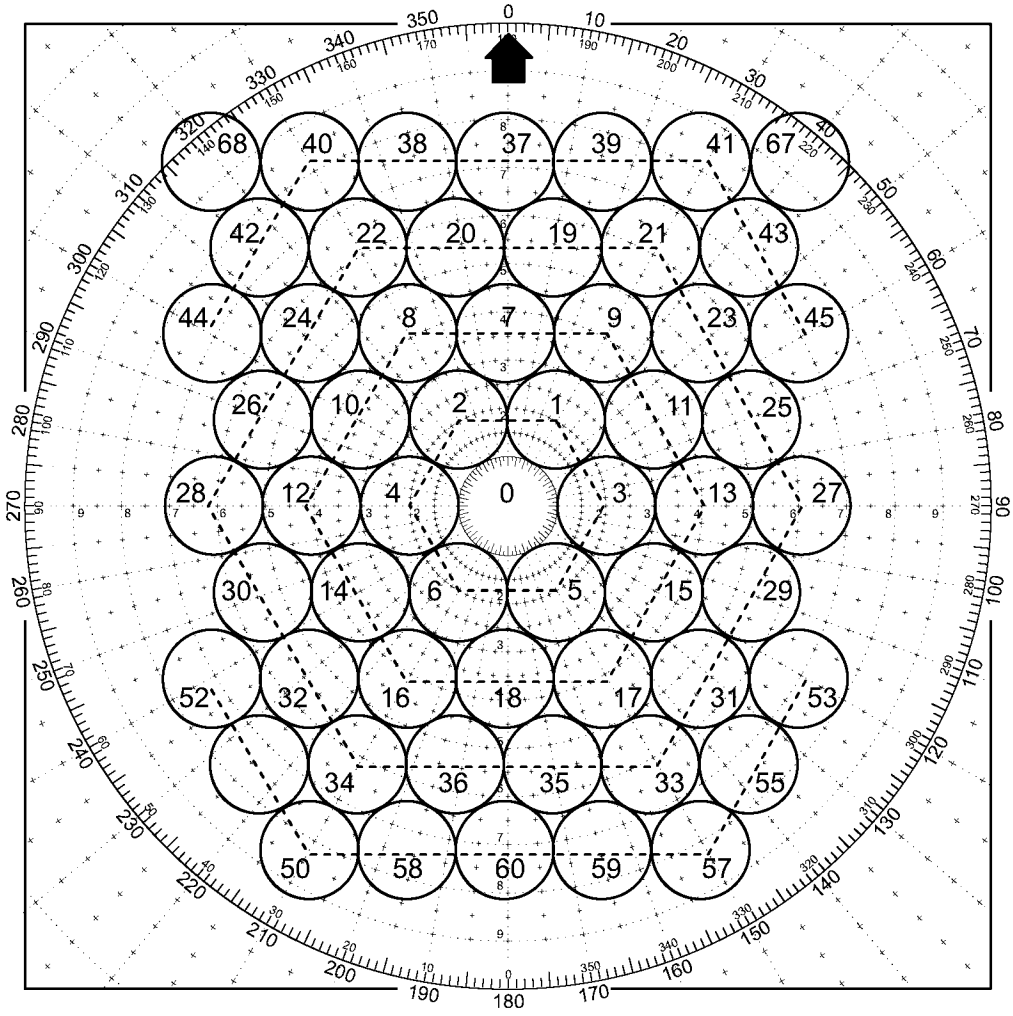


Figure 3-17. Special Disposition 2W

(2) The AAWC's ship occupies a station in the direction of the air threat.

(3) Maximum spacing between heavy ships is desired.

g. (NC) (NMM) Stationing of AAW Ships. These ships are best placed in the most likely direction of attack at a distance that must be a compromise between the following:

(1) Giving the major unit unrestricted use of her short range guns and missiles.

(2) Giving a carrier sea room to operate aircraft.

(3) Giving a missile ship sea room to maneuver to enable missile firing arcs to be open.

(4) Keeping the missile ships clear of the position of maximum friendly air activity.

(5) Keeping the missile ships in good data transmission or voice communication with the major units.

h. Stationing of Radar Pickets. These ships are to be stationed an appropriate distance from disposition center at predetermined rather than randomly selected positions.

i. (NC) (NMM) Stationing of Other ASW Ships. These ships may be stationed as SAUs to provide ASW support. These stations may be changed by the ASWC or screen commander as appropriate and as necessary to combat the submarine threat, advising the OTC as practicable.

j. Disposition Orders. The following instructions are to be included when ordering Disposition 2W:

(1) Disposition circle spacing (in miles).

(2) Force PIM.

(3) Disposition center if other than force PIM.

(4) Station assignments.

(5) Radius of particular stations (if not equal to disposition circle spacing).

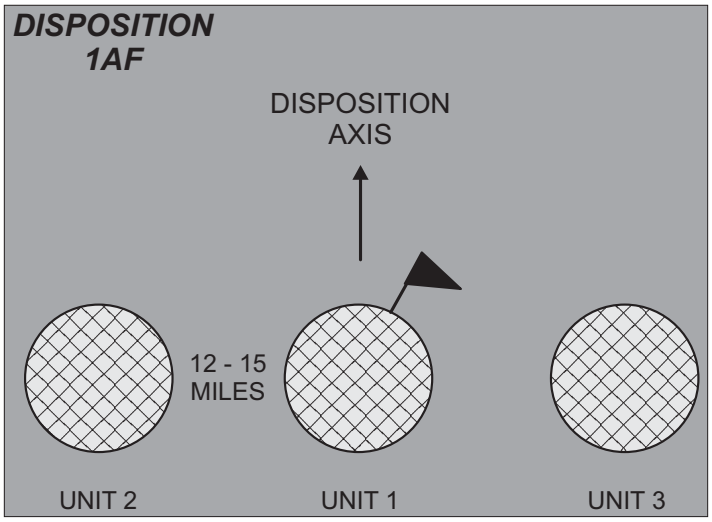
k. Maneuvering Instructions.

(1) Scheduled changes of course and speed (according to the PIM) are to be executed without further signal by all units at the time indicated.

(2) The disposition may be maneuvered as a whole or individual units may maneuver as desired to avoid known submarine positions.

(3) **(NC) (NMM)** Carriers, SAUs, and plane guards turn toward or away from each attack as appropriate at high speed to expedite change of station between SAU stations and plane guard station.

(4) Station-keeping is by own dead reckoning, satellite, or other navigational techniques. Accurate navigation is essential, especially in dispersed formations.



(NATO-CONFIDENTIAL) (NMM)

Figure 3-18. (NU) (NMM) Replenishment Disposition

3213 (NC) (NMM) REPLENISHMENT DISPOSITIONS

Replenishment Disposition 1AF is designed to give protection from the threat of nuclear attack by dispersion of the forces (Figure 3-18). This disposition reduces over concentration of replenishment units in any area. Disposition 1AF is composed of two or more replenishment units on a line of bearing at right angles to the disposition axis; the axis is normally coincident with the replenishment course. The units may be in Replenishment Formation 60, 61, or 62 while replenishing or in readiness for replenishment. Formation 50 or 51 may also be used. The units will be from 12 to 15 miles apart, with the flagship of the disposition in the center unit.

3214 (NC) (NMM) ANTIAIR WARFARE DISPOSITION (THREATENED SECTOR PROTECTION) 2V

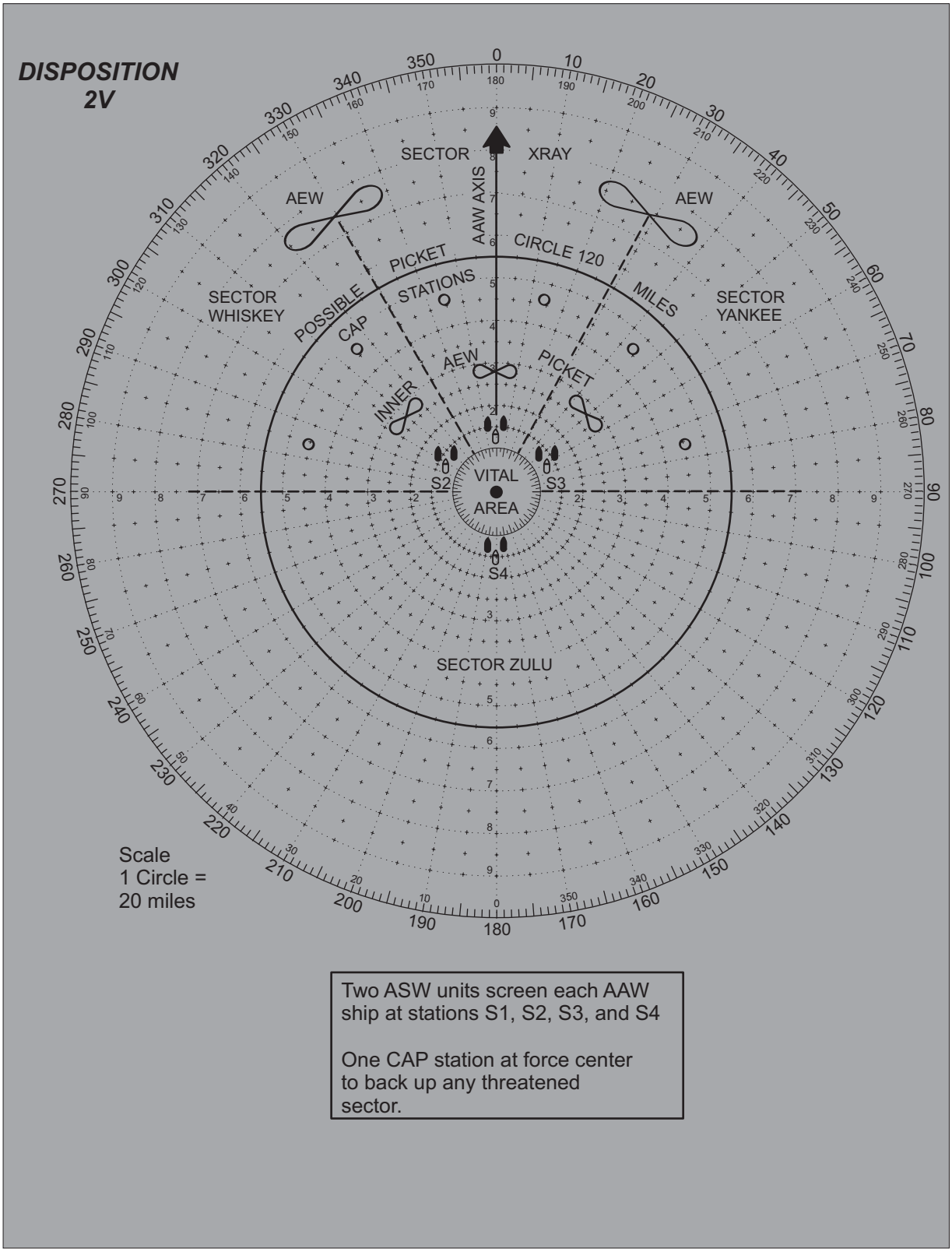
a. Description. Disposition 2V provides defense in depth, decentralized control, and dispersion adequate for nuclear attack. It is appropriate for use when it is desired to concentrate the defense in the general direction of the antiair warfare axis (see Figure 3-19). Designed principally for carrier task forces in which no missile ships are present, it may nevertheless be successfully employed by any group or force assigned pickets and CAP or missile ships. ASW protection is difficult to attain because of the separation of units, and for this reason the disposition should not ordinarily be employed unless the air threat is greater than the submarine threat.

b. Disposition Axis. Disposition axis is the antiair warfare axis.

c. Station Assignments.

(1) Sector AAW Coordinators (SAAWCs) are assigned by the OTC to provide for an appropriate number of sectors. In the example shown, the SAAWC's ships are on the 30-mile circle.

(2) Carriers are stationed to provide maximum protection from air attack commensurate with the discharge of their assigned mission. Compromise in positioning may be necessary in order to afford maximum coverage by accompanying forces, taking into consideration the necessity of providing adequate maneuvering space for flight operations. Similarly, some asymmetric stationing is desirable in



(NATO-CONFIDENTIAL) (NMM)

Figure 3-19. (NU) (NMM) Antiair Warfare Disposition (Threatened Sector Protection) 2V

order to exploit its deceptive potential. When necessitated by flight operations, carriers may maneuver as required within a circle of 10 miles radius from their assigned stations.

(3) Surface Pickets are stationed in inner and outer picket rings. The following factors are considered in assigning stations:

(a) Number of picket ships available.

(b) Evaluation of enemy threat, size, type, and probable approach sectors.

(c) Picket ship radar, ESM, communication, and air control capability.

(d) Number, location, and type of antiair warfare ships.

(e) CAP on station capability.

(4) AEW Pickets are stationed to provide early warning against low fliers, usually working directly with a surface picket (see Chapter 7). Where aircraft range and equipment are suitable, some models of AEW aircraft can provide warning coverage at all altitudes and may be used as an advance picket line ahead of the foremost surface pickets. Such aircraft may be capable of controlling CAP.

(5) ASW Units. Surface escorts and/or fixed and rotary-wing ASW aircraft are provided for carriers and antiair warfare ships commensurate with the submarine threat and ASW force available. These units conform to the movements of the ship being screened. Although Disposition 2V is based on the air threat being greater, all ASW measures should be taken that do not conflict with antiair warfare needs.

3215 (NC) (NMM) ANTIAIR WARFARE DISPOSITION (INCLUDING MISSILE SHIPS) 3V

a. Description. Disposition 3V features defense in depth and decentralized control, similar to Disposition 2V, but is designed for the use of missile ships as well a CAP (see Figure 3-20).

b. Disposition Axis. Disposition axis is the antiair warfare axis.

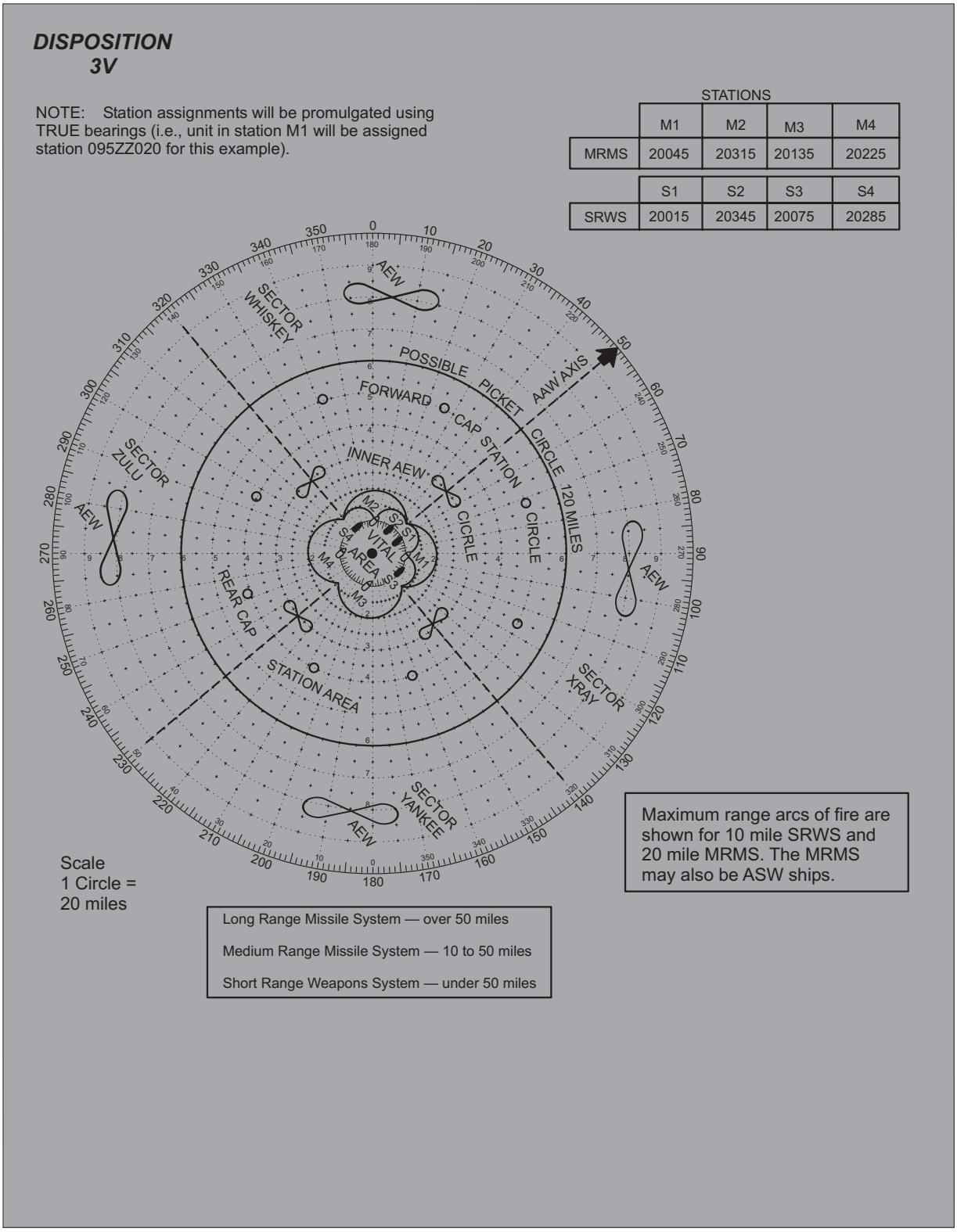
c. Station Assignments. One of the missile ships in each sector will be designated the SAAWC's ship. Possible arcs of missile fire are shown to illustrate the desirability of close-in stationing to achieve mutual support. Stationing of the missile ships is based on consideration of the threat and types of missile ships available. In the example shown, the missile ships are on the 20-mile circle. Surface pickets, AEW pickets, and ASW units are stationed using the principles set forth and illustrated in Disposition 2V. In the example shown, four medium range and four short range missile ships are used. In disposition 3V (see Figure 3-20) station assignments are indicated in positions relative to the disposition axis (AAW axis). However, AAW stations assignments will be promulgated using TRUE bearings in every case.

3216 CIRCULAR DISPOSITIONS

The method of stationing a circular disposition is similar to that described in Article 3115 and shown in Figure 3-1 except that circle spacing is in miles, rather than in thousands of yards, as in circular formations.

3217 CARTWHEEL DISPOSITION/FORMATION

a. Description. The CARTWHEEL disposition is designed to permit task groups to operate loosely in mutual support. It may be ordered in Support Situation B or C, the latter being preferable where, for example, one task group is providing ASW support to more than one other.



(NATO-CONFIDENTIAL) (NMM)

Figure 3-20. (NU) (NMM) Antiair Warfare Disposition (Including Missile Ships) 3V

(1) In this disposition, task groups are allocated to separate sectors, each sector being under the control of its own sector commander, who is normally also the CTG. In some instances the CTF may allocate sectors to task units for a specific task, in which case the CTU becomes the sector commander.

(2) Sector commanders in a CARTWHEEL disposition may in turn station their units in a CARTWHEEL formation. Care must be taken to ensure that the outer boundaries of that formation do not extend beyond the limits of the disposition sectors.

(3) The CARTWHEEL formation may also be used by OTCs of groups operating independently.

b. Purpose.

(1) To provide a disposition or formation that will allow an OTC or CTG to delegate the tactical control and conduct of affairs to selected subordinate commanders or units while retaining the means to rapidly resume control.

(2) To provide a defense that will allow for immediate and preplanned threat reactions.

(3) To provide deception and disguise in a formation that will conceal high value units (HVUs).

(4) To provide a disposition or formation that will allow attachments and detachments to take place with minimal confusion and need for subsequent reorganization.

c. Execution.

(1) Disposition Sectors.

(a) Sectors will normally be allocated in accordance with the sector screen format. Alternatively, the standard lettered sectors as specified for the CARTWHEEL formation in subparagraph c(2)(a) below may be used, but the depth of radius of each sector must in this case be signaled.

(b) Sectors will be based on the center of the task force (ZZ). If no ship is stationed in ZZ, the geographic PIM or ZZ will be signaled.

(2) Formation Sectors.

(a) The CARTWHEEL formation will be divided into lettered sectors, which will be as follows, unless otherwise ordered:

Sector ALFA	000 to 120	6 to 20 kyd
Sector BRAVO	120 to 240	6 to 20 kyd
Sector CHARLIE	240 to 359	6 to 20 kyd
Sector DELTA	000 to 359	0 to 6 kyd

(b) Any changes to the above bearings, radii, or depths of sectors will be promulgated when the formation is ordered. Sectors will be based on station Zero, the center of the task group or task unit as appropriate. If no ship is in station Zero, the geographic PIM of station Zero will be signaled.

d. Helicopter Sectors. Dipping helicopters may be assigned sectors for stationing by sector commanders, or may be assigned sectors outside the CARTWHEEL, using the sector screen method of ordering.

e. Method of Ordering. The CARTWHEEL disposition or formation will be signaled using the format in ATP 1, Vol. II.

f. Mutual Interference. The OTC must allocate safety zones between groups, taking into account:

(1) The risk of collision.

(2) The field of fire required by the ships of the HVU's inner screen to engage incoming missiles and aircraft.

g. Policies.

(1) Sector defense allows for immediate threat reaction by sector commanders, but the OTC retains the power to override if necessary.

(2) The OTC will detail additional group or force assets to a sector if the situation dictates.

(3) Sector boundaries may be crossed to prosecute submarine or surface contacts.

(4) The OTC will pass joining information to units including sector allocations and sector commander. Sector commanders are then to allocate stations within their sector or formation.

(5) Replenishment units will normally be moved between sectors for RAS(L)(A). Sequence will be ordered by the OTC or CTG.

h. Communications. Generally all units should use the same tactical COMPLAN within a CARTWHEEL formation, or within a sector of a CARTWHEEL disposition. Sector commanders are to maneuver their forces on TF/TG Tactical UHF; otherwise, maximum use is to be made of visual signaling.

i. Sector Commanders.

(1) Will be units listed first in each sector allocation.

(2) Are responsible for maneuvering units in their own sectors, and selecting the formation for those units.

(3) Should aim to remain within UHF radio range of the OTC when possible. (This will clearly not be possible with the likely extended distances of a disposition).

(4) Are responsible for immediate actions to counter any threat in their sectors, calling for assistance if required. They should also consider detaching HVUs to a disengaged sector. HVUs so detached are to report to the sector commander of their new sector.

j. Position and Intended Movement (PIM). The OTC will signal the base course and speed, and any zigzag for a unit at the formation center. Sector commanders are to maneuver the groups or units in their sector as required by the policies in force and as required to respond to a threat. Zigzags may be ordered for HVUs.

3218 4W DISPOSITION

a. Description. Disposition 4W provides a framework for operating forces in widely dispersed groups. It can be used to assign Battle Group(s)/Task Group(s)/Task Unit(s)/Task Element(s)/individual units to a specified dispersed operating area relative to a Force PIM. It can be used to define surveillance areas, execute intercept of hostile units, prevent mutual interference and execute operational deception (OPDEC).

b. Terminology.

(1) Disposition 4W. This refers to the entire Grid as illustrated in Figure 3-21.

(2) Segment. Any square within the Grid. The term segment is used to avoid confusion with AAW Sectors or formation/screen stations. Large segments can be identified by specifying the borders of the segment.

(3) Line. The boundaries dividing the segments in either direction (e.g., Line AB or Line 0405).

(4) Lane. The area between two specified lines (e.g., Lane C or Lane 04). A number of lanes can be grouped together (e.g., Lane LN). Included lanes need not be designated.

(5) Point. Intersection of Grid lines. A point is described as the southwest corner of a single square segment with the Grid oriented north, (e.g., Point C19 is at the intersection of Line BC and Line 18-19).

c. Grid Construction.

(1) The 4W Disposition Grid, as shown in Figure 3-21, is 240 nm X 240 nm and is divided into 10 nm X 10 nm square segments. If a larger or smaller disposition is required the OTC/CWC can use a portion of Disposition 4W, change the size of the squares, or add new lanes in ascending alphanumeric order.

(2) The 10 nm X 10 nm segments are described by the letter and number which include that segment (e.g., H24). In labeling the lettered axis, the letters I and O are omitted. Lettering is A to Z (less I and O).

(3) Larger segments are described by combinations of the inclusive alphanumeric boxes which include that segment (e.g., segment PQ1516 defines a 20 nm X 20 nm segment containing subsegments P15, P16, Q15, Q16).

(4) The disposition axis is oriented parallel to the lettered lanes. Normally, the disposition axis is parallel to PIM track to allow efficient positioning of screen forces in the van of the disposition. However, if the PIM course changes frequently, or the nature of the threat does not require positioning of screen forces in the van, or the type of friendly forces assigned (e.g., merchant convoy) precludes changing the axis with PIM course changes, then it may be simpler to orient the axis to an appropriate bearing and keep it constant regardless of PIM.

(5) The geometric center of the grid is Point N13. Unless otherwise designated this will also be disposition center and PIM origin.

d. Execution. Disposition 4W will normally be ordered by instructions in the OPGEN/OPTASKs or other appropriate messages. The OTC or designated warfare commander will specify segment assignments for all groups/units. These assignments must be made in close coordination with other warfare commanders/coordinators. Segment assignments may be executed by tactical voice signal using the “STATION S” signal.

e. Group Formation. The commander of each group in the disposition is responsible for his group's formation/screen within his assigned segment whenever more than one ship is assigned. Unless otherwise directed, a group may maneuver anywhere within its assigned segment.

f. Disposition Guide. Normally, there will not be a "Disposition Guide." The disposition moves with PIM. Therefore, all formations in Disposition 4W maneuver with PIM within their assigned segment. The OTC/CWC will designate a disposition center (normally Point N13) and a disposition axis which establishes the position and orientation of the Grid to PIM.

g. Communications. The OTC must be capable of communicating with each group at any time. If EMCON precludes HF communications, the OTC must establish alternate communication links. The following communications considerations pertain:

(1) Common HF/SATCOM circuits should be designated for intergroup communications. Each group may be assigned separate UHF frequencies for intragroup communications.

(2) Warfare commanders should be able to communicate with all units (regardless of groups) having primary capability in their warfare function.

h. Maneuvering Procedures.

(1) Segment Changes. Periodically, it will be necessary to change segment assignments. To minimize mutual interference or possible hostile action against friendly forces, intra-grid maneuvers should be ordered by tactical signal. This signal may be transmitted initially over a voice circuit, and should be followed up by record traffic. It is essential that all commanders/warfare commanders and the SOCA be made aware of the details of the change.

(2) Shadowing and Marking. Units will frequently be tasked to conduct surveillance or shadowing in a particular segment of the Grid. Units conducting such missions should avoid entering segments assigned to other groups or units. After arrival in a specified segment, the movement of a unit will be largely determined by the target of interest it is following. Hence, these units should notify their warfare commander of their entry into unassigned segments as soon as it can be forecast.

(3) Planned Course Changes. The OTC's OPGEN normally will specify task force PIM. The disposition will move with PIM and the disposition axis will be PIM track unless otherwise specified.

(NC) (NMM) The OTC or SOCA is responsible for relaying appropriate information to support submarines and the SUBOPAUTH. The following procedures apply to grid reorientation with planned PIM changes.

(a) Large Axis Changes. A large axis change is any change in which rotation results in different segment locations for a unit or group. In this event, the following procedures may be used:

i. Reassign Grid Squares. This is done by overlaying the new Grid orientation over the old and determining what the new segment assignments should be. Such reassignments should be included in the signal executing the axis change. This procedure eliminates any requirements to maneuver. However, units may not be correctly aligned to threat axis.

ii. Retain Original Grid Segment Assignments. This procedure will require most units to maneuver to new Grid locations. The time required to perform this maneuver will vary and may be considerable.

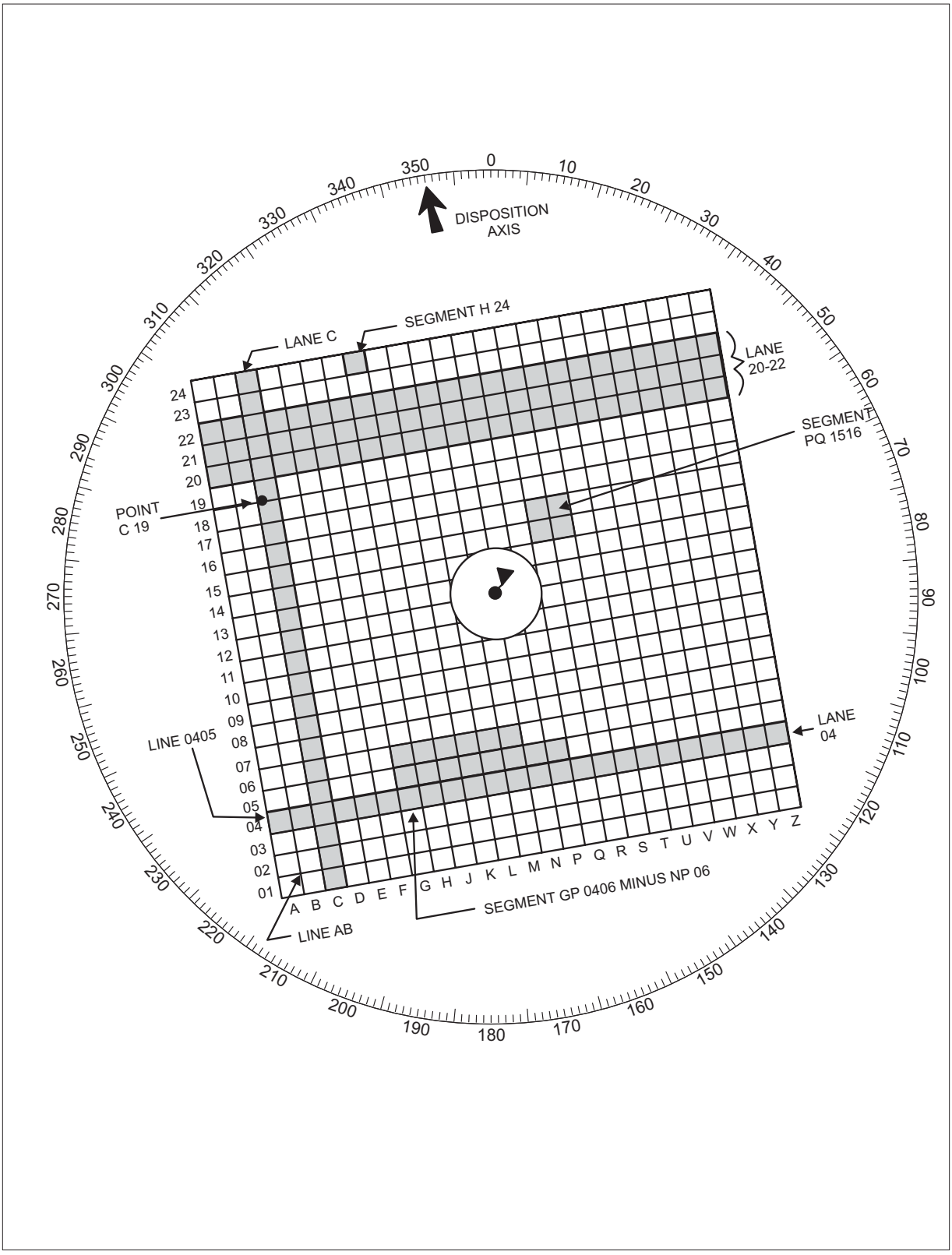


Figure 3-21. Disposition 4W

(b) Small Axis Changes. When the disposition axis is rotated, the commander of each group is to maneuver his formation to remain in its assigned segment. If the *before* and *after* position of the segments is such that all ships remain within their original segment, no additional procedures are required. A larger course change can be accommodated using this method by dividing it into a series of smaller course changes over a period of time.

(4) Immediate Course Changes.

(a) Normally such changes should be made with a TURN signal. The 4W Disposition axis is not changed and all units and groups maintain the same true bearing and range from disposition center as before. Disposition center moves off PIM in direction of the turn at ordered speed.

(b) If there is a common net that is being guarded by all TF units, then a TURN signal can be executed by the IMMEDIATE EXECUTIVE method. At least one ship in each group and/or each group commander should be required to acknowledge the signal.

(NC) (NMM) The OTC or SOCA is responsible for relaying appropriate information to support submarines and the SUBOPAUTH.

If there is not a common circuit or if there is enough time, then the DELAYED EXECUTIVE method can be used. This can be done on a tactical voice circuit, such as the TF/TG OTH Command net, to all group commanders. After this is done, each group commander would put the signal over a local group UHF circuit, such as the Tactical Maneuvering net. Another option would be to send a HIGH PRECEDENCE tactical signal over the TF Broadcast with a specified execute time and direct each group commander to acknowledge receipt.

3220 (NC) (NMM) DISPOSITION PLANNING FACTORS

Table 3-4 contains the main factors to be considered in the planning of force dispositions as set forth in detail in this and other publications. It is not exhaustive, and is intended to be a guide only, and should be reviewed as the tactical situation changes.

Table 3-4. (NU) (NMM) Disposition Planning Factors

a. MISSION

b. THREAT ASSESSMENT

1. Enemy's likely course of action
2. Enemy's weapon systems capabilities
3. Enemy's command, control and communications capabilities
4. Enemy's ECM, ESM, and acoustic capabilities
5. Enemy's intelligence state

c. STATIONING

1. PIM
2. Defense in depth
3. Own capabilities — offensive and defensive
4. Use of chaff
5. Deception
6. Use of pickets
7. Advanced offensive positions
8. Reconnaissance
9. Own deficiencies
10. Replenishment
11. Mutual interference and support
12. Intercepts

d. COMMAND, CONTROL AND COMMUNICATIONS

1. Emission policy
2. Communications requirements
3. Data links
4. Navigation

e. RULES OF ENGAGEMENT

f. ENVIRONMENTAL FACTORS

1. Weather
2. Propagation; above water and below water

g. FLIGHT OPERATIONS

(NATO-CONFIDENTIAL) (NMM)

SECTION III — SCREENS

3300 PURPOSE

The purpose of a screen is to protect a main body or convoy. It may be designed to provide protection against aircraft, missiles, submarines, or surface forces. In a multithreat environment, due consideration must therefore be given to the assessment of threat priorities and the advanced warning which can be obtained by the force. Since the threat can change during an operation, continuous reassessment of the situation is necessary to maintain the efficiency of the screen. Since present weapons and sensors demand defense in depth, screens should be adequately dispersed, thus increasing the enemy's problem in recognizing and attacking the main target.

3310 TYPES OF SCREEN

a. Sector Screen. Sectors are chosen to exploit the individual equipment capabilities of various screen units and to provide flexibility and defense in depth. Sectors are defined by true bearings and distances from screen center. Screen units patrol assigned sectors; the amount of patrolling and the size of the sector depend on the speed advantage of the screen unit over the main body or convoy. Random maneuvering in sectors has the advantage of disguising the disposition of the force and thus poses an additional recognition problem to an enemy.

b. Skeleton Screen. Screen units are disposed relative to a rectangular main body or convoy and patrol stations or ordered lines.

c. Helicopter Windline Screen. A helicopter screen is provided for a carrier temporarily during flight operations, relative to the carrier's track into the wind.

d. Departure Screen. When the main body is large, forming up may require considerable time, and it may be desirable to wait for the moment when the main body is in formation to order screen units to their appointed station in the cruising screen. In this case, a departure screen is to be ordered to protect the main body while it is forming up. When the main body is small, it may not be necessary to form a departure screen.

e. Entry Screen. The purpose of the entry screen is the protection of the main body as it passes through the area immediately to seaward of the swept channel, particularly during the period it is changing formation prior to entering the swept channel. When the main body is large, an entry screen using the same procedure as for a departure screen should be ordered by the OTC.

3311 SCREEN SELECTION AND DESIGN

Selection and design of the screen are based upon the OTC's appreciation of the situation. The OTC should consider the following:

(NR) (NMM) For details of various factors involved, see ATP 28 and ATP 31.

a. The Mission.

b. The Situation.

(1) The threat:

(a) Enemy forces (surface, subsurface, air, or combined).

(b) Enemy capabilities (sensors, weapons, standoff capability, nuclear warheads, jammers).

(c) Enemy's possible courses of action.

(2) Characteristics of the area of operations:

(a) Distances (to own and enemy bases, to own and enemy supporting forces).

(b) Oceanographic factors (water depth, marine life, wrecks, sonar conditions, and currents).

(c) Meteorological factors (visibility, sea state, radar conditions, wind direction and speed).

(3) Own forces:

(a) Screen units (number and types, radar, EW, sonar, weapons, communications replenishment requirements).

(b) Main body or convoy (composition, size and spacing, speed, maneuverability, defensive capabilities).

(c) Support forces (pickets, aircraft, surface forces, submarines, auxiliaries).

c. Opposing Courses of Action.

(1) Enemy's overall specific objectives.

(2) Own courses of action.

3312 (NC) (NMM) STATIONING SCREEN UNITS

a. Inner Screen. In addition to its ASW advantages, particularly against diesel submarine torpedo attacks, an inner screen provides the best concentration of defensive fire and may be the only possible formation with a small number of screen units. The risk of confusion is reduced over that which is likely to be incurred when friendly forces are dispersed. Screen units stationed from 5 to 7 nm from the main body are unlikely to detect FPBs on radar before they reach optimum firing range. The inherent disadvantages of the inner screen may be alleviated when aircraft are used to provide radar early warning and distant ASW forces are used to provide early warning of submarine contacts.

b. Outer Screen. An outer screen may provide a more effective defense against the anticipated threat than an inner screen would. The long-range, passive detection capability of support submarines, sonobuoy-equipped ASW aircraft, and towed array surface ships provides a reasonable ASW search coverage of a large area and platform acoustic covertness inhibits the enemy's ability to maneuver to avoid detection. These units may be stationed in the order of 25 to 100 nm from the main body as an outer screen to counter the threat of the medium-range, missile-equipped submarine and to provide an initial line for defense in depth against submarine torpedo attacks. Note that submarines are assigned stationary areas and are never used in moving screens. The search capability of these units is reduced when they are employed in inner screens. Other factors to consider with an outer screen are:

(1) Coordination of the outer screen units may be complicated by a lack of communications capability.

(2) Effective screen coordination is required between the various warfare commanders and the screen commander.

(3) The requirement for early detection of threats and the selection of the appropriate response.

(4) Outer screen surface units should not be stationed too near the limit of the main body's radar cover. When these units are lost on radar and reappear during a confused situation, they run the risk of being engaged by friendly forces.

(5) The stern sector must not be forgotten.

3313 — 3319 SPARE

3320 DESCRIPTION OF SCREENS

3321 SECTOR SCREEN

a. Description. The center is ZZ or QQ, unless otherwise ordered. Sectors are allocated by indicating sector boundaries and sector depth (separated by a tack) followed by the call sign of the unit assigned to that sector.

(1) Sector Boundaries are ordered by a group of four numerals. First two numerals indicate the true bearing of the left boundary in tens of degrees; the second two numerals indicate the true bearing of the right boundary in tens of degrees.

(2) Sector Depth is also ordered by a group of four numerals. First two numerals indicate the inner limit and the second two the outer limit of the sector in thousands of yards from the screen center.

-EXAMPLE-

SCREEN K–ZZ–0307–0510 c/s DD 4

Meaning: DD 4 is allocated a sector 030° to 070° true, depth 5,000 to 10,000 yards from ZZ.

(3) Increments of 5° or 500 yards are ordered by using ANS.

-EXAMPLE-

SCREEN K–ZZ–20 ANS 33 ANS–02 ANS 07 c/s DD 6

Meaning: DD 6 is allocated a sector 205° to 335° true, depth 2,500 to 7,000 yards from ZZ.

b. Stationing a Main Body or Military Convoy. Ships of a main body or military convoy may be stationed by the sector method, but the fact that they are a part of the main body or military convoy must be made clear to the force. Ships stationed by this method carry out random movements within their sectors.

c. (NC) (NMM) Construction of ASW Screens. For ASW screen design use the screenplanner software. For further details see ATP 28, paragraph 941 and ATP-28 Screenplanning Supplement. (See Figure 3-22 for an example of an ASW sector screen.)

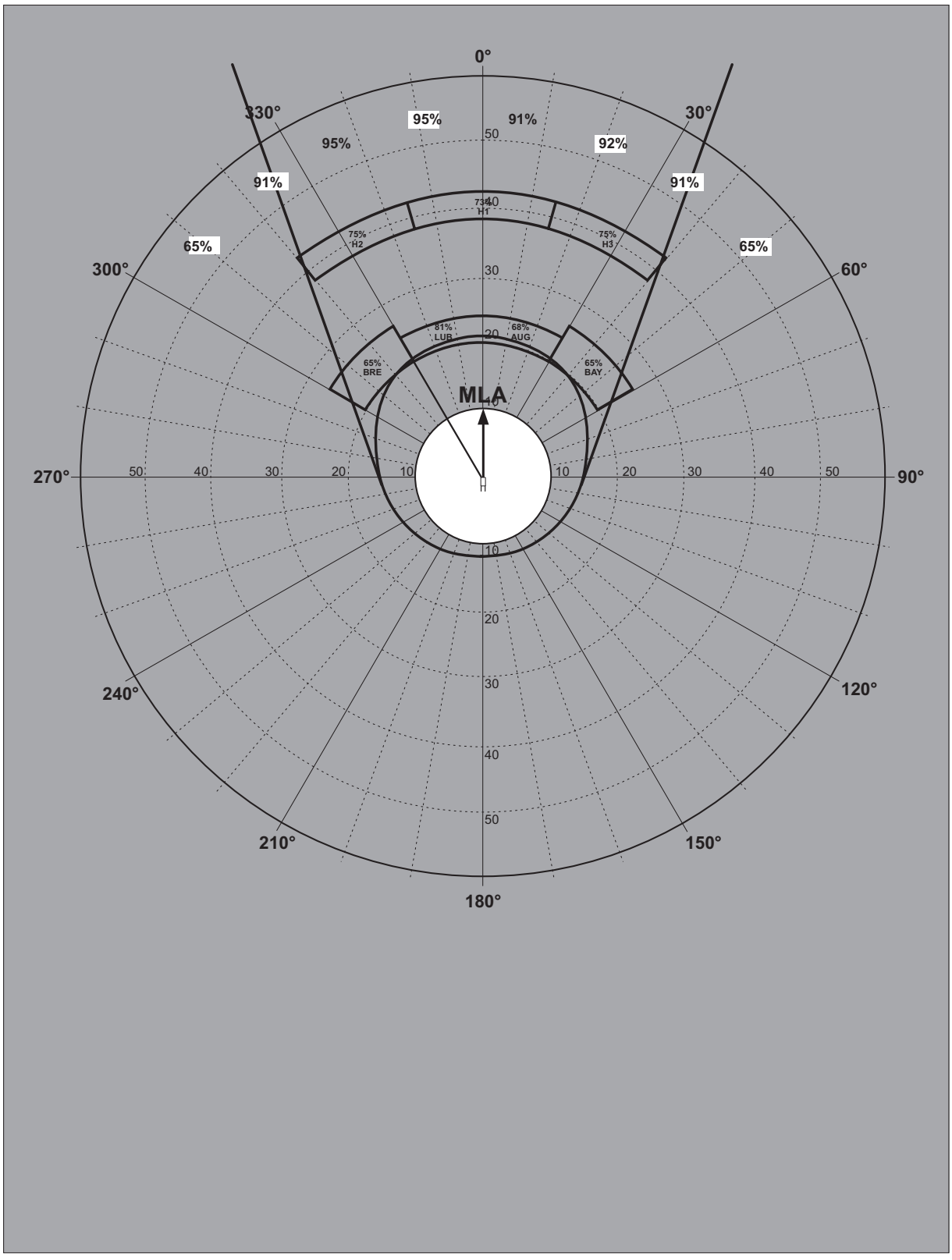


Figure 3-22. ASW Sector Screen (Example)

3322 SKELETON SCREEN

a. Description. Stations assigned are relative to a corner or side of the main body or convoy.

b. Ordering a Skeleton Screen. Stations or patrol lines are ordered by using the skeleton screen diagram (Figure 3-23).

(1) Station Allocation. A station is allocated by signaling one or two letters from the diagram, followed by a number to indicate the nearest distance in thousands of yards, followed by the call sign of the unit assigned to that station. The use of two letters to allocate a station indicates a middle line between two single letters from the diagram.

-EXAMPLE-

SCREEN G–DE 5 c/s DD 6

Meaning: DD 6 is allocated the station 45° on starboard bow of the main body or convoy at 5,000 yards.

(2) Patrol Line Allocation. A patrol line is allocated by signaling two stations as in station allocation.

-EXAMPLE-

SCREEN G–CD 5 E 5 c/s DD 6

Meaning: DD 6 is allocated the patrol line between 15° and 60° on starboard bow of the main body or convoy at 5,000 yards.

c. Screening in Restricted Waters. Stations may be assigned by using the skeleton screen diagram. A typical, narrow-front skeleton screen is shown in Figure 3-23.

3323 HELICOPTER WINDLINE SCREEN

Available helicopters are ordered to sectors, stations, or patrol lines ahead of a carrier launching or recovering aircraft. The break-dip position is to be at least 5,000 yards from the carrier at all times. A helicopter windline screen may be ordered by using either the sector method or by stationing the helicopter(s) relative to the carrier.

3324 DEPARTURE AND ENTRY SCREENS

a. When the departure/entry screen is ordered, units proceed independently to the sectors or areas assigned and then patrol at random within them. More than one unit may be allocated to a single sector or area, in which case, the screen commander is to specify the unit that is to coordinate their patrol. Sufficient time should be allowed so that screening ships do not proceed at a speed higher than optimum sonar speed and are able to employ tactical countermeasures while taking up their cruising stations.

(NC) (NMM) In the case of departure operations, the screen commander should order the cruising screen to be formed so that the screening units are in their cruising stations as the Guide passes point O. (See Chapter 2.)

b. The two methods of ordering departure/entry screens are sector and grid. The choice between them depends only on convenience of ordering in their particular geographic location.

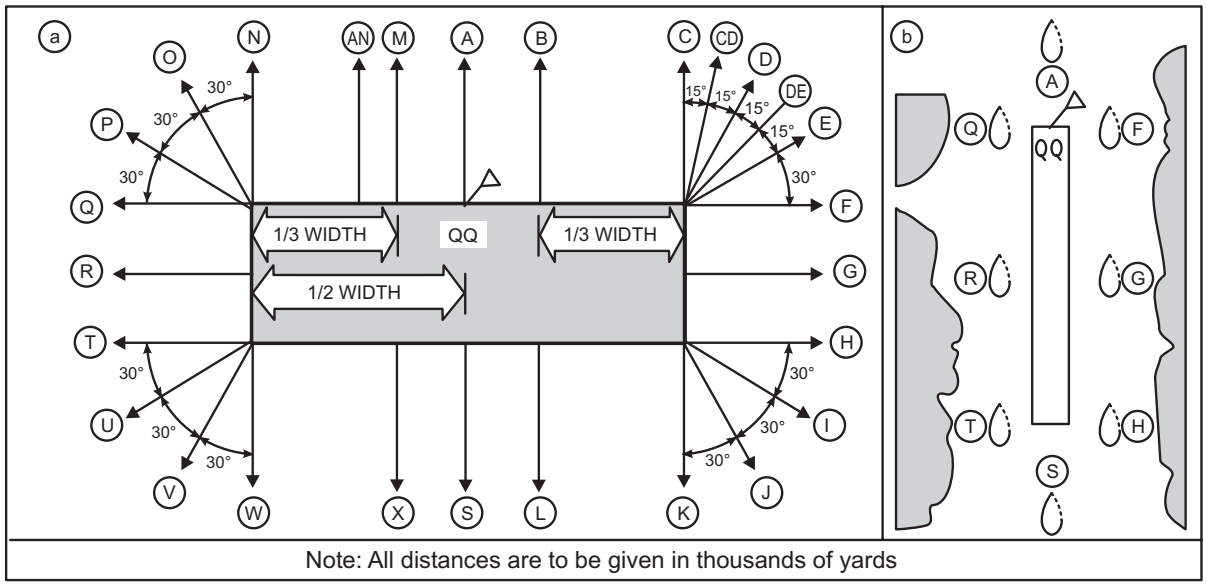


Figure 3-23. Skeleton Screen Diagram

c. Sector Departure/Entry Screens.

(1) Description. Units are allocated patrol sectors for which they are responsible, using the sector method of ordering with the screen center given as a geographic position.

(NC) (NMM) Screen center is usually best placed on point X or along the line X-O.

(2) Method of Ordering.

(a) Form departure/entry screen sector.

(b) Screen center.

(c) Sector allocations.

(3) Example. An example is given in Figure 3-24.

d. Grid Departure/Entry Screens.

(1) Description. Ships are allocated patrol areas for which they are responsible, the boundaries of these areas being specified by the use of CCG preferably locked to a prominent geographic feature.

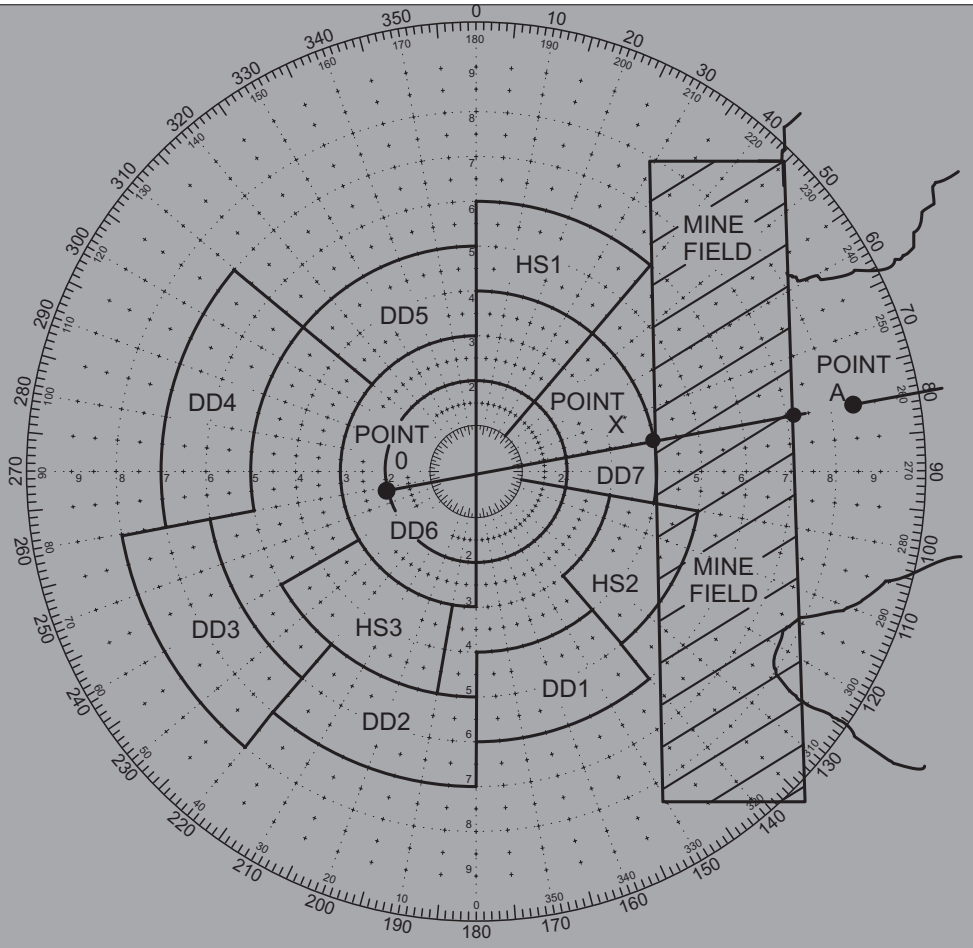
(2) Method of Ordering.

(a) Form departure/entry screen.

(b) Grid reference position

(NC) (NMM) (The grid position of point X must also be specified.)

(c) Area allocations. Areas are designated by the grid reference indicating the southwest corner of each patrol area. Patrol areas are to be 3 miles square unless otherwise ordered. If a larger area is ordered, the grid reference is to be followed by a two-figure group, the first figure indicating



NOTE: Circle spacing is 1,000 yards.

SIGNALS

SCREEN D1 — 260 DESIG X2
SCREEN 0 — 0004 — 0406 c/s HS1
— 0410 — 0104 c/s DD7
— 1410 — 0305 c/s HS2
— 1418 — 0406 c/s DD1
— 1836 — 0003 c/s DD6
— 1822 — 0507 c/s DD2
— 1924 — 0305 c/s HS3
— 2226 — 0608 c/s DD3
— 2631 — 0507 c/s DD4
— 3136 — 0305 c/s DD5

NOTE
For sector entry screen,
use signal SCREEN E1.

(NATO-CONFIDENTIAL) (NMM)

Figure 3-24. (NU) (NMM) Example of Sector Departure/Entry Screen

the East-West dimension and the second figure the North-South dimension in miles. Patrol areas may be overlapped.

(3) (NC) (NMM) Example. An example is given in Figure 3-25.

3325 SCREEN FOR DAMAGED SHIPS

The sector method should be used for ordering screens for damaged ships. If the speed of a damaged ship is low, screen units should be allocated large sectors in order to provide an all around protection and so that they can use adequate tactical countermeasures for their own defense.

3326 — 3329 SPARE

3330 MANEUVERING WITH A SECTOR SCREEN

a. Conduct of Ship Screen Units. Units are to patrol widely throughout their sectors and when a subsurface threat exists, to choose that speed which makes for the best use of sonar in the conditions prevailing. Units should take account of the movement of adjacent screen units in order to avoid undue gaps. For safety reasons a unit is not to close nearer than 500 yards to the boundary separating its sector from one occupied by another unit.

b. Conduct of Helicopter Screen Units. Helicopters are to dip randomly throughout their sectors. They may mark-dip in advance of their sectors but must break dip within it. Helicopters operating under tactical direction should maneuver to cover adjacent helicopter sectors left temporarily vacant. For safety reasons, a helicopter must break dip if it closes within 500 yards of a sector boundary common to an adjacent occupied sector.

c. Alteration of Course. If the base course of the main body or convoy is altered, screen units continue to patrol their sectors.

d. Screening a Carrier During Flight Operations. The conduct of screen units depends on the method used for carrier flight operations (see Chapter 6):

(1) If Method A is used, the rules in subparagraph c above apply.

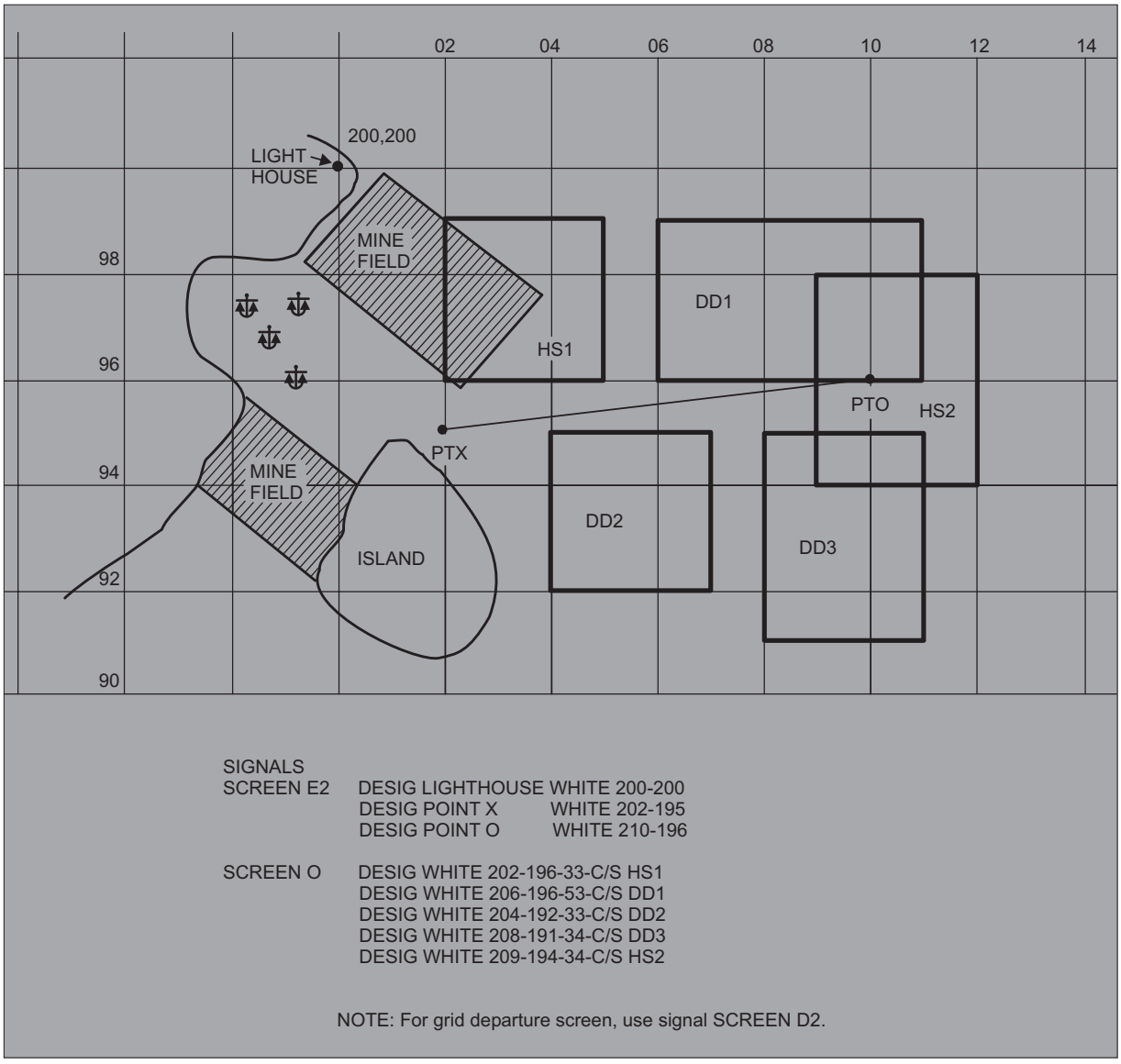
(2) If Method B is used, screen units are to patrol their sectors in the upwind direction.

(3) If Method C is used, screen units should anticipate a turn into the wind by moving upwind in their sectors.

e. Adjusting the Screen. To adjust the screen, units may be ordered to shift their sector boundaries or to change the depth of their sector. If the tactical requirements are not met by adjusting, the screen must be reordered.

(1) Shifting Sector Boundaries. Units are ordered to shift their sector clockwise or counter-clockwise by a specified number of tens of degrees. Such shifts should be at least 10° and must not exceed 90°. Caution must be exercised to ensure that large shifts do not result in screen units hindering the main body and a reduction in screen protection for an excessive period of time.

(2) Changing Depth of Sector. When the situation requires a rapid change of the screen, units may be ordered to change the inner and outer limits of their sector in the direction of or away from the screen center by a specified number of thousand of yards. Such changes should not be less than 1,000 yards.



(NATO-CONFIDENTIAL) (NMM)

Figure 3-25. (NU) (NMM) Example of Grid Departure/Entry Screen

(3) Main Body or Convoy. Ships of the main body or convoy that are stationed by the sector method may be maneuvered by the OTC the same way as screen units.

3331 MANEUVERING WITH SKELETON SCREENS

a. Conduct of Screen Units. Units are to patrol their stations or patrol lines unless otherwise ordered. The way of patrolling is at the commanding officer's discretion, unless it is specified by the OTC. The extent of patrolling depends, for example, on the distance between adjacent screen units and on the speed advantage over the convoy or main body.

b. Turn-Together or Emergency Turn by Convoy or Main Body. Screen units maintain true bearings and distances from the main body or convoy.

c. Wheeling by Main Body or Convoy. Screen units maneuver to maintain their relative bearings and distances from the main body or convoy.

3332 INSTRUCTIONS FOR CONVOY SCREENS

General instructions for ordering and conduct of screens are contained in earlier articles in this section. Specific responsibilities of convoy screen ships follow:

a. Maintaining Convoy Discipline. Screen ships are to assist the convoy commodore in maintaining convoy discipline by reporting ships that make smoke, show lights, lose station, make unauthorized use of radio, pump bilges, or dump refuse. They are to use initiative and warn merchant ships directly when immediate action is necessary, informing the OTC and convoy commodore of the action taken.

b. Maintaining Convoy Formation. Screen ships are to make every effort to keep ships in their proper stations. The OTC may order a screen ship to escort one or more scattered ships; he may also remedy poor station keeping by ordering screen ships to lead the flank columns of the convoy until individual merchant ships have regained station. OTCs must report merchant ship casualties by a MERCASREP.

c. Action When Ship Is Damaged. A screen ship on observing that a ship has been damaged is immediately to report the occurrence and the cause, if known, to the OTC, and at night, if possible, is to fire two white rockets. It must not be assumed that the OTC is aware of a ship being damaged until the fact has been reported to him.

d. Rescue of Survivors. Action to counter a threat and continued protection of the convoy are to take precedence over the rescue of survivors. When survivors are sighted in the vicinity during a search for a submarine, life rafts should be dropped. If required, the OTC is to designate screen ships, as soon as they can be spared, to pick up survivors and to screen other ships engaged in rescue work.

3333 HELICOPTERS IN THE SCREEN

The rules for ordering helicopter screens or assigning helicopters a station or sector in a surface screen are the same as those for ordering surface screens. However, stations or sectors assigned to unspecified helicopters must be designated by addition of "DESIG H" after the station or sector assigned.

-EXAMPLE-

SCREEN G–N8C8 DESIG H

Meaning: In this skeleton screen, there is a helicopter patrol line 8,000 yards ahead of the main body or convoy.

3334 CONTROL OF SCREEN HELICOPTERS

a. Helicopter Control Unit. The OTC (or screen commander, if delegated) may assign the control of helicopters to one or more helicopter control units (HCUs). The duties of the HCU are the same as those of an ACU. In the case of a windline screen, the OTC should order the number of helicopters required and designate the carrier as HCU. Helicopters may also be ordered to operate independently.

b. Procedure When Helicopters Are Employed on Screening Duties.

(1) The OTC (or screen commander, if delegated) assigns helicopter screen stations.

(2) The OTC (or screen commander, if delegated) normally allocates one or more helicopters to each HCU.

(3) HCU passes to helicopters their sector boundaries and sector limits, or the bearings and distances of their stations from a suitable reference point (e.g., QQ or ZZ)

(4) HCU directs the movements of the helicopters under positive control to ensure safety.

c. Procedure When Carrying Out Evasive Steering. When evasive steering is being carried out, HCUs must coordinate helicopter movements with ship movements so as to avoid unacceptable gaps in the screen.

(1) Very-Long-Leg or Long-Leg Zigzag Plan. When one of these plans is in force, helicopters in the screen need only be informed of this fact and of the alterations of course at least one dip cycle before they take place.

(2) Short-Leg Zigzag Plan. When this plan is in effect, helicopters in the screen may be taken under positive control. Helicopters should not be employed along the short legs except in the direction of the force movement.

d. Information to Helicopters. Helicopters must be kept informed of the situation by their HCUs to enable them to perform their functions properly. Information, such as course and speed alternations, evasive steering in use, adjustment of the screen, and contacts obtained by other units, are all required by helicopters in the screen.

3335 PICKETS

a. Ordering. Picket stations are ordered either by true bearing and distance from screen center or by the sector method.
(NR) (NMM) When fixed-wing aircraft are employed as pickets, airplans from Chapter 8 may be used.

b. Maneuvering. The true bearings and ranges of picket stations do not change with alterations of course by the main body or convoy. If new picket stations are desired, the OTC (or screen commander, if delegated) should order them well in advance of the alteration of course.

c. (NR) (NMM) AAW Pickets. For further details of tasking and maneuvering pickets in the AAW role, see Chapter 7 and ATP 31.

3336 TOWED ARRAY SHIPS IN THE SCREEN

The procedures for stationing surface ships equipped with towed array systems are similar to those for other surface ships.
(NC) (NMM) Additional considerations are:

a. (NC) (NMM) TAS Ship. The TAS ship may require at least 2 hours to localize and attack passive contacts. The dimensions of the patrol station assigned should therefore include an allowance for at least 2 hours of force movement along the PIM. In addition, a requirement to conduct Sprint and Search Tactics may require elongation of a sector.

b. (NC) (NMM) TAS Ship Stations. TAS ship stations may be designated to include the ASW function and for suitably equipped units those of EW, or ASUW, or AAW pickets.

(1) TAS equipped ships may also be employed in stationary patrol areas for operations such as entry/departure screens and defended lanes.

(2) More detailed explanations of TAS ship employment are found in Chapter 9 of ATP 28.

3337 — 3339 SPARE

3340 SPECIAL INSTRUCTIONS

3341 INSTRUCTIONS FOR INDIVIDUAL SCREEN UNITS

a. Report on Joining a Screen. On joining, the commanding officer is to report to the OTC and screen commander any defect that affects his operational capability and his fuel state.

b. Rejoining the Screen. Units rejoining a screen are to proceed to their previously assigned station, unless otherwise ordered.

c. Replenishment of Screen Units. When screen units are to conduct replenishment, the procedure will be as follows:

(1) Screen ships are to proceed when relieved at screen station unless otherwise ordered.

(2) Remaining screen units act in accordance with subparagraph f below.

(3) Screen units rejoining after replenishment act in accordance with subparagraph b above.

(4) Screen helicopters may be refueled by surface units.

d. Bad Weather Conditions. If, during bad weather, a screen unit is unable to maintain the speed necessary to accomplish the task without damage or serious effects on its sensor performance, the commanding officer is to report to the OTC (or screen commander, if delegated) the maximum speed he can maintain.

e. Equipment Failure. Any sensor or weapon system failure in a screen unit is to be reported immediately to the OTC (or screen commander, if delegated) and to adjacent units, including the estimated time at which repairs will be completed. A gap caused by this failure is to be covered, as far as possible, by adjacent units by adjusting their patrol without leaving their assigned sectors, stations, or patrol lines, unless the screen commander decides to adjust or reorder the screen.

f. Filling a Gap. If a screen unit leaves the screen, units in sectors, stations, or patrol lines adjacent to it are to maneuver in their sector, station, or patrol line so as to cover as much of the gap as possible. They will leave their sector, station, or patrol line only if ordered to do so.

g. Right of Way. Ships of the main body or convoy have right of way over screen ships, unless the latter are in contact with submarines. A helicopter in the dip or hover is not to be approached by ships within 500 yards.

h. Navigational Hazards. Individual ships are responsible for avoiding navigational hazards.

i. Bulging the Screen. If, during maneuvering a carrier by Method B (see Chapter 6), the length of flight operations necessitates the carrier to proceed outside the screen, the screen is to bulge. In this case, the two screen units ahead of the carrier leave their sectors, stations, or patrol lines to screen the carrier.

j. Taking Up or Changing Sectors or Patrol Lines. Ships should proceed at maximum sonar speed or operational speed as the tactical situation dictates.

k. Station Keeping by Helicopter. A helicopter should be in its allocated station or sector at the moment of breaking dip for next jump.

3342 SCREEN ADJUSTMENT

The OTC, or the screen commander when delegated this responsibility, will adjust the screen whenever there is a change in the tactical situation or in the number of screen units available.

CHAPTER 4

Communications

SECTION I — TACTICAL COMPLANS

4100 SCOPE

This chapter sets forth in broad terms the tactical aspects of communications, including data links, and establishes measures necessary for their protection. Detailed communications doctrine, communications plans (COMPLANs), and descriptions of specific circuits are contained in ACP 176 and NATO Supplements. The use of certain nets, as they affect the principal areas of warfare, is described below. See also Chapter 5, Electronic and Acoustic Warfare (EAW), and APP 1, Maritime Voice Reporting Procedures.

4110 COMMUNICATION PLAN (COMPLAN) DESIGN

COMPLANs should be designed using the following guidelines:

a. Reduction to a minimum of the number of circuits to be guarded by ships. This is the principle of the electronic protective measures/reduced tactical COMPLAN (EPM/RTC), an example of which is in Figure 4-1. An RTC can be devised by combining circuits with similar procedures in order to reduce the total number of nets in accordance with ACP 176. For small forces with limited communication equipment, an RTC should be considered. The OTC must ensure that adequate instructions are issued beforehand so that the COMPLAN is easy to interpret.

b. The use of MF/HF transmissions should be minimized to reduce the probability of fixing high value units by the enemy. This involves the maximum use of satellite communications (SATCOM), using AUTOCAT/MIDDLEMAN and ship-to-ship UHF relay.

c. Where the incorporation of MF/HF frequencies is unavoidable, use should be made of limited range intercept (LRI) techniques.

d. Key circuits should be provided with frequency diversity, preferably in more than one band (cross-band working). Since equipment and frequencies are bound to be in short supply, priority should be given to those circuits most needed to coordinate force defense, particularly antiship missile defense (ASMD).

e. Vital UHF circuits and alternates should have a frequency separation of at least 30 MHz (preferably 40 MHz) to reduce effectiveness of disruptive jamming. To prevent mutual interference, a frequency separation of 1 to 5 MHz is necessary. Minimum separation depends upon equipment fitted in units.

f. Make maximum use of cryptographic protection on circuits to minimize the requirement for low-grade codes and authentication.

g. Take account of special requirements for specific circuits as follows:

(1) Antijam Coordination Net — A line-of-sight net which ideally should be secure voice or out of band (e.g., VHF (IMM) or VHF (Aeronautical)). It is used for passing vital information when under ECM attack, alerting the force to imitative deception by a GINGERBREAD call, and the execution of countermeasures.

LINE IDENTIFIER FROM_ TO _	(NC) (NMM)	PLAN	COLUMN IDENTIFIER FROM_ TO _ →	SIX	FOUR	AND SO ON - - →		
	LINE NO.	CIRCUIT TITLE	EMISSION	A	B	C	D	E
CHARLIE	205/206	TF/TG BROADCAST		4510	7344	2994	2678	19568
WHISKEY	207/208	TF/TG CALLING WORKING		12132.5	2965	3767	2725	18325
AND SO ON	209/210	TF/TG TACTICAL		266.3	320.6	4213,5 (4212)	5645.5 (5644)	
	212/213	TF/TG REPORTING		308.6	371.1	2673.5 (2672)		
	222	ACTION NET ALPHA		288.7				
	223	ACTION NET BRAVO		293.0				
	224	ACTION NETCHARLIE						
	404/405	AAW WEAPON COORD						
		AND SO ON						

Figure 4-1. Example of EPM/Reduced Tactical COMPLAN

(2) TF/TG/MF — A circuit for use by the OTC to pass vital instructions by CW when no other radio circuits are available. Ships should always have this circuit on a loudspeaker and must be prepared to guard it at short notice once threat warning RED has been promulgated.

(3) **(NC) (NMM)** Fighter Control Frequencies — These should be in the lower half of the UHF band because of undesirable transmission characteristics which are more pronounced at the top of the band than at the bottom.

h. To preserve security and to gain valuable time when changing frequencies in a jamming environment, EPM COMPLANs should make allowance for the allocation of column and line identifiers. Lines should be identified by random phonemicized letters of the alphabet, and columns by random numerals. The OTC should make clear for what period the identifiers are in force.

i. To assist in equipment allocation within individual units, the OTC should indicate circuit priorities.

4120 COMMUNICATION PROCEDURES

Detailed procedures for the conduct of communications vary for different types of nets and are found in the appropriate ACPs and APs.

4121 NET CONTROL STATION (NCS)

Each net will have a net control station (NCS) assigned to control traffic and enforce discipline on the net. The NCS function may be assigned as a specific duty or it may be incorporated in the functions of a warfare commander, coordinator, or controller (i.e., EWC or FTC-A) as discussed in Chapter 6.

Link nets, such as Link 11, have slightly different requirements, and the control procedures for those nets are described in Chapter 6.

4122 VOICE PROCEDURES

Maritime voice reporting procedures are contained in APP 1.

4123 CALL SIGNS

a. General. Daily changing call signs should be used on all military uncovered communication circuits. Ship names or international call signs may be used:

(1) When communicating in the VHF (IMM) band in the vicinity of merchant vessels or stations.

(2) During search and rescue (SAR) operations.

(3) In circumstances where it is considered impractical or unsafe to use daily changing call signs, for example on harbor movement nets. Such nets should not be used outside 15 miles of harbor limits.

NOTE

Instructions for the use of call signs are contained in APP 1.

b. Standard Call Sign Convention for Warfare Commanders and Coordinators. Warfare commanders and coordinators may be allocated a two-letter call sign related to their respective command or coordination function as shown below. This does not preclude the use of daily changing call signs. A force may have more than one CWC (such as a carrier battle force consisting of multiple carrier battle groups, each with its own CWC organization). The first letter of each call sign signifies which CWC the commander or coordinator is subordinate to and is unique to that CWC organization. For example, the first group would be allocated the letter A, the second group B. Therefore, call sign BW is the AAWC of the second group.

NOTE

The call sign AA is reserved for the Fleet Commander.

	Primary	Alternate
CWC	"___"B	"___"V
AAWC	"___"W	"___"C
ASWC	"___"X	"___"Y
ASUWC	"___"S	"___"T
SC	"___"N	"___"D
EWC	"___"E	"___"Z
AREC	"___"R	"___"U
HEC	"___"L	"___"H
MWC	"___"G	"___"F
SOCA	"___"J	"___"K

4124 USE OF RATT FOR TACTICAL MESSAGES

a. Where voice circuit encryption/decryption equipment is not available, secure RATT should be used whenever possible to pass intra-force tactical signals.

b. All tactical signals passed via RATT circuits are to:

(1) Bear the precedence IMMEDIATE.

(2) Bear a sequential serial number and DTG.

(3) Be identified by TACSIG as the first word of the text.

(4) Be given RUSH DISTRIBUTION only and subsequently filed.

c. Tactical RATT cannot be used to transmit EXECUTIVE METHOD messages.

4125 DATA LINK

For details of communications and circuits associated with data compilation, see Chapter 4, Section I.

4126 GENERAL

Tactical data links are communication paths used to transfer information from tactical data system (TDS) equipped units to both TDS- and non-TDS-equipped units. These links permit a rapid exchange of information as they automatically exchange data between the units participating. The information transferred may be used for picture compilation or to order specific action by units or weapon platforms.

Voice communications must be used to pass all the appropriate information to non-link-fitted units and may be required to assist in the management of links.

4127 TYPES OF DATA LINK

The following NATO data links are associated with maritime operations:

a. LINK 1 is the NATO Air Defense Ground Environment (NADGE) link between air defense sites in Europe.

b. LINK 4 is used as a ground and ship-to-air link for the control of aircraft.

c. LINK 11 is an automatic medium-speed link used for the exchange of picture compilation and command and control information between ships and between ships, aircraft, and shore stations.

d. LINK 14 is a semiautomatic data link transmitted by selected TDS units, a computer-generated RATT transmission for the benefit of non-link-fitted ships. Termination in the receiving unit is be teleprinter with manual or automatic plotting.

e. LINK 11B is an automatic medium-speed link used for the exchange of the tactical picture between U.S. maritime units (forward) and U.S. military units ashore.

f. LINK 16 is a real-time, ECM resistant, secure, bit-oriented data link using time-division multiple access technology for information exchange in contact reporting, aircraft control, weapons coordination, and command and control.

4128 PROCEDURAL STANDARDS

These are detailed in relevant publications of the ADatP series.

4129 EMISSION POLICY

The Emission Policy (EP) is set forth in Chapter 5.

4130 COMMUNICATIONS SECURITY (COMSEC)

4131 COMSEC PROCEDURES

a. COMSEC procedures are designed to protect communications transmissions from exploitation by hostile forces. These include:

(1) Control of radiated power.

(2) Use of low-grade codes to protect voice transmissions.

(3) Use of covered (electronically encrypted) circuits.

(4) Use of authentication (see Articles 4132 and 4133).

(5) Minimal transmissions on communication circuits designated for use by the EP and strict circuit discipline.

(6) Frequency selection to best exploit the medium in which the transmission is effected, including the use of LRI techniques.

(7) Attention to equipment maintenance to produce minimal internal noise and nullify the possibility of radiation of encrypted or unencrypted traffic from the superstructure of the transmitting unit or other improper antenna.

b. COMSEC procedures form an integral part of electronic protective measures (EPM).

4132 AUTHENTICATION

a. Principles. Authentication is used as a measure of protection against imitative deception on communication circuits. Current authentication procedures are based upon the following principles:

(1) Authentication should not be used unless warranted by the degree of risk that imitative deception may be attempted by the enemy.

(2) When used, the amount of circuit time devoted to the procedure should be the minimum consistent with the achievement of an acceptable level of protection against the unit employing imitative deception.

b. Risk of Imitative Deception. Risk exists on all types of uncovered circuits, and tactical voice circuits are an obvious potential target. Morse circuits, which may replace certain RATT channels that have been subjected to heavy ECM, may be vulnerable to imitative deception. The risk of imitative deception will depend upon what the enemy has to gain from its employment in any tactical situation and governs the establishment of the authentication policy (see Article 4133).

(NR) (NMM) (See APP 1 for GINGERBREAD procedures.)

c. Authentication Procedures. Present authentication rules call for the Challenge and Reply mode whenever possible, because it is significantly more secure than the Transmission mode. It does not follow that the lower level of security attainable through the latter is not an acceptable compromise between security and circuit occupancy, when it is backed up by Challenge and Reply, if the credibility of a given message is in doubt. This is amplified in Table 4-1, but it should be noted that it is relatively easy for an experienced unit employing imitative deception to obtain an indate transmission authentication from one circuit and to use it on another; and it is, therefore, a cardinal rule that a receiving station always initiates a Challenge and Reply whenever the transmitting station has not been identified as friendly.

4133 AUTHENTICATION POLICIES

a. Definitions.

(1) Policy ALFA — Enemy forces are likely to use imitative deception; or the use of imitative deception has been confirmed and a resulting change in policy ordered by the OTC.

(2) Policy BRAVO — Imitative deception is unlikely to be used by the enemy.

b. Use of Authentication Policies.

(1) If the tactical situation is in favor of the enemy trying to conduct imitative deception, the full degree of authentication is to be implemented as in Policy ALFA (Occasions 1 to 14 in Table 4-1). This also applies when imitative deception has already been confirmed. To guard against the situation in which the marker attempts imitative deception simply to test the forces reaction (and the OTC does not wish to reveal the practical effects of Policy ALFA), Policy BRAVO may be ordered by the OTC.

(2) In Policy BRAVO, authentication is used infrequently (Occasions 1 to 8 in Table 4-1). The initial stage of a marking situation is typical of one in which Policy BRAVO would be appropriate: the marker is intent on monitoring rather than interfering with communications. The only benefit to the

Table 4-1. Authentication Policies

Occasion for Use	Type of Authentication
IMITATIVE DECEPTION	
1. When challenged. (A station never responds to a challenge unless it follows on immediately from a transmission they have made.)	Respond to challenge in accordance with Challenge and Reply procedure.
2. a. When Spoofing is suspected.	Challenge and Reply
b. To check identity of originator of an unexpected message.	Challenge and Reply
3. On Receipt of a message:	
a. Authenticated wrongly	Challenge and Reply
b. On which authentication is more than 2 minutes time late.	Challenge and Reply
c. Which was not authenticated when it should have been.	Challenge and Reply
4. a. Joining a circuit.	Challenge and Reply
b. Rejoining a circuit after a long absence (in excess of an hour).	Challenge and Reply
5. a. Imposing radio silence.	Transmission
b. Broadcasting to a unit under silence, or transmitting 'blind'.	Transmission
c. Requiring a unit to break silence.	Transmission
6. Making enemy contact or amplifying reports.	Transmission
7. Changing authentication policy in force.	Transmission
8. Ordering to change watch, circuit, or frequency.	Transmission
9. Initiating EPM procedures.	Transmission
10. Detaching a unit; changing screening stations; or employment of escorts and helicopters.	Transmission
11. Altering course of speed of the main body.	Transmission
12. Transmitting groups from Action Table.	Transmission
13. Calling ZIPPO.	Transmission
14. As directed by the command (i.e., when important tactical signals are made).	Transmission

marker in attempting imitative deception would be to assess the forces ability to recognize and respond to his efforts. With this level of imitative deception threat and the possibility of it continuing for a period, it will probably be the OTCs wish to relax from his full degree of authentication.

c. Ordering Authentication Policies. The authentication policy is ordered by the brevity word OYSTER.

4134 — 4139 SPARE

4140 ANTIAIR WARFARE (AAW) COMMUNICATIONS

AAW communications are used for picture compilation and weapon system coordination. Well-coordinated AAW measures require a rapid and reliable flow of data between units of the force. When coordinating AAW activities one or more of the following nets — AAW reporting net, AAW

coordination net (force/sector), or AAW coordination and reporting net may be used. The joint AAW shore coordination net may be used when coordinating activities with shore air defense authorities.

If equipment limitations preclude manning of all assigned AAW nets by certain units, the affected units will report this to the AAWC for resolution. If the AAWC is unable to resolve the problem without affecting other warfare missions, the matter will be referred to the OTC for resolution.

4141 AAW REPORTING NET

The AAW reporting net, normally an HF (SSB) voice net controlled by the FTC-A, is used for exchanging information about the positions, identities, and supplementary information of air contacts. The duty of FTC-A is normally held by the AAWC, but may be delegated.

4142 AAW COORDINATION NET (FORCE/SECTOR)

This net is normally an HF (SSB) voice net controlled by the AAWC or SAAWC. Main types of traffic are:

a. Threat warnings and ZIPPO calls.

b. Orders relative to CAP or AEW assignments, stationing, and relieving.

c. Weapon coordination (target assignment, weapon designation).

d. Weapon restriction orders relative to safety sectors.

e. Target engagement messages (TEMs).

f. Reports of AAW ammunition states.

g. Coordination of homing for lost aircraft.

h. Coordination and direction of the initial phase of SAR.

i. Shore coordination when appropriate.

4143 LOCAL AAW COORDINATION NET

This is a UHF voice net controlled by the LAAWC. The main uses of this net are to:

a. Provide a clear picture of the local air situation to enable point defense weapon controllers to identify targets.

b. Promulgate threat warnings and ZIPPO calls.

c. Establish watch zones.

d. Issue weapon restriction orders.

4144 INNER WARFARE NET

This is the primary AAW voice coordinating, control, and reporting net for all AAW capable units within the inner defense zone (IDZ). All aircraft transiting the IDZ will check in with the inner defense

zone coordinator (IDZC) upon launch from CV and when entering the IDZ at 100 nm from CV. Net control is IDZC.

(NC) (NMM) The IDZ will normally be established at 100 nm from CV.

4145 OUTER WARFARE NET

This is the primary CAP/AEW UHF reporting net. Nonorganic aircraft entering the AAW surveillance area will check in with the outer defense zone coordinator (ODZC) on this circuit to receive clearance into the area. Net control is ODZC.

4146 COMBINING AAW NETS

In order to economize on the number of HF SSB sets in use, the AAW coordination and AAW reporting nets may be combined into a single net, known as the AAW coordination and reporting (AAW (C&R)) net. This is the primary voice coordinating, control, and reporting net for IDZC, ODZC, and AAWC. This net is not to be confused with the SNIP net described in Article 4147. The success of the combined net depends on good circuit discipline; the ability to pass information depends on the complexity of the real-time situation. However, it is essential that the following information be included:

a. Initial detection and tracking reports of evaluated threats.

b. Engagement and results of engagement.

c. Tracking reports of friendlies that could be mistaken as hostile.

d. CAP and missile ship position reports when not on station.

e. CAP, AEW, and ASW aircraft launch and mission reports.

4147 SINGLE NET INFORMATION AND PLOTTING (SNIP)

This is the primary HF net used between SAAWCs to coordinate AAW measures. The SNIP net is controlled by the AAWC. SAAWCs will use other nets to affect tracking and weapon control functions within their respective sectors of responsibility.

4148 JOINT AAW SHORE COORDINATION (JAAWSC)

This net is used for selective reporting of the air picture between the air defense agency ashore and the AAWC and AEW aircraft, when appropriate.

(NR) (NMM) It may also be used to pass some TASMO messages (see ATP 34) and intercontroller and aircraft handover traffic.

4149 AAW DATA LINKS

a. Link 4A. Primary means of communication between E-2C/E-3/TDS (Link 4) ships and CAP, whether it is one-way close control, two-way close control, or one-way broadcast control.

b. Link 11 (UHF/HF). Used to exchange track data and weapons control information between AAW TDS equipped units and is the primary means by which IDZC and ODZC exchange information.

(1) This circuit is essential to AAW units within a time-critical IDZ.

(2) For purposes of the outer air battle (OAB), Link 11 net participants should be held to a minimum with an AEW acting as NCS.

(3) Silent SAM units in the ODZ will receive tactical AAW picture via Link 11 (receive only). This operation permits units detecting new contacts to get the information rapidly on the data link.

4150 (NC) (NMM) AAW CALL SIGNS

Encrypted or one- or two-letter call signs may be used on AAW circuits. The OTC will promulgate which system will be used in his force. When lettered call signs are used, they will be assigned in the OPTASK AAW message. Letter designators are assigned to AAW units as follows:

a. W — Collective call sign for all primary and secondary AAW units.

b. _W — Antiair warfare commander (AAWC) for a specific CWC organization. Remark: The first letter of this call sign is significant and unique for the CWC organization to which the AAWC belongs. The first battle group will be allocated the letter A, the second B, etc.

c. _C — Alternate AAWC for a specific CWC organization. For first letter see remark above.

d. D to P — Single letters for primary AAW units.

e. Q to R — Single letters for EW aircraft.

f. S — For all ASUW units.

g. T to Z (except W) — Single letters for AEW stations.

h. Dual letters for secondary reporting units. First letter of call sign is that of primary AAW unit assigned as LAAWC. Second letter is A to Z (except I and O). Ensure call signs assigned to secondary reporting units do not conflict with those previously assigned to warfare commanders and coordinators.

4151 — 4154 SPARE

4155 SURFACE WARFARE COMMUNICATIONS

a. Surface Surveillance. Communication requirements for surface data compilation are detailed below.

b. Surface Action Group (SAG). SAG communications are described in Article 4157.

c. Air Coordination. Requirements for air coordination communications are in Articles 4140 through 4150.

(NR) (NMM) TASMO communications for surface warfare are in ATP 34.

d. Over-the-Horizon Targeting (OTHT). Careful thought must be given for the communication requirements for OTHT. Targeting units may well operate outside normal UHF range and may require the use of HF (subject to emission policy). By virtue of their important function, OTHT communications are also likely to be the object of ECM effort by an enemy, and antijam alternatives should be allocated.

4156 SURFACE NETS

The circuits described below are primarily used for surface data compilation. Other activities may require additional communications.

a. TF/TG Reporting UHF. This net is used for initial raid reports to alert units within a group.

b. TF/TG Reporting HF(V). This is the primary net for surface data compilation in a force and is to be guarded by CTGs/CTUs, major units, and all detached units in the disposition. In addition, all surface units should maintain receiver watch on the circuit. The net will be used as follows:

(1) By the OTC to pass tactical signals of an urgent nature to the disposition when passing a message by other means would be detrimental to the operation.

(2) By the FTCs to:

(a) Pass all filtered raid and EW reports to the OTC.

(b) Pass all position reports of own ships and aircraft (or groups of ships for individual task groups).

4157 SAG COMMUNICATIONS

a. Control Net. When the formation of a SAG is planned and adequate warning is given, there will be no difficulty in activating a prepared communication plan.

(NC) (NMM) However, this may not be the case when a SAG is formed in an emergency to counter a sudden threat. In this case, the SAG shall continue employing the present control net. The OTC/SC should shift the remainder of the force to an alternate circuit.

b. Single-Letter Visual Signals. To counter an enemy capability to intercept or jam tactical communications, ships detached to carry out SAG duties must be able to communicate without radio. This may be achieved by use of the Single-Letter Maneuvering Signals and Single-Letter Action Signals in ATP 1, Vol. II. Such signals may be used without further orders as soon as the SAG is formed. SAG control and tactical nets are still to be manned, but should be used for vital information in emergency only.

4158 — 4159 SPARE

4160 (NC) (NMM) ANTISUBMARINE WARFARE (ASW) COMMUNICATIONS

ASW communications are used for picture compilation and weapon system coordination. The basic communications organization for ASW is in ACP 176, and consideration must be given to the special requirements in the tactical employment and coordination of submarines and units with long-range passive sensors. These are further set forth below.

a. Submarines. The submarine must operate in coordination with other units in order that its potential may be fully exploited. This in turn requires communications to the submerged submarine on an unscheduled basis; it also may require communications relay depending upon the equipment fits of the submarine and the force ASW commanders ship.

Submarine communications are discussed in Articles 4170 through 4174 and ATP 18.

b. Towed Array. The employment of towed array units requires provision of fast, secure, communication channels. These include secure voice UHF for scene-of-action coordination and UHF/SHF SATCOM to the OTC/ASWC; secure HF RATT may also be required. A dedicated intelligence broadcast may also be required. Specific communication requirements are:

(1) A secure long-range circuit to pass contact information to the OTC/ASWC and for the OTC/ASWC to control the towed array ship(s). A voice circuit is preferable; however, in its absence a secure RATT circuit is acceptable.

(2) A secure circuit is required for towed array ships to exchange contact data for crossfixing. A voice circuit is again preferable. If SATCOM is not available and ships are beyond line-of-sight, it may be necessary to employ a third party to relay this information.

(3) Each towed array ship should be capable of coordinating the localization process with assigned aircraft using secure voice UHF communications.

(4) All towed array units must be capable of receiving the recognized surface and subsurface picture transmitted by the force track coordinator or other authority out to the limits of the ASW area of interest.

(5) A single net may meet the requirements of items 1 and 2. In a small force, it may also include the subsurface raid reporting function.

4161 SEARCH AND ATTACK UNIT (SAU) COMMUNICATIONS

On dispatch of a SAU, responsibility for its communication requirements is transferred from the OTC to the SAU commander. In general, the existing ASW circuits will continue to be manned by the SAU, with the remainder shifting to an alternative ASW control frequency (Procedure ALPHA, see ACP 176) or screen tactical frequency (Procedure BRAVO). Careful thought must be given to the emission policy adopted by the SAU commander to avoid alerting hostile units to the existence, composition, or position of the SAU, and to this end use should be made of standard tabulated messages, such as the ASW Action Table in ATP 1, Vol. II. Single-Letter Maneuvering Signals may be used for SAU action.

4162 — 4169 SPARE

4170 SUBMARINE COMMUNICATIONS

Communications with submarines differ significantly from those with other force assets and present the most significant challenge in effecting mission coordination and tasking. Keys to success are reliable long-range communications between the task group and the SUBOPAUTH and dependable, redundant, on-scene tactical circuits for the exchange of intelligence; command, control, and coordinating information; and targeting data with assigned submarines. Planners and commanders must be familiar with the submarine communication procedures and capabilities that are addressed in detail in ATP 18.

4171 BASIC CONSIDERATIONS AND GUIDELINES

a. Tradeoffs between covertness and coordination will be necessary when conducting coordinated operations. Planning should recognize that communication delays are often a necessary adjunct to submarine operations. Additionally, an inverse relationship exists between the time a submarine spends in a communications posture (depth and speed limited) and mission effectiveness, when the submarines tasking requires it to operate at high speed or below communications depth for extended periods of time. Historically, the submarine operational broadcast controlled by the SUBOPAUTH is the most reliable means of providing coordination, tasking, and intelligence information to submarines. This method is often slower than tactical communications, however, and provision must be made for the rapid, on-scene exchange of intelligence and coordinating information as required by the tactical situation.

b. Brevity. *As a rule, communications with submarines should be brief.*

(NC) (NMM) Structured message formats in ATP 18 are designed to contain all information required by the SUBOPAUTH and individual submarines in a concise summarization. The SUBOPAUTH may edit (or screen off the submarine broadcast altogether) lengthy messages that are not specifically oriented to the submarines employment. The objective is to avoid overloading the submarine communication system with message traffic not directly relevant to submarine/task group operations. Extracts of operational messages with information may be consolidated and included in Submarine Force

Summary and Situation Report messages contained in ATP 18. OPTASK messages, because of their length, normally are not relayed via the submarine broadcast. Nevertheless, they are important, and efforts should be made to provide them by a means other than the submarine broadcast (e.g., mail, courier, shore/guard ship communications, etc.).

4172 SUBMARINE BROADCAST

a. Submarines receive message traffic on an accountable broadcast transmitted by the SUBOPAUTH. How the broadcast is to be used for command and control of units operating with a task group should be coordinated with the SUBOPAUTH prior to coordinated submarine-task group operations. The information transmitted on the broadcast must be prioritized and coordinated with the SUBOPAUTH and SOCA. Generally, those messages containing operational level tasking (e.g., SUBNOTEs) will have first priority, and those for tactical level tasking and coordination will have second priority. Messages generated by the task group may be edited to fit on the broadcast. Use of communications ZPW (automatic cancellation) procedures applicable to perishable information will allow early removal of these messages from the broadcast and significantly reduce overall traffic loading.

(NR) (NMM) Further information on submarine broadcasts is contained in ATP 18.

b. Lead-Time Requirements. Depending on its role and communication schedule, lead time required to ensure submarine receipt of tasking, coordinating instructions, intelligence, etc., can be significant. Unless the submarine is maintaining a near continuous communications connectivity with the SOCA, plans should be based on worst-case message delivery time and maximize use of scheduled submarine broadcast cycles.

(NR) (NMM) Table 4-2 contains examples of lead-time requirements based on normal broadcast cycles of 8 to 12 hours.

Table 4-2. (NU) (NMM) Typical Advance Notification Requirements for Submarine Operations

EVENT	ADVANCE NOTICE (Hours)
Submarine Assignment Request	24 to 48
Mission Change	10 to 14
Waterspace Change Notification	12 to 30
Final Over-The-Horizon Targeting	2 to 3

(NATO-CONFIDENTIAL) (NMM)

c. Maritime Rear Link (MRL). Establishing a MRL between the OTC/SOCA and SUBOPAUTH is essential for most operations and will greatly simplify coordination of submarine tasking and waterspace management requirements.

d. (NC) (NMM) BARNSTORM Procedures. BARNSTORM is a single, serialized message that may be used by the SUBOPAUTH to transmit submarine tasking, area assignment, waterspace management application, intelligence, and other operational information on the submarine broadcast. The objective is to ensure that submarines conducting communications intensive operations receive all required information without placing excessive traffic load demands on the submarine broadcast.

4173 TACTICAL COMMUNICATIONS

a. Specific tactical circuits as well as special communication procedures for submarine coordination should be identified in the OPTASK COMMS. This information should also be included in the initial submarine assignment request. The objective is to ensure tactical communication paths and coordinating instructions are clear to all participants and that necessary and timely intelligence information can be rapidly exchanged between the task group and submarine.

b. GUERRILLA Procedures. The code word, GUERRILLA, is used by a submarine to indicate that it has HIGH PRECEDENCE traffic for the SOCA or a designated commander/unit in the task group. This code word identifies the transmitting ship as a submarine and is intended to alert other circuit operators to clear the net as soon as possible.

(NR) (NMM) Procedures are contained in ATP 18.

c. Tactical Circuits. Communications planning should provide for primary and secondary voice and data circuits for use with the SOCA as well as alternate circuits for urgent communication with any element of the task group. The intent is to provide the submarine a best bet circuit when time is of the essence, while limiting the need for frequent changes in the submarines basic communications plan setup. First priority should be satellite communications (if fitted), followed by line-of-sight UHF, and HF. Changes that do occur should be reflected in periodic Force Summary message updates.

d. (NC) (NMM) Special Communication Windows. Depending on tasking, special communication windows outside the submarines normal broadcast cycle are generally disruptive to submarine operations and, where possible, should be minimized. There are occasions, however, when use is appropriate; e.g., to conduct initial rendezvous with coordinating air or surface forces, to provide updated over-the-horizon cruise missile targeting information to the submarine, or to order/confirm implementation of a contingency plan. Requests for special communication windows may be included in the Submarine Assignment Request and subsequent Force Summary/SITREP messages or discussed directly with the submarine on tactical coordination circuits.

e. (NC) (NMM) UPLINK/DOWNLINK Considerations. Frequently, tactical situations will require immediate communications outside established communication windows. Procedures for UPLINK and DOWNLINK should be clearly specified in the Submarine Assignment Request or appropriate OPTASK (if held by the submarine) and changes identified in the Force Summary message.

(1) UPLINK.

(a) SATCOM Buoys. For submarines so equipped, SATCOM buoys can be used to send messages via SSIXS to the SUBOPAUTH for relay to the SOCA. Contact reports sent via SATCOM buoy are normally recorded in OTH GOLD format. This permits target data to be entered directly into the supported forces intelligence data base.

(b) ECB/SLOT Buoys. Submarine-launched expendable communications buoys (ECB) and one-way tactical (SLOT) buoys are a reliable communications option if the submarine must remain at search depth. ECB/SLOT buoy use requires that an ASW aircraft be available for monitoring. If continuous aircraft coverage cannot be maintained, specific monitoring periods that will be available should be made known to the submarine. The useful range of ECB/SLOT buoy radio transmissions is limited to line-of-sight range and may further be reduced by sea state and low-power output.

(2) DOWNLINK.

(a) Keyed Sonar. Depending on environmental conditions, keyed sonar provides a reasonably reliable DOWN-LINK for Bellringer. Under good conditions, high-power, low-frequency sonars can be effective if the transmitting surface ship is within 40 to 70 nm of the submarine. PROBE ALERT, a modification to certain US sonars, provides a coded pulse capability. Arranging specific signals to be used and keeping them simple and few in number, before the operation, will facilitate communications on both the transmitting ship and receiving submarine. Both collective and individual submarine callup codes should be considered if multiple submarines are assigned to a task group. ATP 18 contains further details on keyed sonar employment.

(b) Sound Underwater Signal (SUS). Two general types of SUS are available. One employs explosive charges to produce an omnidirectional, broadband signal. The other is nonexplosive and uses a battery-powered device that alternately transmits discrete preset frequencies. Pulse length and sequence may be varied on some systems. Keyed sonar (PROBE ALERT) and SUS are overt acoustic communication methods that can reveal the presence of the transmitting unit as well as the possible presence of a friendly submarine. Depending on the scenario, geographic location, and EMCON plan in effect, deception tactics using routine, random transmissions from unit(s) of the force should be considered whether a submarine is assigned or not. ATP 18 contains further details on SUS codes and employment.

4174 SUBMARINE REPORTING

Specific submarine reporting requirements must be tailored to the scenario and clearly understood by all parties prior to operations. Keeping the SOCA informed of contacts, search and engagement results, intentions, and status is essential. Prompt contact, post-engagement, and periodic situation reports from each submarine are key to the SOCA maintaining a master fused plot of operations, and the OTCs ability to coordinate, allocate, or reassign assets as the operational situation evolves.

(NR) (NMM) Recommended communication traffic handling and event sequencing procedures are addressed in ATP 18. Message formats for contact and periodic situation reports are contained in APP-11.

4175 CONVOY COMMUNICATIONS

Convoy communications will be conducted on International Maritime Mobile (IMM) single frequency VHF channels. As a minimum, there is a need for:

a. A channel, with several alternatives, for communication between the Convoy Commodore and the ships of the convoy.

b. A separate channel for communication between the OTC and the Convoy Commodore.

4176 — 4179 SPARE

4180 AIRCRAFT COMMUNICATIONS

4181 MARITIME PATROL AIRCRAFT (MPA) COMMUNICATIONS

a. Area Operations. MPA on area operations will establish two-way communications with their shore-based controlling authority using the appropriate Maritime Air Communications Organization (MATELO) frequencies. In addition, ground/air broadcasts are available. During area operations, the MPAs first communications priority is to the MHQ. MPA operating on area operations will pass traffic to the MHQ on the Air Reporting and Control net (ARCN), which operates in three modes RATT, voice, and CW (RATT is designed to be the primary). Modes of operation and the primary and secondary frequencies

for the circuit are to be included in the Form Green/Brown/Brown Deviation to OTCs and submarine operating authorities to allow the circuit to be monitored.

b. Aircraft on Direct Support Operations. These aircraft will maintain communications with their shore-based controlling authority on MATELO until they join the force. Thereafter, they will communicate with the specified agency within the force (e.g., force marshaller or ASW ACU), until they depart the force. Normally, the OTC will exercise tactical control of aircraft through an aircraft control unit (ACU), which will guard operational and safety frequencies. Whenever practicable, aircraft will monitor MHQ ARCNs. Contact reports will not be sent to the MHQ unless ordered specifically by the OTC. During direct support operations, the MPAs first communications priority is to the OTC. Subject to the Emission Policy (EP), contact reports may be sent to the OTC on HF if contact is not possible on UHF. On departing the force, aircraft will re-establish communications with their shore-based controlling authority on MATELO. The following general communication procedures apply during direct support operations:

(1) RATT Procedures. MPA on direct support can use RATT:

(a) To pass joining messages.

(b) To overcome communication problems encountered when the identification safety range (ISR) is greater than the UHF communication range.

(c) To allow exchange of tactical information between MPA and surface/subsurface units.

(d) **(NC) (NMM)** To allow submarines to operate Post Box and Blind Broadcast procedures.

(e) To provide the OTC secure communications with submarines operating in associated or direct support.

(f) When necessary to clear urgent signal traffic from surface forces to shore authorities.

(2) UHF Procedures:

(a) Read-back procedures are not to be used.

(b) Secure RATT may be used on UHF circuits, if fitted, to achieve the communication requirements listed in paragraph b(1).

(3) (NC) (NMM) SITREPs to OCA. If the EP permits, the aircraft is to transmit an encrypted encoded SITREP to the OCA on completion of an incident after informing the OTC of the shift of HF channel. If this is not permissible while on task, the report is to be transmitted during the transit back to base when the aircraft is at least 100 nm from the force. Detailed communication procedures that are to be used on direct support operations are contained in ACP 176 and ATP 28.

c. Air/Submarine Operations.

(1) Communications between MPA and submarines will be primarily by UHF in the following preferred order:

(a) Secure voice.

(b) Secure UHF RATT.

(c) Uncovered UHF voice, using low-level code.

(2) HF communications will normally be restricted to the interception of blind or indirect read-back broadcasts by the submarine.

(NR) (NMM) Messages for relay via the MPA to other units or shore authorities are to be formatted in accordance with ACP 127 procedures. (See ATP 28.)

d. Maritime Air Control Authorities (MACA) (may be a cell within the MHQ). All MACAs will monitor circuits during MPA area and Direct Support operations. Messages received by a MACA from MPA will be relayed on to the aircraft's parent MACA.

e. MPA Control Nets General.

(1) A MACA, when required, will communicate with and control aircraft by the following types of communication:

(a) Point-to-point communication.

(b) Air/ground/air communication.

(2) During area/surveillance operations, MPA will be under the control of the OCA/parent MACA; however, other MACAs within the area should also be information addressees on message traffic. During Direct Support operations, MPA will be under the tactical control of the OTC.

4182 — 4184 SPARE

4185 HELICOPTER COMMUNICATIONS

Communications with helicopters place primary reliance upon radio, but visual signals may be used for short-range communication (e.g., in launch and recovery operations) when a restrictive emission policy is in force. The aircraft's communication capability must be carefully considered when the emission policy and communications plan are formulated.

(NC) (NMM) Helicopter communication fits are broadly detailed in ATP 29. When more specific information is required, OPSTAT UNIT (see APP-11) may be used as a means of promulgation.

a. (NR) (NMM) Circuits. These will normally be specified in the OPTASK AIR (see APP-11) and detailed in the COMPLAN. Circuits available for this function are described in ACP 176.

b. (NC) (NMM) Communications Relay. Some helicopters have a capability to monitor SLOT buoys and may be used, subject to other screening commitments, to relay intercepted messages to the OTC or SOCA (ASWC).

c. Tactical Data Links. Some helicopters have the capability to communicate with a parent ship through a tactical data link.

4186 HELICOPTER CONTROL NETS GENERAL

a. Communication Circuits. Communication nets for helicopter control are detailed in ACP 176. Selection of a suitable circuit will necessarily be a function of the helicopter's employment, but the OTC must bear in mind the limited communication facilities available in most aircraft and control units. Where interoperation with other types of aircraft is required (e.g., in ASW), it will normally be prudent to use a common control circuit for both to aid information flow and to economize on communication equipment and frequencies.

b. Emission Security (EMSEC). Care must be taken that transmissions between ships and aircraft are subject to the same EMSEC constraints as those between other force units. Details of EMSEC procedures are in Chapter 5.

c. Voice Procedures. Voice procedures for helicopter control are in APP 1.

d. Brevity Code Words. Brevity code words used in helicopter control are in APP 7.

4187 — 4189 SPARE

4190 COMMUNICATIONS FOR DECENTRALIZED COMMAND AND CONTROL

a. General. When the OTC delegates tactical control of units in a force or group as described in Chapter 1, there will be specific communication requirements between the OTC and appointed warfare commanders and coordinators, and between warfare commanders and coordinators and their assigned units. To meet these requirements, the OTC and warfare commanders and coordinators have certain circuits, described in ACP 176, at their disposal.

b. Plans. When drafting a communications plan, the OTC and warfare commanders and coordinators must consider the communications assets of units assigned. Smaller units can easily become overburdened by too great a communication requirement. Requirements for manning the nets and the net priorities should take into account each ships role as well as its abilities and limitations. To allow for required maintenance and emergent casualties, communications plans should, as a goal, task no more than 90 percent of the communications equipment in any unit. To accomplish this, it may often be necessary to combine some circuit requirements and/or assign guard ships for some nets. Communications plans should include instructions for smooth transitions through various EMCON conditions. UHF airborne relay planning must also be included to permit an uninterrupted flow of essential communications without violating RADHAZ restrictions or EMCON plans.

c. Circuit Operation. Standard operating procedures apply to each circuit. The OTC and coordinators will act as net control station (NCS) on their respective warfare nets. Warfare commanders or their FTCs will be NCS for their respective coordination and reporting nets. NCS duties will be transferred from a primary commander to an alternate commander when the warfare commander role is transferred. NCS will be responsible for maintaining proper circuit discipline and ensuring that proper security procedures are followed. Authentication and encryption will be used as required on all uncovered circuits in accordance with the OTCs and/or EWCs instructions. Where possible, voice circuits should be operated in a secure mode.

d. Merger of Communications Circuits in Combined TG Operations. The merger of two independent TGs into a combined TF will require one set of warfare nets to be secured while additional units join the remaining nets. Having a number of units switching circuits can be complicated and, if not handled correctly, cause a considerable amount of confusion. A suggested procedure for shifting warfare coordination responsibilities upon joinup of two major TGs might involve the following:

(1) The OTC of the force/group being joined specify 24 hours in advance the EMCON plan in effect and tactical communications circuits currently in use.

(2) Designated OTC issue a change to the OPGEN to reflect new warfare commander and coordinator assignments (24 hours in advance).

(3) Designated OTC change delegated responsibilities to warfare commander and coordinator, if required, by issuing change to the OPGEN (24 hours in advance).

(4) Post-joinup, warfare commanders and coordinators issue changes to warfare commander and coordinator OPTASKs if required (12 hours in advance).

SECTION II — TACTICAL ASPECTS OF SATELLITE COMMUNICATIONS (SATCOM)

4200 INTRODUCTION

Satellites provide a method of line-of-sight communications over long distances. They have the advantage of being little affected by ionospheric phenomena and thereby offer high availability and reliability. SATCOM is limited in range only by the requirement for both shore and ship terminals to be within the earth coverage of the satellite antenna, and communication links via satellite have therefore assumed a most significant role in communication between the OTC afloat and commander ashore.

4201 SYSTEMS

Technical details and procedural instructions for use of SATCOM are given in national publications, which may be released to other nations, as required. A number of commercial systems are available for use by the merchant fleets of the world. These provide telephone and telex facilities and may be used with appropriate off-line encryption to carry tactical traffic to suitably equipped auxiliaries.

4202 EMPLOYMENT

Military SATCOM systems generally provide secure transmissions and reception facilities for telegraph, voice, and data traffic. They may be provided for strategic or tactical use.

a. Strategic Use. Because of their excellent long-distance performance, the majority of SATCOM channels are used for strategic purposes between maritime forces and shore-based authorities. Where traffic to and from a seaborne commander is heavy, satellite communications channels may be configured as maritime rear link or full period terminations.

b. Tactical Use. Certain SATCOM systems are configured for tactical exchange of voice or data. Where such a requirement is identified for strategic systems, this can be achieved, with the concurrence of the operating authorities concerned, by transmission of traffic via shore for automatic retransmission over satellite broadcast or rear link. This procedure may also be used for the radiation of a TF/TG broadcast using shore-based transmitters, but the technique is expensive in satellite capacity and should be used sparingly.

4203 ELECTRONIC WARFARE (EW) CONSIDERATIONS

a. Security. By virtue of the highly directional nature of satellite transmissions from the mobile terminal, and the narrow beamwidth employed by them, SATCOM systems are less susceptible to D/F than are HF transmissions. Nonetheless, they employ high power, generate significant sidelobes, and, particularly at low angles of elevation, may be detected by enemy ESM at long ranges.

b. Effect on Friendly ESM. Because of the frequencies at which they operate, satellite transmissions may affect the sensitivity of friendly ESM equipments. This factor, and the susceptibility of SATCOM to intercept and D/F, must be considered when the emission policy is formulated.

c. ECM. Most SATCOM systems are vulnerable to ECM. Where SATCOM provides a primary communications route, consideration should be given to the provision of alternative means of transmission as a backup.

d. Limitations. When operating in high latitudes, continuous SATCOM is not possible because of coverage limitations from geosynchronous orbits.

CHAPTER 5

Electronic and Acoustic Warfare (EAW)

SECTION I — OBJECTIVES AND ORGANIZATION

5100 INTRODUCTION AND SCOPE

This chapter covers the basic procedures and instructions for electronic and acoustic warfare together with emission policy and control. The ability of a military force, as part of the overall information operations plan (see AJP-1), to make effective use of the electromagnetic and acoustic spectrum while, at the same time, preventing or reducing the enemy use thereof, will play an important part in deciding the outcome of any future conflict. A comprehensive and viable emission plan together with capable electronic and acoustic warfare systems are as important as any other plan or weapon system in a commander's arsenal, and must be fully integrated into all military operations. For the purpose of this chapter, EAW means electronic and/or acoustic warfare.

(NC) (NMM) Detailed electronic and acoustic warfare (EAW) information is contained in ATP 31 and ATP 28, respectively.

5101 DEFINITIONS

a. Electronic Warfare (EW). Military action to exploit the electromagnetic spectrum, which encompasses the search for, the interception and the identification of the electromagnetic emissions, the employment of the electromagnetic energy, including directed energy, to reduce or prevent hostile use of electromagnetic spectrum, and actions to ensure its effective use by friendly forces.

EW comprises three divisions:

(1) Electronic Warfare Support Measures (ESM). That division of EW involving action taken to search for, intercept, and identify electromagnetic emissions and locate their sources for the purpose of immediate threat recognition. It provides a source of information required for immediate decisions involving ECM, EPM, and other tactical actions.

(2) Electronic Countermeasures (ECM). That division of EW involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum, through the use of electromagnetic energy. There are three subdivisions of ECM — electronic jamming, electronic deception, and electronic neutralization.

(3) Electronic Protective Measures (EPM). That division of EW involving actions taken to ensure friendly effective use of the electromagnetic spectrum despite the enemy's use of the electromagnetic energy. There are two subdivisions of EPM — active EPM and passive EPM.

(a) Active EPM. Detectable measures, such as altering transmitter parameters as necessary, to ensure friendly effective use of the electromagnetic spectrum.

(b) Passive EPM. Undetectable measures, such as operating procedures and technical features of equipment, which are meant to ensure friendly effective use of the electromagnetic spectrum.

b. Electronic Order of Battle (EOB). A list of emitters used by a force or in a scenario with specific information on the electromagnetic characteristics, parameters, location, and platforms of these emitters.

c. Acoustic Warfare (AW). Military action to use the underwater acoustic spectrum to the advantage of friendly forces by exploiting enemy emissions and controlling friendly emissions.

There are three divisions within AW:

(1) Acoustic Warfare Support Measures (AWSM). That division of AW involving actions to search for, intercept, and identify radiated underwater acoustic energy for the purpose of exploiting such radiation. The use of AWSM involves no intentional underwater acoustic emissions and is generally not detectable by the enemy.

(2) Acoustic Countermeasures (ACM). That division of AW involving actions taken to prevent or reduce an enemy's effective use of the underwater acoustic spectrum. ACM involves intentional underwater acoustic emissions for deception or jamming.

(3) Acoustic Protective Measures (APM). That division of AW involving actions taken to ensure friendly effective use of the underwater acoustic spectrum, despite the enemy's use of acoustic energy. APM involves anti-AWSM and anti-ACM, and may not involve underwater acoustic emissions.

(R)

d. Acoustic Spectrum (Freq KHZ)

	FROM	TO
ULFA	-	0.001
ELFA	0.001	0.01
VLFA	0.01	0.75
LFA	0.75	3
MFA	3	15
HFA	15	100
VHFA	100	300
UHFA	300	500
SHFA	500	+

e. The three divisions of electronic and acoustic warfare are parallel and complementary.

f. Frequency Management. Ensure frequency deconfliction and coordination, with particular concern that safety frequencies are adequately assigned, throughout the force.

5110 DIRECTION AND COORDINATION

5111 GENERAL

The OTC/CWC is responsible for EAW; he may delegate functions in Table 1-8 to an Electronic Warfare Coordinator (EWC) and Table 1-4/1-8 to an Antisubmarine Warfare Commander (ASWC). To best exploit its potential, EAW policies and activities must be harmonized with other warfare policies and activities. The OTC/CWC promulgates the Emission Policy (EP) for the force, which will be reflected in the Emission Control Plan (EMCON Plan). To accomplish the mission, the electromagnetic and acoustic environment in which the force will operate is a major factor of the situation assessment.

5112 FUNCTIONS WHICH MAY BE DELEGATED TO EWC/ASWC

a. Formulation of EMCON Plans. The EWC and the ASWC are the OTC's/CWC's principal advisors on the formulation of his Emission Policy (EP). Once the OTC/CWC promulgates the EP, the ASWC will develop the acoustic portions of the EMCON plans and the EWC will develop the electronic

portions. Both portions will then be incorporated into the force EMCON plans, which will be coherent in intent and support the EP.

b. ESM/AWSM Activities. The EWC/ASWC assign the ESM/AWSM duties and guards as appropriate. They perform the following functions, if delegated by the OTC/CWC:

(1) Issue the list of threat and target emitters (Electronic Order of Battle (EOB)).

(2) Assign the ESM/AWSM duties and ESM/AWSM guards as appropriate.

(3) Coordinate with the AC/AREC/HEC for aircraft support, the OTC/CWC/SOCA for submarine support, and/or the OTC/CWC for surface support.

(4) Coordinate and control ESM/AWSM activities on the appropriate net.

(5) Collect, evaluate, recognize/classify intercepts, and disseminate data.

(6) Correlate information obtained from own sensors with information available from other sources.

(7) The EWC allocates racket numbers.

c. ECM/ACM Activities. The EWC/ASWC coordinate and control ECM/ACM activities respectively within the force. Coordination with all warfare commanders is required. They perform the following functions, if delegated by the OTC/CWC:

(1) Direct the employment of force decoys according to the policy formulated by the OTC/CWC.

(2) Coordinate the employment of active jamming and of electronic neutralization devices according to the policy formulated by the OTC/CWC.

(3) Advise the OTC/CWC on planned responses.

(4) Coordinate with the AC/AREC/HEC for aircraft support, the OTC/CWC/SOCA for submarine support, and/or the OTC/CWC for surface support.

(5) Advise the OTC/CWC, the SC, and warfare commanders on unit disposition to achieve the optimum balance between ECM/ACM effectiveness and counter-surveillance posture.

(6) Promulgate plans to conduct electronic/acoustic deception according to the policy formulated by the OTC/CWC.

(7) The EWC will provide tasking of ECM aircraft.

d. EPM/APM Activities. The EWC manages, monitors, coordinates, and may control EPM within the force. In particular, he monitors compliance with the EMCON plan and assesses force electromagnetic interference (EMI) and force electromagnetic compatibility (EMC). The ASWC carries out similar functions in APM. The EWC also manages the security aspect of force communications.

e. Anti-Intruder Activity. The EWC and warfare commanders may advise the OTC/CWC of anti-intruder policy in peacetime or periods of tension.

f. Cryptological Activity. The EWC advises the OTC/CWC on the use of cryptological assets, both organic and non-organic.

5113 INDIVIDUAL SHIP RESPONSIBILITIES

a. Each Commanding Officer is responsible for the defense of his ship. Therefore, under direct attack, he may lift electronic and acoustic emission restrictions as necessary for self-defense.

b. Detached Unit. When detached, the commanding officer becomes responsible for formulating the EP related to the ordered task, within the framework of the OTC/CWC's overall EP.

5120 VOICE REPORTING

5121 PROCEDURES

(NR) (NMM) Procedures for EW voice reporting are in APP 1; those for AW are in APP 1 and APP-11.

5122 EW REPORTING OF CONFIDENCE LEVELS

a. Recognition of electronic emitters can be difficult, either because transmissions are short, or because transmitted parameters are common to many emitters. False reports may not only lower the confidence of the command in EW, but also may cause wrong decisions. Therefore, an operator is to indicate his confidence in his assessment of an intercept.

b. Confidence levels as indicated are to be used in voice reporting:

(1) Confidence 1: Doubtful. The operator is unsure about the recognition of an intercept because it is based on estimated rather than measured information.

(2) Confidence 2: Possible. The operator has some reservations on the recognition of an intercept because it is based on limited intercept information and/or falls within common parameters of other emitters.

(3) Confidence 3: Probable. Recognition of an intercept based on measured parameters which, although coinciding with those of the stated emitter, are common to some other enemy and/or friendly emitters. The EWC may ask for the spot numbers of alternative emitters.

(4) Confidence 4: Certain. A recognition of an intercept based on measured parameters which coincides accurately with those of the stated emitter.

c. Normally the OTC/CWC/PWCs will indicate in their operational signals the confidence level required for preplanned responses (e.g., SAU/SAG detachment, orders for engagement, etc.).

5123 EW INTERCEPT BEARING ACCURACY

Bearing accuracy of an intercept must be reported as soon as it can be estimated to permit triangulation of the source emitter. Bearing accuracy of any radar jamming experienced should be reported. Accuracy should be reported by use of suffixes detailed at Article 2107.

SECTION II — (NC) (NMM) EMISSION POLICY (EP)

5200 (NC) (NMM) CONSIDERATIONS

a. The Emission Policy (EP) dictates the degree of freedom allowed in the use of electronic and acoustic emitters in a force, the choice of which will be decided by the OTC's/ CWC's assessment and the advantage which may be gained by the enemy from any interception of them. Silence on transmitters is the normal condition and transmitting is the result of a deliberate decision to radiate. The resultant EP should:

(1) Reflect and support the OTC's/CWC's aim.

(2) Take account of the threat, capabilities, and tactics of the enemy.

(3) Cover all aspects of warfare and address all emissions including:

(a) Electro-optical, bridge dial illumination, cigarette glows, de-icing equipment, funnel exhaust, and signal projectors.

(b) Radiated acoustic noise, including nonessential underwater transmissions, operation of auxiliary machinery, cavitation, and nonessential crew activity.

(4) Provide sufficient warning by the use of pickets or specific units on which to base a change in the policy.

(5) Allow for the reaction time of sensors and weapons that have been silent, and the time it takes to build up a picture on which to fight effectively.

(6) Allow for the Rules of Engagement (ROE) in force.

(7) Reflect the relative disposition of maritime units and areas of operation of supporting aircraft, surface ships, and submarines.

(8) Allow for periodic systems checks and maintenance.

(9) Be sufficient for subordinate commanders to construct and recommend appropriate EMCON plans. (See Article 5301.)

5201 (NR) (NMM) SILENT EMISSION POLICY

Transmissions should always be reduced to the absolute minimum required to achieve the aim of the mission. The OTC/CWC must consider the advantages and disadvantages of a silent EP when formulating the EP, and continuously review the need to transmit.

a. Some advantages of silent EP are:

(1) Deny passive information.

(2) Conceal identity of specific units.

(3) Assist own passive sensors.

(4) Achieve surprise.

(5) Deny intelligence from communications.

(6) Deny fire control solutions to weapons fired on passive data.

(7) Support to antiradiation missile (ARM) measures.

(8) Provoke enemy emissions/radiations.

b. Some disadvantages of silent EP are:

(1) Reduction of warning time and range if enemy is silent.

(2) Reduction of tactical picture.

(3) Risk of surprise.

(4) Reduction of control and coordination.

5202 (NC) (NMM) ENEMY CONTACT

Once the enemy has been detected, it is important that the degree of relaxation correctly relates to the degree of threat posed. Therefore, not all restrictions should necessarily be lifted at the first indication of enemy presence.

5210 (NC) (NMM) BREAKING SILENCE

There are certain occasions when a commanding officer may break emission silence, although by doing so he violates the plan in force. If he does, the OTC/CWC must be informed. The fact that silence has been broken by a unit does not automatically change the policy in force. Any change must be reflected in the EMCON plan and ordered by the OTC/CWC.

a. Standard occasions for breaking emission silence, which may be modified by the OTC/CWC, are:

(1) To engage an enemy detected near or within weapon release range in self-defense or in close defense of a HVU.

(2) To prevent imminent collision, grounding, or aircraft crash.

(3) When released by planned responses.

b. Standard occasions for breaking radio silence, which may be modified by the OTC/CWC or aircraft controlling authority, are:

(1) To report contact with the enemy.

(2) To answer the authenticated call of a senior officer, including an instruction to acknowledge immediately.

(3) To transmit a distress message.

(4) To prevent friendly units being fired upon by friendly forces. This includes reporting of ETA by joining aircraft.

(5) To report urgent defects which might prevent accomplishment of assigned mission.

(6) During exercises, to make communication and position checks as required by peacetime regulations.

c. Examples of OTC's/CWC's modifications might include:

(1) Reporting unidentified radar, sonar, and ESM detections.

(2) Transmitting negative enemy contact reports.

5220 (NC) (NMM) POST-ATTACK EMCON AND COMSEC

On completion of any action that will have lifted restrictions on emissions and COMSEC, the OTC/CWC/EWC/ASWC must ensure that a return to a firm control of EMCON is executed and that COMSEC rules are re-imposed. This is in order to deny the enemy post-attack analysis from passive sensors and will require him to conduct post-attack reconnaissance by other means.

SECTION III — EMISSION CONTROL (EMCON)

5300 EMCON CONSIDERATIONS

The overall EP is promulgated by operation order or signal and describes the policy in broad terms with a brief explanation of rationale. It must be in sufficient detail for both subordinate commanders to apply the EMCON plan and Maritime Headquarters (MHQ) to plan support operations accordingly.

The detailed control for each type of emission is achieved by an EMCON plan covering all emissions. The OTC/CWC should promulgate, well in advance, a number of plans covering all options related to the tactical situation and anticipated changes.

The tactical situations (TACSIT) are listed below:

0 Unknown
1 Forces located and targeted
2 Force location known; disposition unknown
3 Forces not located.

Table 5-1 contains the standard format of an EMCON plan. Methods of signaling EMCON are explained below. Every effort should be made to ensure that air, surface, and subsurface units tasked in support are aware of the force's EMCON plan before arrival. In addition, the OTC/CWC should signal the EMCON plan in force as part of the joining message.

5301 (NC) (NMM) EMCON OBJECTIVES

a. The EMCON Plan is derived from the Emission Policy and is used by the OTC/CWC to control all emitters in order to:

(1) Gain maximum information.

(2) Deny information to the enemy.

b. The EMCON Plan must:

(1) Include all emitters.

(2) Be easy to interpret and understand.

(3) Be in effect at all times.

5310 CONSTRUCTION OF EMCON PLANS

a. In the EMCON Plan format (Table 5-1):

(1) Index Numbers are used to designate the columns assigned to each type of emitter. Spare numbered columns should be used to designate specific emitters whenever it is necessary to issue separate overriding instructions.

(2) Index Letters are used to designate the lines assigned to each type of unit. Spare lettered lines may be used for particular units, or alternatively, a unit may be detailed to use a line other than that normally applicable by using the appropriate signal group from ATP 1, Vol. II.

b. The status of emissions required or allowed for each type of emitter by each type of unit should be defined using a radiation status indicator (RSI) from Table 5-2. RSIs provide sufficient flexibility to meet most situations. A blank space in any EMCON Plan is equivalent to the RSI "S" (silence). EMCON Plans can be ordered and/or amended by Operation Order or MTMS directives, or by using signal groups from ATP 1, Vol. II, and signaled to aircraft by using the appropriate brevity code word. Generally, original EMCON plans are designated by letters; for example, EMCON Plan ALFA. Modified plans are designated by the same letter as the original plan, followed by sequence number of the modification; for example,

Table 5-1. Basic EMCON Plan Format

		SEARCH HEIGHT FINDERS										AI/FC/GMC RADARS										NAVAIDS										ELECTRONIC COUNTERMEASURES																	
	INDEX NUMBERS	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
INDEX LETTERS	EQUIPMENT / TACTICAL UNITS	ALL BANDS	A/B BANDS	C/D BANDS	E/F BANDS	G/H BANDS	I BAND	J BAND	K BAND	CCA/ASI RADAR		ALL BANDS	E/F BANDS	G/H BANDS	I BAND	J BAND	K BAND					ALL NAVAIDS	UHF/VHF BEACON	LF/MF BEACON	RAD ALT DOPPLER	IFF 1/2/3 INTERROGATOR	IFF 1/2/3 TRANSPONDER	IFF MODE 4 INTERROGATOR	IFF MODE 4 TRANSPONDER	RADAR TRANSPONDER	TACAN	ALL JAMMERS	C/D BAND JAMMERS	E/F BAND JAMMERS	G/H BAND JAMMERS	I BAND JAMMERS	J BAND JAMMERS	K BAND JAMMERS	CHAFF CHARLIE	ALL DECM	ECHO ENHANCERS	RADAR DECOYS	COMM JAMMERS									
A	AIRCRAFT CARRIERS																																																	
B	CRUISERS																																																	
C	DESTROYERS/FRIGATES																																																
D	PATROL BOATS																																																
E	MINESWEEPER/HUNTER																																																
F	SUBMARINES																																																
G	LANDING SHIP/CRAFT																																																
H																																																	
I																																																	
J	MAIN BODY																																																
K	SCREEN UNITS																																																
L	PICKETS																																																
M	UNREP GROUP																																																
N	AMPHIBIOUS GROUP																																																
O	MERCHANTS/CONVOY																																																
P																																																	
Q	HELICOPTERS																																																
R	ASW AIRCRAFT																																																
S	ATTACK AIRCRAFT																																																
T	AEW AIRCRAFT																																																
U	MP AIRCRAFT																																																
V	RECON AIRCRAFT																																																
W	STRIKE AIRCRAFT																																																
X	TANKER AIRCRAFT																																																
Y	CAP AIRCRAFT																																																
Z																																																	
AA																																																	
AB																																																	
AC																																																	
AD																																																	
AE																																																	
AF																																																	
AG																																																	
AH																																																	

NOTE

When index numbers are not sufficent, an OTC may allocate additional numbers within the equipment category by prefixing the numerical "1" and repeating as much of the number series as is needed (for example, add 185, 186, and 187 under " radio communications" after 89)

Table 5-1. Basic EMCON Plan Format (Cont.)

	INDEX NUMBERS	EQUIPMENT / TACTICAL UNITS	AIRCRAFT CARRIERS	CRUISERS	DESTROYERS/FRIGATES	PATROL BOATS	MINESWEEPER/HUNTER	SUBMARINES	LANDING SHIP/CRAFT		MAIN BODY	SCREEN UNITS	PICKETS	UNREP GROUP	AMPHIBIOUS GROUP	MERCHANTS/CONVOY		HELICOPTERS	ASW AIRCRAFT	ATTACK AIRCRAFT	AEW AIRCRAFT	MP AIRCRAFT	RECON AIRCRAFT	STRIKE AIRCRAFT	TANKER AIRCRAFT	CAP AIRCRAFT								
		INDEX LETTERS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
OPTICAL ELECTRO-OPTICAL	99																																		
	98	NAV/POSITION LGTS																																	
	97	LASERS																																	
	96	IR COMM																																	
	95	ILLUMINATION IR																																	
	94	IR DECOYS																																	
	93	PANEL/MARKER LGTS																																	
	92	STARSHELL/FLARES																																	
	91	VISUAL COMM (OMNI)																																	
	90	VISUAL COMM (DIR)																																	
RADIO COMMUNICATIONS	184	CELLULAR TELEPHONE																																	
	183	COMMERCIAL SATCOM																																	
	182	UHF SATCOM																																	
	181	SHF SATCOM																																	
	180	EHF SATCOM																																	
	89	LINK MF/HF																																	
	88	HF/MF SHIP/AIR																																	
	87	HF/MF SHIP/SHORE																																	
	86	HF/MF SHIP/SHIP																																	
	85	ALL HF/MF COMM																																	
	84	VHF																																	
	83	UHF SHIP/AIR																																	
	82	UHF SHIP/SHIP																																	
	81	LINK UHF																																	
	80	ALL UHF COMM																																	
ACOUSTIC	79																																		
	78																																		
	77																																		
	76																																		
	75																																		
	74																																		
	73																																		
	72																																		
	71	PROPELLER CAVITATION																																	
	70	SONAR JAMMERS																																	
	69	EER/ACTIVE SONOBUOYS																																	
	68	SONAR ABOVE 15 KHz																																	
	67	SONAR 6-15 KHz																																	
	66	SONAR BELOW 6 KHz																																	
	65	IND ACTIVE DECOYS																																	
	64	SIMULATORS																																	
	63	TOWED DECOYS																																	
	62	UW TELEPHONE																																	
	61	FATHOMETERS																																	
	60	ALL EQUIPMENT																																	

Table 5-2. Radiation Status Indicators (RSIs)

The following RSIs indicate when equipment may be operated without seeking the OTC/CWC's permission, or operated outside the standard occasions for breaking silence:		
A	Aircraft	May be operated if essential for safe operation of aircraft and helicopters.
B	Night	Between sunset and sunrise.
C	Day	Between sunset and sunrise.
D	Distance	When clear of nearest friendly unit or position designated. Distance to be specified in miles (e.g., D30).
E	Essential Transmission	Essential transmissions maybe made without seeking the OTC/CWC's permission. (Note 1)
G	Guard	To be operated or guarded (COMMS) by unit designated on behalf of other units. (Note 2)
S	Silence	No emissions permitted without the permission of the OTC/CWC or in accordance with the standard occasions for breaking silence. Equipments that "leaks" in dummy load or in standby should be switched off. (Note 3)
T	Reduced Output	Brilliance/output level reduced to the minimum level required for safety and/or to obtain the required operational results.
U	Transmitter Permitted	Transmissions may be made. (Note 1)
X	Specific Emissions	The TCO/CWC must specify when the emitter may be used. (Note 4)

NOTES: 1. Units should transmit for as short a time as possible to achieve the aim, and should avoid emitters that cause interference. Sonars may use random mode, scale, power, and frequency changes.

2. Details of guard ships and how they transmit information (e.g., data link) should be outlines in the EP. The EMCON Plan must ensure that guard ships are provided with the means to transfer data to the force. Guardship duties can be rotated at irregular intervals between appropriate units. RSI "G" for communications should detail one unit for a named circuit (e.g., radar guard ship RSI "G" for HF JAAWSC). This should not be confused with setting watch on circuits as detailed in the OPTASK COMMS.

3. A blank space in any EMCON Plan is equivalent to the RSI "S" (silence).

4. XRAY is to be used to indicate unique occasions when an emitter may be used outside the standard occasions for breaking silence and the occasions governed by the other RSIs. These may be, for example, the deployment of decoys against radar satellites, the use of FC radars for height finding, or the use of IFF systems. The OTC/CWC is to specify these occasions for each column.

EMCON Plan ALFA ONE, ALFA TWO. Each modified plan should be considered to be a separate EMCON plan. Units should keep a copy of each modified EMCON plan in order to be able to revert to an earlier plan if required.

5320 (NC) (NMM) EMISSION DIAGRAMS

a. If the OTC/CWC needs emission diagrams, they should be promulgated within the Operation Order or as part of the EMCON Plan. The following factors should be considered when preparing emission diagrams:

(1) Duration of each transmission period. Whenever possible, the duration of transmission should be varied to reduce the probability of intercept.

(2) Random selection of emitters which operate at different frequencies. This reduces the probability of intercept.

(3) Time required for the various emitters to go from a standby to radiate condition.

(4) Percentage of active acoustic and/or radar search required to meet mission objectives.

b. An example emission diagram is provided in Figure 5-1.

Emit (Radar device) in intervals:		
Minutes	Frequency	Power (percent)
00-10	D1	100
10-15	D3	50
15-18	D4	100
18-26	D2	100
26-38	D1	50
38-44	D3	100
44-55	D2	50
55-60	D4	100

(NATO-CONFIDENTIAL) (NMM)

Figure 5-1. (NU) (NMM) Emission Diagram Example

SECTION IV — (NMM) ELECTRONIC AND ACOUSTIC WARFARE (EAW) TASKING

5400 (NC) (NMM) TASKING OBJECTIVES

a. The objective of EAW tasking is to ensure that:

(1) All emissions likely to be intercepted are covered by detection and analysis facilities.

(2) Active assets (e.g., ECM, active sonar, decoys, etc.) are deployed, briefed, and where appropriate, pre-tuned to counter the threat.

b. Overall tasking policy is the responsibility of the OTC/CWC and should be adjusted to meet changes in the tactical situation and equipment availability. The EWC, on behalf of the OTC/CWC, is responsible for the promulgation of, and changes to, EW tasking signals. The ASWC is responsible for the allocation, disposition, and tasking of acoustic resources.

5401 (NC) (NMM) ELECTRONIC WARFARE TASKING

a. Tasking Format. EW tasking is simplified by using a graphic format (such as the one shown in Figure 5-2.)

b. Tasking Message. The EW tasking message is contained in APP-11.

5410 (NC) (NMM) ESM TASKING

a. Factors to be Considered. The EWC should take into account the following factors before issuing his tasking instructions:

(1) Characteristics of enemy equipment, especially of threat emitters. Care should be taken to avoid operator overload. In an expected dense signal environment, tasking of significant target radars should be added to threat radars.

(2) Number, capabilities, and limitations of ESM equipment and associated platforms in the force.

(3) The disposition of units. There may be conflict between the requirements of different warfare areas.

(4) The priority of communications intercepts versus radar intercepts.

(5) The number of communication circuits available.

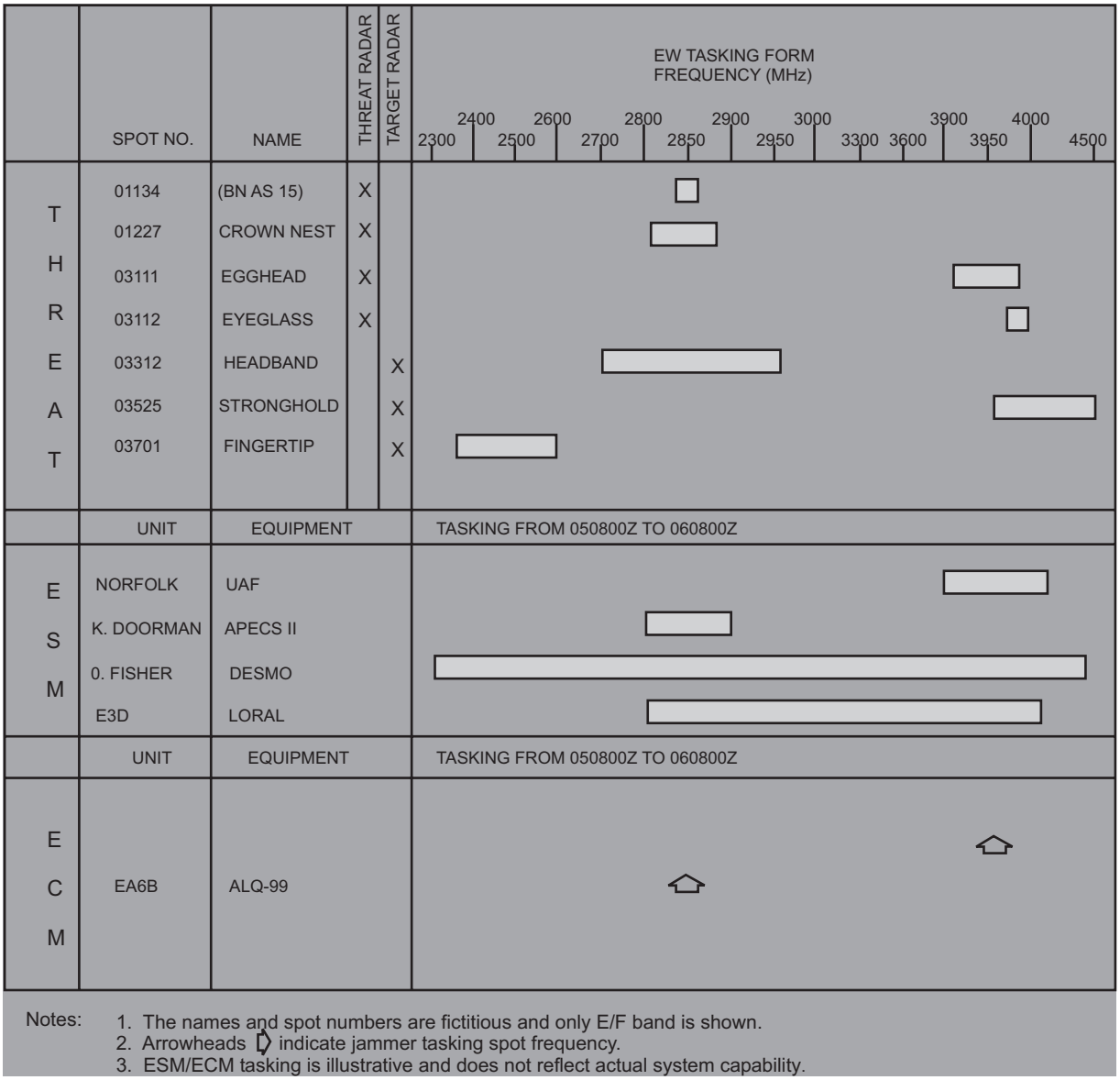
(6) Duration of the operation, if known.

(7) Own emission policy.

b. Equipment Characteristics Affecting Tasking. Considerations affecting tasking of individual items of ESM equipment are:

(1) High-probability, wideband, instantaneous frequency measurement (IFM) equipment should normally be tasked to cover the whole of their bands and/or one of the sub-bands, if applicable.

(2) Low-probability narrowband equipment should be tasked to cover a portion of a frequency band.



Notes:
1. The names and spot numbers are fictitious and only E/F band is shown.
2. Arrowheads ⇩ indicate jammer tasking spot frequency.
3. ESM/ECM tasking is illustrative and does not reflect actual system capability.

(NATO-CONFIDENTIAL) (NMM)

Figure 5-2. (NU) (NMM) EW Tasking Format

(3) Units with automated recognition/classification equipment should be tasked to the frequency range of threat emitters.

c. Threat and Target Emitters. A threat emitter is an emitter, normally associated with a weapon system, the detection of which might indicate that an attack on the force is imminent or in progress. A target emitter is an emitter, the detection of which would indicate the presence of enemy forces.

d. Threat and Target Emitter List (EOB). The OTC/CWC is to issue a list of threat and target emitters in the tasking message. The list of threat emitters will vary according to the intelligence available and the tactical situation. Attention must be paid to the fact that some surveillance emitters can be used for targeting purposes and their data used to assist missile launch. Therefore, they are regarded as both target and threat emitters, depending on the tactical situation.

5411 (NC) (NMM) ECM TASKING

a. Factors to be Considered when tasking ECM equipment:

(1) Characteristics of enemy equipment.

(2) Number and disposition of jamming, deception, and neutralization platforms.

(3) Characteristics of own equipment. Some jammers are ineffective against modern guidance and homing systems, whilst others are for self-protection only.

(4) Jammers should be tasked as far as possible to the emitters against which the ship's ESM equipment is tasked.

(5) Emission Policy.

b. ECM Systems. These systems are divided into two main categories as follows:

(1) Area Defense Systems. These are the systems that are tasked at force level. Systems include force decoys and high-power noise and repeater jammers that may be capable of screening units other than the jamming platform. The decoy deployment policy will be established by the OTC/CWC and promulgated by operation order or signal.

(2) Self-Defense Systems. Self-defense systems include chaff launchers (for both deception and seduction), IR and ARM decoys, and various types of jammers. As self-defense systems, employment of these assets resides with individual ships, unless otherwise ordered.

c. Planned Responses. The OTC/CWC may order planned responses to be used in reaction to threats. When these are initiated, ships carry out the appropriate ECM responses. Careful consideration should be given to planned responses when one or more area defense jammers are in force. Specific tasking instructions should always be given in this instance.

5420 (NC) (NMM) ACOUSTIC WARFARE TASKING

The following factors should be considered in the allocation, disposition, and tasking of acoustic warfare resources:

a. Anticipated threat, including emission characteristics of enemy forces.

b. Number and capabilities of own acoustic assets, including submarines and aircraft.

c. Predicted detection ranges for active and passive equipment, and predicted intercept ranges for active sonars.

d. Radiated self-noise, including its effect upon own detection ranges, and assessed detection ranges by enemy passive equipment.

e. Emission Policy.

SECTION V — EMPLOYMENT OF ELECTRONIC AND ACOUSTIC SUPPORT MEASURES (ESM/AWSM)

5500 INTERCEPTION, DETECTION, AND DIRECTION FINDING (DF) OF TRANSMISSIONS

a. The objective of ESM/AWSM search is to provide the tactical advantage of "first sighting" by passive means. The first indication of an enemy's presence may be provided by interception of his emissions. In addition, early interception allows the timely preparation of countermeasures.

b. In order to conduct ESM/AWSM search for an enemy, complete and continuous coverage of the frequency spectrum is required together with as wide a geographic dispersion of intercept equipment as possible.

c. Intelligence sources may provide information on the frequencies emitted by the enemy and, in certain cases, give actual frequencies used, or likely to be used. It is, therefore, possible for the OTC/CWC to organize ESM/AWSM search to cover specific frequencies.

5510 ELECTROMAGNETIC INTERFERENCE (EMI) OF SEARCH EQUIPMENT BY OWN TRANSMISSIONS

a. Interference caused by radiations from electronic transmitters of ships in company may reduce the effectiveness of passive sensors. Radars, in particular, by reason of their short pulses at peak power, produce powerful harmonics that can make reception in a sensitive search receiver difficult in adjacent bands, and almost impossible in the same band. It is possible to reduce this interference by using a very narrow bandwidth, a filter, or a suppression device in the receiver. This may result in a corresponding loss of intercept probability.

b. Interference may also be caused by accidental radiations, such as sparking in motors or generators, or by lack of electromagnetic compatibility (EMC).

5511 ACOUSTIC INTERFERENCE OF SEARCH EQUIPMENT BY OWN TRANSMISSIONS

a. Interference caused either by own ship's radiated noise or by active sonar transmissions can reduce the effectiveness of sonar receivers both in own ship and other units in a force.

(1) Own ship's radiated noise is sound that is inadvertently transmitted into the water, predominantly by machinery, cavitation from propellers, ship's movement, and flow noise. These can be exacerbated by manmade noises caused by unsecured equipment and electrical/electronic circuits in the ship. Radiated noise can be reduced but not eliminated by good husbandry of machinery, propellers, and general securing of equipment throughout the ship.

(2) Sonar transmissions can cause mutual interference with other units operating in the same vicinity, particularly when two frequencies are close. This can be received directly or through reverberations that increase background noise. Interference can be reduced by placing units with similar sonar frequencies on opposite sides of the screen.

b. Passive sonar can be confused by high acoustic levels; for example, units in a departure screen streaming noisemakers/operating echo sounders/transmitting on UWT could mask the acoustic signature of a heavy unit passing through the area from a listening submarine.

5520 (NC) (NMM) RECORDING ENEMY EMISSIONS

The recording of enemy emissions provides valuable information for intelligence data bases. Every opportunity to record received emissions should be exploited. The data will be held in national and NATO data bases like the NATO Emitter Data Base (NEDB). The NEDB is the primary source of data for non-communication emitters.

5530 (NC) (NMM) LOCALIZATION AND ANALYSIS OF ENEMY EMISSIONS

5531 (NC) (NMM) GENERAL

Once an unknown emitter has been detected, immediate action is required to provide early warning of possible enemy threats. The unknown emitter should be recognized/classified using all parameters available. Its location should be determined by triangulation. Speed is of the essence and timely early warning may not permit a detailed analysis.

5532 (NC) (NMM) RECOGNITION, CLASSIFICATION, AND IDENTIFICATION

a. Recognition or classification is aided by:

(1) Comparing parameters with current intelligence (or friendly equipment characteristics) by manual or computer-assisted search of threat libraries.

(2) Correlating data with data derived from other sensors.

(3) Correlating data with intelligence information.

(4) Operators' experience.

(5) Contact motion analysis (CMA).

b. Identification of an emitter may not be possible at this early stage without further analysis or because of ambiguities. In such cases, the emitter must be treated as an unknown.

5533 (NC) (NMM) DISPOSITION OF UNITS

When stationing units, the following factors should be taken into account for localization:

a. To obtain satisfactory triangulation, a broad baseline is necessary. Useful bearing cuts are between about 30° and 150°. The optimum length of the baseline will depend on the sensitivity and bearing accuracy of the equipment. To conduct triangulation, ESM units need to communicate. This may be restricted by the Emission Policy in force, unless a standard occasion for breaking radio silence can be invoked.

b. To avoid mutual interference it may be necessary for units conducting passive search to be separated from those using emitters in the same frequency band. Alternatively, emitters may be directed to transmit away from passive search units.

c. The need to have adequate cover in the direction of a known threat.

d. The requirement to meet other needs, such as sonar and radar coverage, or communications and weapon range.

SECTION VI — EMPLOYMENT OF ELECTRONIC AND ACOUSTIC COUNTERMEASURES (ECM/ACM)

5600 (NC) (NMM) EMPLOYMENT OF ELECTRONIC AND ACOUSTIC COUNTERMEASURES

a. General. ECM/ACM is action taken to prevent or reduce an enemy's effective use of the electromagnetic and acoustic spectrums. There are three subdivisions of ECM/ACM: jamming, deception, and neutralization.

b. Employment.

(1) ECM/ACM are weapon systems and must be coordinated with other weapons to counter air, surface, and subsurface threats. They involve deliberate reflection, jamming, radiation, or re-radiation of emissions and are detectable by the enemy. They are further divided into area and self-defense countermeasures.

(2) ECM/ACM can be used against all enemy emissions, including communications, and can contribute significantly to the defense of a force under attack. They provide the OTC with the ability to deny or, at least, reduce the effectiveness of enemy coordination, control, communications, reconnaissance, and weapons systems. When employed against missiles or homing torpedoes, ECM/ACM can be used for confusion, distraction, and seduction.

5610 (NC) (NMM) JAMMING

The deliberate radiation, re-radiation, or reflection of emissions with the object of impairing the use of communications, sensors, and weapons being used by an enemy.

5611 (NC) (NMM) THE OBJECTIVE AND EFFECTS OF JAMMING

a. The objective of jamming is to reduce the fighting effectiveness of the enemy by degrading the overall performance of his communications, sensors, and weapons systems.

b. The following effects may also take place:

(1) Create an additional load on the enemy's other electronic and acoustic facilities.

(2) Cause confusion to the enemy's operators.

c. Successful jamming is dependent upon knowledge of the enemy's command, control and communications and his weapon systems.

5612 (NC) (NMM) JAMMING CONSIDERATIONS

When jamming, the following should be considered:

a. Loss of Tactical Surprise. The start of jamming may give the first warning to the enemy of own presence or of the imminence of operations.

b. Localization. The enemy can DF or localize the jamming transmitter. Since certain weapons have a home-on-jam (HOJ) capability, the operation of jammers must be carefully considered.

c. Interference With Own Units and Equipment. Jammers may interfere with:

(1) Friendly equipment using similar frequencies in the vicinity of the jammer.

(2) Internal devices within the jamming unit.

(3) Decoy effectiveness.

d. JAMWARN. In order to minimize the impact of jamming on friendly forces consideration should be given to the issuing of a jamming warning IAW APP-11.

5613 (NC) (NMM) CONTROL OF ELECTRONIC JAMMING

a. Subject to policies established by appropriate higher authority, the responsibility for the control and organization of jamming rests with the OTC/CWC, although in some cases this function may be delegated to the EWC.

b. The OTC/CWC should order:

(1) Transmissions that may be jammed without further orders.

(2) The range beyond which jammers should not be used for fear of premature disclosure.

(3) Frequency bands in which jammers should be prepared to jam.

c. The arrangements for jamming should be such that all important enemy targets are covered. When sufficient units are available, jamming guards should be detailed in pairs.

d. The two methods of jammer control are:

(1) Positive — The OTC/CWC or delegated authority will control the use of all equipment in the force.

(2) Veto — Units employ their own equipment, keeping the OTC/CWC or delegated authority informed. The OTC/CWC or delegated authority may override the actions.

5620 (NC) (NMM) COMMUNICATIONS JAMMING

a. Jamming of communications, more than any other type of jamming, is subject to policies established by higher authorities.

b. Although special equipment may be designed for jamming communications, it is possible to use normal communication transmitters, provided the transmission is suitably modulated.

c. The omnidirectional nature of most communication antennas leaves them vulnerable to jamming from any direction. The jamming antenna is also normally omnidirectional, so that multiple targets can be jammed when desired.

d. The effectiveness of jamming will depend on:

(1) Relative positions of the jammer, transmitter, and receiving stations.

(2) Power of the jammer and communication transmitters.

(3) Type of communication signal that is being jammed.

5630 (NC) (NMM) DECEPTION

The deliberate radiation, re-radiation, alteration, or reflection of energy in a manner intended to mislead an enemy in the interpretation or use of information received by his sensors. If deception is to be effective, careful coordination is required to ensure that all sources of information to the enemy give the same misleading picture.

5631 (NC) (NMM) ACTIVE DECEPTION

a. Deception repeaters are either on-board or off-board systems that return a false echo to the receiver. They use echo enhancement, false target generation, and break-lock techniques. The echoes may be altered to change range, bearing, and number or size of echoes. Deception can be:

(1) Manipulative — By changing the characteristics of single pulses.

(2) Imitative — By processing pulses without altering their characteristics or generating new pulses with similar characteristics.

b. Noise jammers introduce energy into an enemy sensor to create a deceptive threat axis or mask own intentions.

5632 (NC) (NMM) PASSIVE DECEPTION

The introduction of alternative echoes into an enemy's sensor to mislead an operator or weapon system. These echoes may be produced by decoys.

5650 (NC) (NMM) ELECTRONIC NEUTRALIZATION

The deliberate use of electromagnetic energy to either temporarily or permanently damage enemy devices that rely exclusively on the electromagnetic spectrum. This implies the use of directed energy systems.

SECTION VII — EMPLOYMENT OF ELECTRONIC AND ACOUSTIC PROTECTIVE MEASURES (EPM/APM)

5700 GENERAL

a. The friendly use of the electronic and acoustic spectrums, with minimum risk of detection by the enemy, is achieved as follows:

(1) The OTC/CWC issues his Emission Policy (EP).

(2) The EP is promulgated, taking into account current communication or emission security (COMSEC/EMSEC) guidance.

(3) The EWC/spectrum manager produces EMCON/frequency management plans, based on the EP, that friendly units should adhere to, unless released by standard occasions for breaking radio silence, for instance.

b. Enemy ECM/ACM can be protected against by technical and tactical antijam measures.

5710 (NC) (NMM) EPM/APM CONSIDERATIONS

The following factors and measures to counter enemy ESM/AWSM should be considered:

a. Atmospheric and oceanographic conditions.

b. Directional transmissions.

c. Frequency management (e.g., frequency shifting, use of non-ionospheric propagation, and use of low-probability of intercept (LPI) techniques.

d. The extent of which communications circuits may be used and the degree of security required.

e. Use of minimum power.

f. Reduction of transmissions, including intermittent policy and avoiding the use of unique emitters.

g. Technical alteration of emission parameters.

h. Use of War Reserve Modes (WARM).

5720 (NC) (NMM) REDUCING THE EFFECTIVENESS OF ECM/ACM

The enemy's use of ECM/ACM can be protected against by using measures against jamming, deception, and neutralization.

5721 (NC) (NMM) REDUCING THE EFFECTIVENESS OF JAMMING

Measures to protect against jamming include:

a. Destruction of the jammer.

b. Dissemination of accurate information from unjammed units.

c. Disposition of assets.

d. Technical EPM/APM measures in equipment.

e. Frequency shifting (see Table 5-3).

f. Communication antijam plans.

g. Sensor antijam plans.

h. Frequency diversity.

5722 (NC) (NMM) MEASURES AGAINST DECEPTION

Protective measures against deception include:

a. Frequency diversity.

b. Exchange and comparison of data within a force to eliminate false information.

c. Disposition of assets.

d. Use of technical EPM/APM measures.

e. Frequency shifting and authentication of communication circuits.

f. Discreet identification.

5723 REDUCING THE EFFECTIVENESS OF ELECTRONIC NEUTRALIZATION

Measures to protect against electronic neutralization include:

a. Physical protection.

b. Technical EPM features.

5724 (NC) (NMM) MEACONING, INTERFERENCE, JAMMING, AND INTRUSION (MIJI)

a. Meaconing is the deception of a navigation aid, such as TACAN or DME, with the aim of decoying an aircraft from its intended course or destination. The term “meaconing” can also be applied to the seduction of mobile SATCOM aerials by an airborne platform. In both cases, meaconing is achieved by transmitting an alternative signal. In intrusion, an enemy gains access to a communication system (voice or data link) and manages to insert false data or instructions. Jamming and interference normally involve the use of electromagnetic energy to degrade communication and radar/weapon systems to varying degrees.

b. Whenever a MIJI incident is experienced, the OTC/EWC should be informed immediately. The EWC should attempt to identify the source of the MIJI, so that the necessary actions can be taken to reduce the effects. The area EW coordination cell (EWCC), may be able to assist in the identification of MIJI sources.

Table 5-3. (NU) (NMM) Standard Communication Antijam Measures/Procedures

MEASURE	DESIGNATOR
Frequency shift to column or frequency(ies) on circuit(s) nominated.	ONE
Start parallel keying on additional column(s) or frequency(ies) ordered.	TWO
Change from current column to nominated column in COMPLAN ordered.	THREE
Change from day to night or night to day frequency as appropriate.	FOUR
OTC/CWC will direct units to part of radio spectrum clear of jamming after ESM search.	FIVE
Activate TF/TG MF.	SIX
Set watch on underwater telephone.	SEVEN
Revert to morse on this circuit.	EIGHT

NOTES: 1. Procedures for this use of antijam meansures are contained in APP 1.

2. Measure may be ordered on the affected circuit or any other usable circuit, on the antijam coordination circuit, or by prearranged visual or acoustic signal.

3. Where possible, one station is to remain on the affected circuit(s) to occupy the jammer.

SECTION VIII — AREAWIDE ELECTRONIC WARFARE COORDINATION

5800 (NC) (NMM) ELECTRONIC WARFARE COORDINATION CELL (EWCC)

a. EW impacts on all warfare activities. This impact has necessitated the creation of an at-sea EW coordinator (EWC). The EWC, acting on behalf of the OTC/CWC, coordinates the activities of EW assets within the force. It is essential that both at-sea and shore-based commanders at all levels have experienced EW staffs to coordinate areawide EW assets and activities. To provide this intercommand coordination function, an electronic warfare coordination cell (EWCC) should be established by a commander in his area of responsibility (AOR) when a joint force or more than one force are employed, thereby maximizing the impact of limited EW resources.

b. The EWCC is the commander's mechanism for coordinating EW assets within his AOR. It will be established as an integral part of the operations staff at the level(s) deemed appropriate to support the operation, and will provide the means of coordinating all EW activities.

c. EW efforts of the force managed by the EWC will be coordinated by the EWCC with those of all other forces in the commander's AOR to achieve overall control of the electromagnetic spectrum. These coordination actions executed by the EWCC will serve to support the commander's overall operational plan.

5801 (NC) (NMM) EWCC RESPONSIBILITIES

Consistent with the resources available, EWCC responsibilities include, but are not necessarily limited to:

a. Planning.

(1) Prepare EW aspects of operations plans, orders, and data bases, including recommendations on Rules of Engagement (ROE) for EW and NATO Precautionary System (NPS) measures.

(2) Make recommendations to the commander on tasking component commanders to provide EW support as required.

(3) Identify requirements for intelligence support to EW operations.

b. Coordination.

(1) Coordinate activities of joint and single Service EW components.

(2) Coordinate administrative, logistic, and communication support to EW resources.

(3) Recommend EW targets that support the commander's C2W and information operations plan.

(4) Coordinate and prioritize requests for EW support.

(5) Request EW support.

(6) Coordinate EW mutual support.

(7) In coordination with other cells and agencies, develop, update, and maintain comprehensive EW data bases.

c. Monitoring.

(1) Ensure that all possible sources of EW information are exploited.

(2) Ensure timely dissemination of EW-derived data.

(3) Assist the commander in assessing the effects of hostile and friendly EW, and aid the CIS staff in frequency deconfliction.

(4) Maintain a current assessment of the EW resources available to the commander.

(5) Disseminate tactical Electronic Order of Battle (EOB) updates obtained by nonorganic assets to subordinate EW units.

d. Direction.

(1) Allocation of EW resources.

(2) Implementation of EW plans.

(3) Supervision of EW procedures.

(4) Supervision of force EPM, including revising the Emissions Policy.

5802 (NC) (NMM) ADDITIONAL EWCC CONSIDERATIONS

a. The EWCC will continually collect and process information relevant to the conduct of operations. This will include maintenance of comprehensive data bases for:

(1) Electronic Order of Battle (EOB).

(2) Joint Restricted Frequency List (JRFL).

(3) Areawide military, civil, and civilian frequency spectrum usage.

(4) Friendly and enemy EW equipment capabilities.

(5) Meaconing, interference, jamming, and intrusion (MIJI) incidents.

b. These data bases will be valuable tools for both afloat and ashore commanders, particularly in the areas of frequency management and tasking of limited EW resources.

c. A fundamental responsibility of the EWCC is development of a JRFL to map use of the electromagnetic spectrum within the area. It is composed of:

(1) Taboo frequencies — Friendly frequencies on which jamming or other intentional interference is prohibited.

(2) Protected frequencies — Friendly frequencies on which interference is prohibited.

(3) Guarded frequencies — Enemy frequencies used as a source of information and on which jamming is therefore controlled.

d. The JRFL is vital to prevention of unintentional interference and assists in optimizing the use of limited resources. The list is continually updated by the EWCC staff, who have specific knowledge of operational requirements.

e. The EWCC will maintain the JRFL for its AOR. It will need access to the radar frequency and communications plans of any in-area maritime force(s) to resolve the inevitable conflicts. This two-way flow of information is vital to the prevention of fratricide.

CHAPTER 6

General Warfare Instructions

SECTION I — RULES OF ENGAGEMENT (ROE)

6100 INTRODUCTION

In the conduct of peacetime operations, maritime units normally base their conduct on International Law, the International Rules of the Road, and the Geneva Convention. Those units under national command are further guided by national instructions, while those units under the operational command of the Strategic Commanders (SCs) conform to NATO instructions. The national/NATO instructions providing this supplementary guidance are designated as Rules of Engagement (ROE).

ROE are directives to military forces (including individuals) that define the circumstances conditions, degree, and manner in which force, or action which might be construed as provocative, may, or may not, be applied. ROE are not to assign tasks or give tactical instructions. With the exception of self-defense, during peacetime and operations prior to a declaration of counter aggression, ROE provide the sole authority to NATO forces to use force. Following a declaration of counter aggression, ROE generally limit the otherwise lawful use of Force.

6110 PLANNED RESPONSES

a. Initial Responses. As very short advanced warning of an attack may occur, it is essential that initial responses to specific detections be planned and promulgated by the OTC. To ensure quick reactions, planned responses should be:

(1) Matched to the actual threats.

(2) Promulgated so as to permit rapid updating.

(3) As simple as possible.

b. Promulgation. Unless otherwise directed in planned responses, the implementation of such a plan carries with it the automatic upgrading of the appropriate threat warning to RED.

SECTION II — PICTURE COMPILATION AND SCOUTING

6200 INTRODUCTION

This section describes the process of picture compilation, which is fundamental to maritime operations, and scouting, which is the observation of the surrounding environment.

(NR) (NMM) More details of the methods for gathering information and exploitation of the recognized picture are contained in the relevant warfare publications: ATP 18, ATP 28, ATP 31, and ATP 34.

6201 PICTURE COMPILATION

In all maritime operations, ranging from peacetime through increasing tension to hostilities, it is necessary to compile a plot of surface, air, and subsurface contacts.

The process of all actions and activities aimed at compiling a plot is called picture compilation.

In maritime operations, picture compilation will normally be executed to support decision making in relation to the mission. The nature of the mission will dictate the importance of the plot and what information is to be derived from it.

In support of the overall plan, the OTC and/or delegated authorities are to develop, formulate, and implement the picture compilation plan.

6210 THE PICTURE COMPILATION PLAN

The picture compilation plan should take into account the following three items:

a. General considerations.

b. Elements of picture compilation.

c. The process of picture compilation.

6220 GENERAL CONSIDERATIONS

General considerations in developing the picture compilation plan are:

a. Environment.

b. Resources.

c. Operational situation.

6221 ENVIRONMENT

There are three basic elements of the environment which should be considered:

a. Geographic location of the area of operations (e.g., open ocean, inshore).

b. Environmental factors (e.g., oceanographic, meteorological, atmospheric, etc.).

c. Familiarity with the geographic location and environmental factors.

6222 RESOURCES

The OTC or delegated authorities should assess all resources available to support the picture compilation plan:

a. Intelligence information.

b. The capabilities and limitations of the available assets and their sensors and the probability of gaining contact with them.

c. Dissemination capabilities (e.g., data link systems, voice communications, messages).

6223 OPERATIONAL SITUATION

In maritime operations, the operational situation will significantly affect the production and implementation of the picture compilation plan. Important elements are:

a. Mission.

b. Threat.

c. Peacetime, time of tension, time of war.

d. Rules of Engagement (ROE).

e. Directives from superior authority.

6230 ELEMENTS OF PICTURE COMPILATION

In general terms, picture compilation should result in the determination of the following four elements:

a. WHAT:

(1) Environmental descriptors (surface, subsurface, land, air and space).

(2) Identity (hostile, suspect, unknown, neutral, assumed friend, friend).

b. WHERE:

(1) Position.

(2) Bearing.

(3) Area of probability.

(4) Height.

(5) Depth.

c. WHITHER:

(1) Course.

(2) Speed.

d. WHEN:

(1) Time of contact report of information in the report.

All elements should be amplified if possible or required (e.g., type, class, nationality, Doppler, behaviour, time late, etc.).

6240 THE PROCESS OF PICTURE COMPILATION

Picture compilation can be subdivided into five processes:

a. Detection.

b. Localization.

c. Recognition.

d. Identification.

e. Dissemination.

6241 DETECTION

a. The detection process includes the employment of sensors in a certain area or volume, to determine the presence or absence of contacts or contact-related data. The presence of contacts or contact-related data should stimulate the other four processes.

b. The detection process can be aimed at the detection of specific contact(s) in a clear-cut area.

c. Probability of gaining contact depends on the following:

(1) Sensor probability of detection (sensor's sweep width).

(2) Coverage factor.

(3) Frequency of cover.

(4) Duration of mission.

(5) Type and behaviour of target.

(6) Time late and last known position.

(7) Operator performance.

(8) Environmental and geographic factors.

d. These factors should be applied to the conduct of scouting missions against surface and subsurface targets. As it is often impossible to assign values to these factors because of the problems in predicting sensor performance and target behaviour, the probability of gaining contact is difficult to determine. However, broad values for both coverage factor and frequency of cover may be required in planning.

e. **(NC) (NMM)** In such cases, the following values of sweep width may be used:

(1) Sonar — Surface ships — twice tactical sonar range.

(2) Radar — 70 percent of twice maximum range of detection.

(3) Visual by aircraft in accordance with Table 6-1 of ATP 31.

(4) ESM — 70 percent of twice maximum range (provided target is making electromagnetic emissions).

6242 LOCALIZATION

The localization process includes the employment of sensors to determine the positional information and movements of a contact (WHERE/WHITHER). The positional information, which might be an area of probability or a bearing, can be relative to a platform, absolute, or in a grid system.

6243 RECOGNITION

The recognition process includes the employment of sensors in order to determine characteristics of a contact. The collected characteristics should be compared with reference data which can lead to correlation, with a level of confidence. The degree to which recognition will have to be executed should be ordered by the appropriate authority and can range from very rough (e.g., combatant/ merchant) to fine (e.g., name of contact). In general, recognition is the interpretation of data collected by sensors. The recognition confidence levels which can be used are:

a. Certain Target. Positively recognized by type, visually or electro-optically, and by a competent person and continuously tracked after initial recognition.

b. Probable Target.

(1) A certain target that has been tracked intermittently and is confidently considered to be the same target, or

(2) A contact viewed by imaging radar whose image quality provides strong cumulative evidence with positive indicators that are consistent with a type of enemy unit, or

(3) Strong, cumulative information based on any two of the following:

(a) A contact with an electronic emission unique to a type of enemy unit.

(b) A contact with acoustic emissions unique to a type of enemy unit.

(c) In a position predicted by enemy or intelligence reports.

(d) Sighted visually or using electro-optics but not positively recognized.

(e) Radar target with tracking and/or formation consistent with that expected of the enemy.

(f) Active sonar contact with tracking and/or formation consistent with that expected of the enemy.

(g) Missile release by target.

(h) A contact viewed by imaging radar whose image quality provides indicators that are consistent with a type of enemy unit.

c. Possible Target. A contact that has a lower degree of recognition than that required for probable. The confidence of the recognition must be amplified as follows:

(1) High Confidence — A contact which satisfies only one of the criteria required for probable.

(2) Low Confidence — A contact which has indications that it may satisfy the criteria and further investigation is required.

6244 IDENTIFICATION

The identification process includes the assignment of one of the six standard identities to a detected contact (hostile, suspect, unknown, neutral, assumed friend, friend). The assignment of a standard identity will be executed by the appropriate or designated authority, based upon the available data (mostly localization and/or recognition data) and a set of rules (identification criteria), laid down by the appropriate authority. Table 6-1 provides examples of identification methods and criteria.

6245 DISSEMINATION

The dissemination process overlaps the previous four phases and includes the use of data links, voice communications, and messages in order to transfer data of contacts between two or more units/ platforms.

6246 — 6249 SPARE

6250 SCOUTING

6251 INTRODUCTION

The considerations and processes described in the previous paragraphs are applicable to all areas of warfare. However, each type of warfare has its own special features which will impact on the methods and processes for compiling the plot. It is the responsibility of the OTC and/or delegated authorities to promulgate specific instructions for different warfare areas in advance as stated in Chapter 1.

6252 AIM

The aim of scouting is the observation, either systematic or not, of the surrounding environment executed by all available means in a particular area.

6253 SCOPE

a. In maritime warfare, the generic term “scouting” is used to describe all surveillance and reconnaissance activities as indicated in Figure 6-1.

b. Only tactical scouting will be considered since strategic scouting is beyond the purpose of this publication.

c. Scouting operations may be tasked against any vehicle or area. However, since deployed maritime forces have a continuous need for information about the enemy or potential enemy, they are constantly engaged in tactical surveillance and reconnaissance, and thus units may contribute to scouting whether or not specifically tasked. Scouting operations are designed to investigate, detect, identify,

Table 6-1. List of Track Identification Methods and Criteria

The following list, which is not exhaustive, is intended to give examples of identification methods and criteria that can be used by the OTC or delegated authority.
VISUAL (including electro-optics)
- Contact positively identified - Contact identified but not positively - Opening of fire (guns, missiles ...) - Wrong reply to a visual identification signal - No reply to a visual identification signal - Ship or aircraft showing no lights
ELECTRONIC
- Contact(s) less than 10 (or n) degrees from a communications intercept bearing (or at an intersection of two bearings) - Contact(s) less than 10 (or n) degrees from a bearing (or at an intersection of two bearings) of a radar or other electronic transmission - Contact(s) less than 10 degrees from a jamming bearing - Contacts not responding to an IFF/SIF interrogation - Contacts giving wrong reply to an IFF/SIF interrogation - Electronic emission identified as that of a missile guidance system - Electronic emission corresponding to a fire control radar trained towards - Electronic emission with changing characteristics (frequency, scan, PRF) - Airborne radar transmissions associated with data link transmission
ACOUSTIC
- Contact with acoustic emissions - Passive sonar intercept of a unit - Passive buoy intercept of a unit
BEHAVIOR
- Contact in a position predicted by enemy or intelligence reports - Contact closes within a specific range - Contact closes from an expected direction - Contact proceeds at excessive speed - Contact operating airborne vehicles - Contact correlates with known PIM, patrol area, or flight plan of own units - Contact shows hostile intent - Contact shows hostile act - Change of speed greater than 5 knots

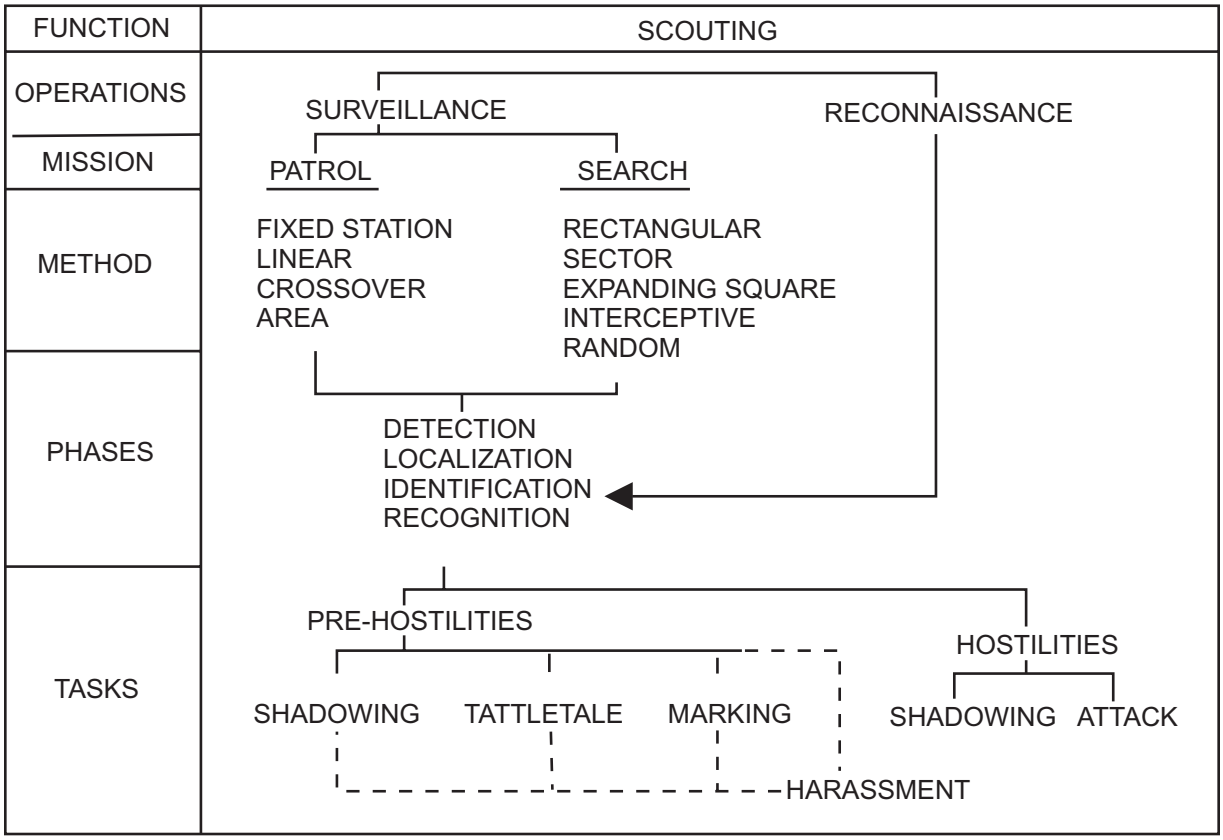


Figure 6-1. Scouting Description

localize, report, and monitor if required. Occasionally, specific tasks may be ordered to accomplish more limited needs, such as the hampering of the opposition's movement.

d. The relationship between the various types of operations, missions, methods, and tasks are illustrated in Figure 6-1.

6254 PLANNING OF SCOUTING OPERATIONS

a. Selection Criteria. The type of operation, mission, method, or task to be used will depend on the situation and vehicles available and may also depend on the ROE in effect. Although Figure 6-1 illustrates a progression of all the above, the sequence may be initiated or terminated with any operation, as appropriate.

b. Selecting Units and Sensors.

(1) Units. Surface units, submarines, and aircraft may be assigned to conduct a scouting operation. Coordinated operations are encouraged, where possible, to maximize the advantages of each kind of unit.

(2) Sensors. Sensor selection is partially limited by the type of unit tasked. The controlling authority may specify the sensor(s) to be used by giving adequate emission policy. It is usually better to allow the unit a choice of sensor(s) as selection often depends on local operational and environmental

factors. Selection also depends on the ROE in force as they are a primary consideration in selecting covert or overt action and are therefore a factor in selecting the type of sensors to be used.

c. Overt and Covert Tactics. Scouting can be carried out overtly or covertly and the tactical implications must be considered before missions are ordered.

(1) Overt Tactics. In general, overt tactics are adopted when concealment of the unit's task is undesirable, unnecessary, or impracticable, and/or the need for speed in gaining contact overrides the need for concealment.

(2) Covert Tactics. The term, "covert," applied to air operations, should be interpreted as "disguised," rather than as "passive," because an aircraft may need to use radar occasionally to skirt unidentified contacts at a safe stand-off distance based upon expected weapon envelopes of threat units. In general, covert tactics are adopted to:

(a) Avoid detection of the unit or at least minimize the warning to enemy defenses.

(b) Deny the enemy continuous intelligence of the unit.

(c) Force the enemy to use active sensors.

(d) Deceive the enemy.

6255 SCOUTING METHODS

As indicated in Figure 6-1, scouting consists of surveillance and reconnaissance activities.

a. Surveillance. The systematic observation of aerospace, surface, or subsurface areas, places, persons, or things by visual, aural, electronic, photographic, or other means; specifically, in maritime surveillance, to detect and determine the number, identity, or movement of aircraft, missiles, surface, or subsurface vehicles. Surveillance operations in peacetime are normally a national responsibility. NATO Surveillance Coordination Centers (NSCC) coordinate maritime surveillance operations in order to optimize the effort and the information obtained. Moreover, contingency plans are available to expand the NATO surveillance effort when the situation so dictates. Since forces under different operational and tactical control may participate in surveillance operations, the command and control relationships detailed in Chapter 1 are not always applicable. However, when local coordination is required, the area headquarters may designate an On-Scene Surveillance Coordinator (OSSC) as tactical coordinator. The OSSC should:

(1) Establish communications with other forces involved in the same operation.

(2) Inform all units about his intentions.

(3) Dispose units in order to optimize efforts and resources.

(4) Send all the appropriate reports.

(5) Inform the concerned headquarters when assuming/passing his duty.

NOTE

(NR) (NMM) Air and surface surveillance are described in ATP 31; subsurface surveillance in ATP 18.

b. Reconnaissance. An operation undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy; or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. Reconnaissance operations are often classified according to the purpose for which they are undertaken (e.g., intelligence, ice, or beach reconnaissance) or according to the means employed in obtaining the information (e.g., radar or ESM reconnaissance). Reconnaissance missions may be conducted by satellite, aircraft, submarines, or surface units. It is a more limited operation than surveillance.

6256 SURVEILLANCE METHODS

There are two methods to conduct a surveillance mission:

a. Patrol.

b. Search.

6257 PATROL

a. General. A patrol is a detachment of units sent out for the purpose of gathering information or systematic and continuing investigation along a line to detect or hamper enemy movements.

b. Basic Types of Patrol. The four basic types of patrol are fixed station, linear, cross-over, and area.

c. Ordering a Patrol. The OTC or controlling authority should promulgate some or all of the following:

(1) Aim of the patrol.

(2) Type of patrol.

(3) Limits of the barrier line or location and dimensions of the patrol area.

(4) Sequence of ship and their initial position.

(5) Patrol guide.

(6) Start and duration of the patrol.

(7) Patrol speed.

(8) Assumed enemy course and speed.

(9) Sweep width.

(10) Direction and length of legs.

(11) EMCON plan.

(12) Tasking of passive sensors.

(13) Reporting procedures.

(14) Action on gaining contact.

(15) Action on completing the patrol.

NOTE

(NR) (NMM) An aircraft patrol may be ordered using an appropriate airplan in Chapter 9.

6258 SEARCH

a. General. A search is a systematic investigation of a particular area to establish the presence or the absence of (a) specific contact(s).

b. Basic Types of Search. The five basic types of search are rectangular, sector, expanding square, intercepting, and random.

c. Ordering a Search. The OTC or controlling authority should promulgate some or all of the following:

(1) Aim of the search.

(2) Type of search.

(3) Assumed position of enemy at a stated time, or the geographic area to be searched.

(4) Limiting enemy courses for intercepting search.

(5) Limiting enemy speeds for intercepting search.

(6) Direction of search line.

(7) Order of ships on search line if other than standard.

(8) Track spacing.

(9) Position of the Guide at time of starting search.

(10) Start and duration of search.

(11) Search course.

(12) Search speed.

(13) EMCON plan.

(14) Tasking of passive sensors.

(15) Reporting procedures.

(16) Action on gaining contact.

(17) Action on completion of search.

6259 SPARE

6260 TASKS

Based on the recognized picture, tactical decisions can be made. This can lead to the assignment of tasks to ships, aircraft, or submarines. The following tasks are described in the subsequent paragraphs:

a. Shadowing.

b. Countershadowing.

c. Marking.

d. Countermarking.

e. Tattletale.

f. Weapon employment.

6261 SHADOWING

a. Shadowing operations are normally a follow-up to surveillance and/or reconnaissance missions. The effectiveness of shadowing is measured by the ability to obtain and report the required information. Shadowing can be carried out using overt or covert tactics. In times of tension, the shadowing unit must be well aware of the Rules of Engagement (ROE) in force. Shadowing may be conducted by aircraft, submarines, or by ships, or combinations of them.

b. It is important that shadowing is not mistaken for marking, as this may cause an unwanted escalator effect. To avoid any misunderstanding on own intentions, the following should apply:

(1) Select shadowing units with little offensive capability.

(2) Shadowing with relatively strong units should be done within own sensors but outside own maximum effective weapon range.

(3) Shadow covertly.

6262 INFORMATION EXCHANGE BETWEEN SHADOWING AND RELIEVING UNITS

a. The exchange of information between the shadowing unit(s) and the relieving unit(s) must be as complete as possible. Some major points to consider are:

(1) Additional information about the type of target.

(2) Position, course, and speed of the target.

(3) Observed emission policy and level of communications security of the target.

(4) Frequencies used by the target.

(5) Aircraft embarked.

(6) Behaviour of the target in general and against the shadowing unit(s).

b. During aircraft handover, the aircraft going off task is to ensure that the relief aircraft gets a positive handover. In covert operations, the following should be considered:

(1) The handover should take place below the target's radar horizon.

(2) If possible, secure communications should be employed preferably at a range and altitude from the target that will preclude intercept.

(3) Passive handover techniques such as the use of predesignated sonobuoy channels should be considered.

6263 COUNTERSHADOWING

a. In both peacetime and in times of tension, commanders should be aware of the fact that they could be shadowed even though there may be no indication of a shadower. The known presence of one shadower does not exclude the presence of other, undetected, shadowing units. A shadower is not necessarily dangerous in itself.

b. Its task may be to gather intelligence or to observe units and relay information on movements. On the other hand, its task may be to provide target information for the opponent's offensive forces, intended to adopt counter-shadowing tactics to hamper the shadower's task.

c. The purpose of countershadowing tactics is to confuse and deceive the shadowing opponent in order to withhold information on own movements and intentions and, if possible, to shake it off. In general, these tactics will be most effective when used at night, in reduced visibility, or by taking advantage of environmental conditions.

(NC) (NMM) A full description of tactical deception is contained in ATP 55.

6264 MARKING

The aim of marking is to be able to deliver an immediate and effective attack on the enemy when hostilities are ordered. However, units overtly engaged in marking operations will be particularly vulnerable to surprise attack by the enemy; units marking covertly (e.g., SSNs) will be less vulnerable to attack. In selecting the marking unit, it will be necessary to weigh the need to demonstrate a presence against the vulnerability of the marker.

6265 COUNTERMARKING

The potential threat posed by a marking unit may be reduced by the employment of a countermarker. Units engaged in countermarking will pose a direct threat to the marker and thus limit the options available to him. If conducting continuous countermarking duties, they may be better able to accomplish the aim than surface units as they are less vulnerable to pre-emptive action. Surface units conducting countermarking may be at close quarters harassment stations; missile, gun, or radiation positions; or defensive positions close to own threatened unit(s).

6266 TATTLETALE

A unit maintaining contact may be used to pass targeting information to other units. Such a unit maintaining contact is designated a tattletale. A tattletale may or may not be capable of taking offensive action. Tattletale operations may be preferable to direct marking as they permit the whereabouts of the primary attacking unit to be concealed.

6267 — 6269 SPARE

6270 PICTURE COMPILATION AND WEAPON EMPLOYMENT

a The required product of the picture compilation process is a recognized picture that forms the basis for tactical decisionmaking, including weapon employment.

b. In general, weapon employment will only be considered on contacts which constitute a threat to friendly forces and therefore should be identified as hostile.

(1) However, the identity hostile does not necessarily mean that the OTC has evaluated the contact to form so great a threat that weapon employment is justified. On the other hand, in some situations weapon employment may be authorized on contacts with a non-hostile identity.

(2) **(NR) (NMM)** The following factors are to be taken into account (see Figure 6-2) before weapon employment on a hostile contact is allowed:

(a) More information might be required; e.g., specific characteristics with a certain level of confidence.

(b) Political situation.

(c) ROE.

(d) Mission.

(e) Relative strengths.

(f) Target priorities.

(g) Weapon expenditure.

(h) Promulgated weapon restrictions (see Articles 6746 to 6748).

(i) Distance.

(j) Threat (see Figure 6-3).

(3) **(NR) (NMM) Exception.** The tactical situation can be (become) so unfavorable (e.g., number/type of threat, reaction time available) that the OTC/warfare commander considers weapon employment on contacts with an identity less positive than hostile justified. (This may also apply for individual units in a self-defense situation.)

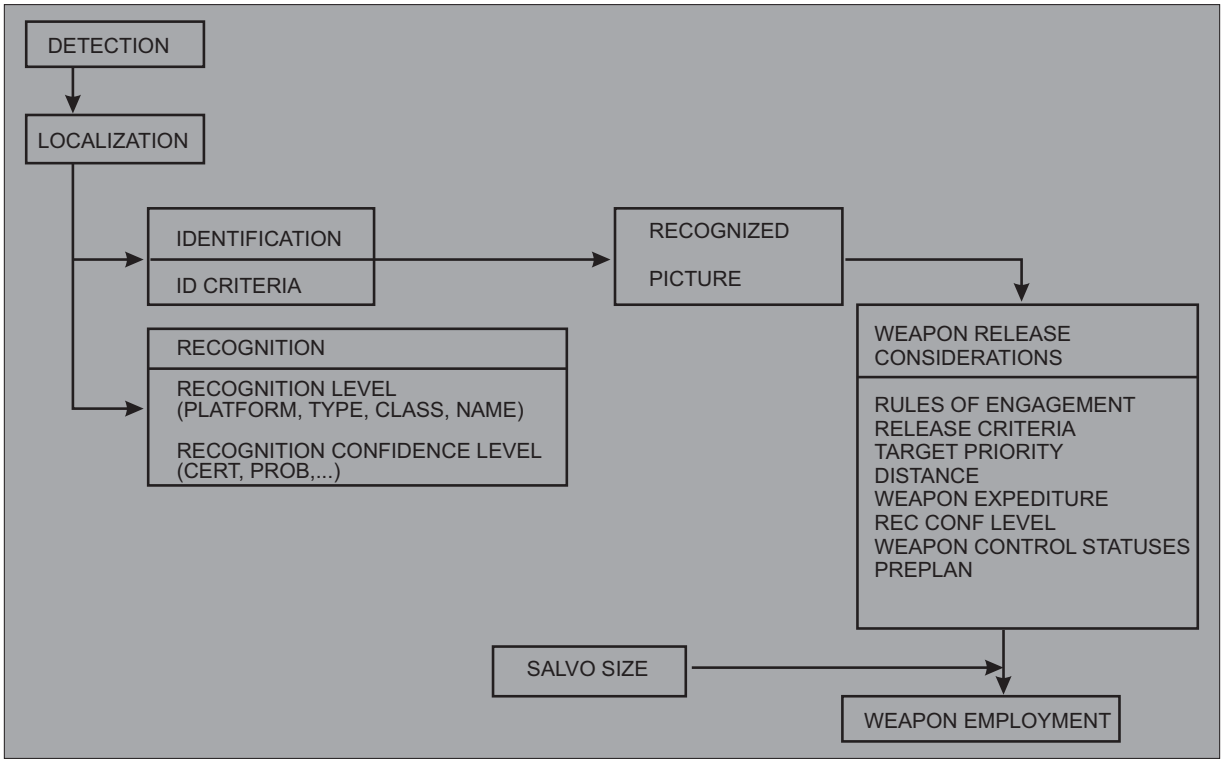
c. The OTC and warfare commanders are to specify all these requirements and considerations in the respective general and warfare instructions in order to make sure to all subordinates what the weapon employment policy is. Usually this will result in differences among warfare areas; (e.g., different identification criteria, recognition (confidence levels), and weapon release criteria).

6280 TERMS AND DEFINITIONS

a. Picture Compilation. All actions and activities aimed at compiling a plot.

b. Detection. The discovery of the presence of a contact or contact related data.

c. Localization. The determination of positional information and the movements of a contact.



(NATO-RESTICTED) (NMM)

Figure 6-2. (NU) (NMM) The Picture Compilation and Weapon Employment Process

d. Recognition. The determination of certain characteristics of a contact.

e. Identification. The assignment of one of the six standard identities, based upon available data and the determined identification criteria.

f. Recognized Picture. The result of the picture compilation process laid down in a common plot, which is compiled using available information from all units/levels concerned, and which covers a predetermined area in which all detected contacts have been evaluated and assigned an indisputed identity.

g. Identification Criteria. Criteria laid down by the OTC or delegated authority to determine which standard identity can be assigned to a detected contact based on the available localization and recognition data.

h. Release Criteria. Criteria laid down by OTC or delegated authority to be satisfied before weapon employment is authorized.

i. Recognition Level. The level to which a contact must be recognized as to platform type, class, or individuality.

j. Recognition Confidence Level. The degree of probability with which the recognition level is established.

SECTION III — DATA COMPILATION

6300 DATA COMPILATION

6301 REFERENCE PUBLICATIONS

a. Procedures and Instructions. Instructions concerning communication procedures are contained in relevant Allied Communication Publications (ACPs).

(NR) (NMM) Voice procedures for raid reporting are contained in APP 1.

b. Brevity Code. Operational brevity code words are from APP 7/MPP 7. Personnel concerned with raid reporting should familiarize themselves with code words in general use.

c. (NR) (NMM) Data Links. Guidance for the technical use of data links can be found in the relevant ADatPs (10, 11, 14 and 16).

6302 OTC'S REQUIREMENTS

As described in Section II, the OTC/CWC and or delegated authorities will formulate and implement the picture compilation plan. Parts of the plan are the required and available means of data compilation.

6303 MEANS OF DATA COMPILATION

Various means are used to compile the recognized picture. Data links, voice nets, and RATT are used to disseminate the information gathered through surveillance (which is done by air, surface, and subsurface units). Data links, voice nets, and RATT are used to promulgate the information gathered through surveillance (by these units). The function of the voice nets in data compilation is raid reporting. On the same nets the management of data links will be coordinated.

6304 COORDINATION

As part of the picture compilation plan, surveillance is coordinated by the OTC or delegated warfare commanders. Data compilation is coordinated by warfare commanders or by the force track coordinators (air, surface, and subsurface) if the task is delegated by the OTC/warfare commanders.

6305 — 6309 SPARE

6310 SURVEILLANCE

Surveillance missions are normally designated by delineating the area and type of surveillance. Surveillance may be of a tactical or strategic nature and may be followed by reconnaissance. Considerations for the selection of vehicles for surveillance are similar to those applying reconnaissance.

6311 SURVEILLANCE AREA

a. The establishment of the size and shape of the surveillance area is fundamental to the success of the surveillance concept. The size and shape of the surveillance area will be determined by comparing the warning time required to deploy forces with the resources available to provide surveillance.

b. The surveillance area may move with the position and intended movement (PIM) or be fixed.

6312 COORDINATION OF DATA COMPILATION IN THE SURVEILLANCE COORDINATION SURVEILLANCE AREA

The aim of surveillance coordination is to optimize the use of resources and avoid duplication of effort. Coordination of unit activities in surveillance is vested in the appropriate warfare commanders. Coordination of data compilation may be delegated to the appropriate force track coordinator.

6313 FORCE TRACK COORDINATOR (AIR) (FTC-A)

The AAWC is responsible for maintaining and disseminating the air picture as it is formed by the total of sensor inputs. This duty may be delegated to the FTC-A, who is normally co-located with the AAWC, if designated. The AAWC/FTC-A has the following responsibilities for picture compilation and dissemination:

a. Control the AAW reporting net (see Article 4141).

b. Compile the air picture, including the correlation and evaluation of reports from other units of the force (including data links).

c. Issue SITREPs.

d. Designate the link management units (DNCS, GRU, link broadcast units, and Gateway Unit).

e. Manage the link picture.

f. Promulgate the link management codes to be used in network management.

g. Control over link operational procedures.

h. Order general gridlocks to be done by the GRU.

i. Coordinate entries from non-link-fitted units into the link picture.

j. Order frequency shifts or other parameter shifts for link if necessary (initiated by the DNCS).

k. Crosstell of information with shore air defense authorities when appropriate.

l. Issue track release policy to be used.

6314 FORCE TRACK COORDINATOR (SURFACE) (FTC-S) AND FORCE TRACK COORDINATOR (SUBSURFACE) (FTC-SS)

The ASUWC and ASWC are charged with maintaining and disseminating the surface and subsurface picture as it is formed by the total of sensor inputs. These duties may be delegated to the FTC-S and FTC-SS, who are normally co-located with their respective warfare commands when designated. Their duties can be combined in the FTC-S/SS. In TDS systems, the FTC-A has the primary responsibility, while the FTC-S and FTC-SS are using that part of the system made available for their data compilation efforts. The FTC-S and FTC-SS have the following responsibilities:

a. Control the appropriate reporting nets.

b. Compile the surface and subsurface picture, including the correlation and evaluation of reports from other units of the force (including data links).

c. Issue SITREPs.

d. Coordinate entries from non-link-fitted units into the link surface and subsurface picture.

6315 — 6319 SPARE

6320 CONTACT REPORTS

6321 GENERAL INFORMATION

a. Purpose. Contact reports are designed to pass the fullest information about contacts in the shortest time and simplest manner. They serve to:

(1) Alert authorities and forces or units about contacts in the area.

(2) Develop comprehensive plots to assist in the rapid evaluation of the situation in the air, surface, and subsurface environment. Contact reports can be made as raid reports and enemy contact reports.

b. Raid Reports. Raid reports are designed to alert the OTC/warfare commander and the units in a formation or disposition to new contacts and, by means of a series of related reports, to develop an accurate plot. They may concern hostile, friendly, neutral, or unidentified contacts. Rapid reporting may be used with land-based stations when a continuous flow of information is required.

(NR) (NMM) Details are in APP 1.

c. Enemy Contact Reports (ECRs). Enemy contact reports are designed to alert appropriate shore authorities, as well as other forces or units operating in the area, of the presence of hostile units or unidentified contacts in the area. Enemy contact reports are made by:

(1) The OTC.

(2) Surface units operating independently.

(3) Land-based aircraft not on direct support.

(4) Submarines operating independently.

(5) Merchant ships.

(NR) (NMM) Details are in APP-11.

NOTE

(NR) (NMM) RAINFORM reports are to be regarded as a form of ECR and are in APP-11.

6322 RESPONSIBILITY FOR PASSING INFORMATION ABOUT CONTACTS

a. The OTC. The OTC is responsible for the dissemination of the recognized picture to all units under his tactical command and to appropriate shore authorities or units in the area using enemy contact reporting.

b. Surface Units.

(1) Any unit operating under the tactical command or tactical control of an OTC is responsible for passing early and accurate contact information to him, using raid reporting.

(2) Any unit in the vicinity of the force, but not under the tactical command or control of an OTC, is responsible for passing early and accurate information to the force about contacts that may be a threat to the force, using enemy contact reporting.

c. Aircraft.

(1) Aircraft on direct support are responsible for making raid reports to the OTC.

(2) Aircraft on area operations or in transit are responsible for making enemy contact and in-flight reports to their shore controlling authority. When operating in the vicinity of friendly surface forces, aircraft are also to pass the information to the OTC(s) concerned. Aircraft may be briefed to give precedence to reports to the OTC(s) over reports to their shore controlling authority. If two-way communication with an OTC cannot be established, or is not permitted by EMCON, an aircraft is to broadcast its reports and, EMCON permitting, pass its reports ashore for retransmittal on the appropriate ship broadcast.

d. Submarines.

(1) Submarines operating independently that make contact with possible enemy units are to make the appropriate enemy contacts reports as soon as practicable.

(NC) (NMM) The submarine may have to delay making its reports for the following considerations:

(a) The requirement to safeguard the reporting of own position.

(b) The requirement to maintain contact with the enemy, since coming to a suitable depth for communication purposes may result in loss of contact with the enemy, particularly when it is another submarine.

(2) **(NC) (NMM)** Any submarine operating under the tactical command or tactical control of an OTC is responsible for passing early and accurate contact information to him in a format directed by the OTC. The OTC should advise support submarines if contact engagement or force alertment is to take precedence. While destruction of the enemy is highly desirable, the ultimate objective is to ensure the survival of protected units. This normally will require submarines to alert the task force before all but urgent approaches and attacks.

(3) **(NC) (NMM)** On each occasion, the relative importance to shore authorities and other forces in the area of the information to be reported has to be weighed against these considerations.

e. Merchant Ships. Enemy contact reports from merchant ships are designated ALARM reports. Details of the form of these reports are contained in ACP 149.

6323 AIR RAID REPORTS

a. General. Long-range detection of air contacts is the first principle of anti-air warfare; however, detection alone does not ensure success, because individual commands must first make a cursory evaluation of all information prior to reporting an air contact. Position and accurate amplifying information about all air contacts must be reported to the FTC-A. Air picture reporting will cover all contacts in the anti-air warfare area, with emphasis on early detection and an information flow that is as continuous as possible on friendlies. However, contacts already being reported by another unit desiring to report is in a more advantageous position to track and wishes to assume reporting responsibility for that contact. Ships are to track or watch all air contacts on their radar displays, with emphasis on promulgated watch zones, and are to report in accordance with reporting rules promulgated by the OTC. In any case, units are to report all air contacts not positively identified as friendly, provided they are considered an immediate threat. All means of detecting air contacts, including lookout reports, are to be exploited to the maximum extent.

Visual sighting can be of special value in engaging both high and low contacts, and lookouts should be indoctrinated as to the importance of reporting all sightings, smoke, and contrails.

b. Local Air Situation. In addition to reporting the general air station, there is an equal requirement for all ships fitted with guns and self-defense missiles to have a clear picture of the local air situation, including relevant information on missile zones, safety sectors, weapon restrictions, and positions of friendly aircraft and helicopters. A knowledge of the positions of all friendly aircraft may be the only clue to the identity of a contact that is in fact an enemy aircraft or missile. The AAWC will normally be the LAAWC for his group and will promulgate the local air picture. Commanding officers are responsible for the employment of their own weapons and the primary function of the local AAW coordination net is to promulgate information to assist them in making their decisions.

c. Local Air Picture. The aim is to provide the group with a clear picture of the air situation around the group. Contacts within 50 nm are given priority, with less frequent reports on those beyond. Contacts are reported using the current agreed basic identities. Position is reported as range and bearing from ZZ of the local force. Although reporting procedures are vital for good raid reporting, under certain conditions a colloquial running commentary has been proven to be more successful than a rigid reporting procedure. However, when a unit detects or sights a target that is a direct threat to the force and has not been reported, it immediately broadcasts a flash report (see Chapter 4).

d. Amplifying Instructions. Friendly aircraft should be referred to by their task. Other aircraft should ideally be referred to by their force track number. A unit reporting a contact must be careful to report fades, including when it is ”too close,” so that another unit may continue reporting that contact.

(1) **(NC) (NMM)** Particular attention must be paid to HOSTILEs with fighters in pursuit. If the fighter is hauled off, the direction of breaking must be reported (North/South, East/West), so that ships may identify the enemy.

6324 SURFACE AND SUBSURFACE RAID REPORTS

Surface raid reports are normally made on TF/TG Reporting net. This net may be HF or UHF. Details concerning the information to be exchanged are in Chapter 8. Subsurface reports are made either on ASW Air Coordination net, on an action net, or on TF/TG Reporting net, depending on whether immediate action is required. Searches should, where possible, be coordinated on a communication circuit common to all operating units. Where MPA are operating in this role, ASW Air Coordination (UHF) net will normally be used. Helicopters operating independently of fixed-wing aircraft should be TF/TG Reporting (HF/UHF) net, unless the level of traffic is such as to overload the limited facilities of the helicopter. Certain helicopters have the facility for transmission of the tactical picture by data link and, under these circumstances, control of the aircraft may be conducted on a alternate circuit at the OTC’s discretion.

(NR) (NMM) Voice procedures are in APP 1.

6325 OTHER REPORTS

a. Air Combat Report. Air combat reports are reports made by aircraft and are primarily used to warn other aircraft and the aircraft control unit(s) of the presence of enemy aircraft. The report consists of code words from APP 7/MPP-7 and/or plain language.

b. Tactical Air Support of Maritime Operations (TASMO) Reports. TASMO reports are used in tactical air support of maritime operations.

(NR) (NMM) These are described in ATP 34 and APP-11.

c. Mine Detection Report. Every ship detonating a mine or detecting a moored mine or a drifting mine case shall make a Mine Detection Report (MINEDETREP) to the OPCON authority with an

information copy to the OTC of the MCM force if in contact with such a force. (For further details see Chapter 13).

d. Situation Reports (SITREPs).
(NR) (NMM) The use and components of SITREPs are detailed in APP 1.

e. RAINFORMs. See Chapter 1.
(NR) (NMM) See APP-11.

f. Engagement After-Action Reports. All units will submit hard copy after-action summary reports to the OTC and warfare commander concerned informing other warfare commanders and others as directed. Units will, in addition, make voice reports to the warfare commander concerned over the appropriate tactical net. For detached units, the task element commander should submit consolidated reports. The AREC will transmit Aircraft Mission Summaries (MISSUMs) or Rainform PURPLE messages for CV-based aircraft. These reports will repromulgate mission results based upon mission debriefing or post-flight analysis.

g. Allied Tactical Air Messages (APP-11).

6326 WARFARE COMMANDER REPORTS

a. Warfare Commander SITREP. Warfare commanders will make voice SITREPs to the OTC on the TF/TG Command net. Additionally, warfare commanders must keep units appraised of the tactical situation over the respective coordination and reporting (C & R) nets. (The same SITREP may satisfy both requirements, but if units are not guarding the TF/TG Command net, then the report should be made over both nets). SITREPs will briefly describe the tactical situation and state the warfare commander's intentions. They will be transmitted whenever dictated by the tactical situation and will be particularly critical during fast moving situations, in order to keep the OTC sufficiently informed.

b. Warfare Commander SITSUM. When directed, warfare commanders and coordinators will submit message SITSUMs to the OTC. Reporting will be over the TF/TG Command (RATT) net in order to keep the OTC, other warfare commanders, and the task force generally informed. SITSUMs will include (as appropriate) warning and weapon status, equipment casualties, and other problems serious enough to be brought to the attention of the OTC and other warfare commanders.

(1) The ASUWC will, in addition, report best current estimate of hostile ship positions and time of last actual detection. Results of recent ASUW actions and surveillance flights, and status of on-going actions and flights will also be reported. Friendly ship positions will be given on request.

(2) The ASWC will report best current locating information for hostile and friendly submarines and towed array ships. Status of current prosecutions and ASW air picture and deck alert will also be reported.

(3) The AAWC will summarize bogey and CAP status, including CAP station occupancy, air control units, and ready alert posture. Missile inventory and status and the results of recent engagements will also be reported.

(4) The EWC will report force EMCON condition and intra-task force variations or violations thereof, current RACKET status, and status of EW aircraft.

(5) The AREC will report aircraft readiness and availability, flight deck status, and launch schedules. Real-time information will be most critical in AAW.

c. The OTC, along with the rest of the force, can best follow a rapidly developing situation by monitoring the AAW(C) net. In order to avoid duplication in reporting and distraction of the AAWC from his vital primary role, the OTC should cancel any requirement for AAW SITREPs/SITSUMs over the TF/TG Command net during periods of intense AAW action and require instead an after-action report from the AAWC summarizing the results of each series of engagements.

6327 — 6329 SPARE

6330 COMMUNICATION

For details of communications and circuits associated with data compilation, see Chapter 4, Section I.

6331 — 6339 SPARE

6340 TACTICAL USE OF DATA LINKS

6341 PURPOSE

Data links facilitate the rapid and accurate exchange of picture compilation information and, in the case of Link 11, weapon engagement status information and command messages. An important function is demonstrated by the ability to pass a complete tactical picture to another unit joining a force or to one whose transmissions are limited by emission policy.

6342 INTEGRATION WITH STANDARD TACTICAL DOCTRINE

Link information is compatible with the information passed over voice circuits between non-link-fitted units and should reflect the same tactical picture. Positional information passed by data link is based on the Data Link Reference Point (DLRP), which is established by the OTC and should be in the same position as the origin for the Cartesian Coordinate Grid (CCG). This is considered further in Articles 2111 and 6371.

6343 TACTICAL USE OF LINK 4

a. Link 4 Operations. Link 4 may be employed in any of the three modes: one-way close control, two-way close control, or one-way broadcast control.

(1) (NC) (NMM) One-Way Close Control. This Link 4 mode consists of a one-way data flow from the controlling agency to the CAP. CAP receive target position, heading, speed, and altitude for up to a maximum of eight targets or points.

(2) (NC) (NMM) Two-Way Close Control. This Link 4 mode of operation may be available to CAP and permits these aircraft to transmit target data, jam strobes, pointers, fuel state, weapons state, and other information back to the controlling platform.

(3) (NC) (NMM) One-Way Broadcast Control.

(a) To accomplish Link 4 broadcast control, AEW and CAP must select the same fighter link reference point (FLRP). This FLRP may be VL or a tacan, which will be one-way information from AEW to the CAP.

(b) Once the above has been accomplished, all data link information from the AEW will be broadcast to all fighters. Each fighter must then determine target position in relation to his own position. This procedure reduces voice communication and permits each fighter to maintain a relative display of the air battle and other CAP.

b. (NC) (NMM) Link 4 Limitations. Link 4 has increased transmit power and is frequency shift keyed (FSK). It is less susceptible to spot or barrage jamming than voice communications; however, it is susceptible to deception (i.e., audio playbacks).

6344 TACTICAL USE OF LINK 11

a. Link 11 Operation. The OTCs tactical instructions for operating Link 11 are detailed in the OPTASK LINK. The force picture depends largely on the interoperability and availability of Link 11 facilities within the force or cooperating units. For Link 11, as for other communications means, RSIs apply respectively. The following considerations will influence the OTCs decision:

(1) Link equipment of participating units.

(2) Expected threat, preplanned reactions, and standard occasions for breaking radio silence.

(3) Mission.

(4) Planned tactical positioning of own units, keeping in mind the expected HF and UHF communication ranges.

(5) Rules of discretion (required (maximum) net cycle time, rate of sequential transmission, data exchange periodicity).

b. Operating Modes. The operating (or transmission) modes of the link are:
(NR) (NMM) They are described in ADatP11.

(1) Roll Call.

(a) Full Roll Call.

(b) Partial Roll Call.

(c) Roll Call Broadcast.

(2) Broadcast.

(3) Silence.

c. Tactical Use of Silence Mode. The Silence Mode can be used in two ways:

(1) All units silent with single transmissions made only are standard occasions for breaking silence.

(2) All units silent with periodic, preplanned, single transmissions by designated units. This tactical mode is referred to as Short Broadcast.

d. Operational Employment.

(NR) (NMM) See Table 6-2 for the description of operational employment options. The table gives recommendations for tactical use of Link 11, depending on the RSIs resulting from the above mentioned deliberations.

Table 6-2. (NU) NMM) Link 11 Operational Employment Options

RSI	Mode	Advantage	Disadvantage	Mode Descriptor
U (Unrestricted Transmission)	FULL ROLL CALL	1. Optimum update rate 2. Complete exchange of data information between PUs	1. Net cycle time (NCT) may be long 2. Risk of participating units being intercepted and detected	Permanent
U (Unrestricted Selective or Sequential Transmission)	PARTIAL ROLL CALL	1. Call-up is directed 2. Exposed units may stay silent 3. Any PU has access to the net	1. Repetitive call-up of participants prolongs NCT	Full report by designated PU during PARTIAL ROLL CALL or ROLL CALL BROADCAST — Sequential Transmission
U (Unrestricted Continuous Transmission of DNCS)	ROLL CALL BROADCAST (Extreme Version of PARTIAL ROLL CALL	1. Convert posture for PU other than DNCS 2. Any PU has access to the net	1. Repetitive call-up 2. Force picture depends on DNCS	Silence (See Note)
U or E (Unrestricted Continuous Transmission of Designated Unit — PU)	BROADCAST	1. Higher update rate from assigned unit 2. Force covert other than designated PU	1. No information from other PU 2. Broadcast unit detectable due to emissions 3. No directive control possible	Permanent
E (Essential Transmission)	SHORT BROADCAST	1. Force covert 2. Vital information can be broadcast immediately	1. Lowers update rate 2. Poor force picture compilation 3. No directive control possible	Preplanned action — OTC option. The most covert mode. Transmission allowed in accordance with OTC's schedule (See Note)
S	SILENCE	1. No ESM decision possible 2. Immediate access to the net by SHORT BROADCAST	1. No information exchange 2. No force picture	Preplanned action (See Note)

NOTE: Some units may choose the quantity of tracks or command and control orders selected for each transmission (selective SHORT BROADCAST). If the OTC plans to use these capabilities, he should ensure that they are available and promulgate them in the OPTASK LINK format (sets UNITFLTR, AREA or GENTEXT).

(NATO-CONFIDENTIAL) (NMM)

6345 WIDE-AREA LINK OPERATIONS

When a Link 11 net is established on a wide area and involves several TF/TG operating independently or in support situation Bravo or Charlie, a link point of contact, the FTC-A, will be designated in each TF/TG. On behalf of the OTC, the FTC-A of each TF/TG will be authorized to provide information and requirements about the link net management with the DNCS, using RATT messages or the voice Link Coordination Circuit. Depending on the nature of the operation, the senior OTC will promulgate information or requirements about the net management, updating the current OPTASK LINK as necessary. During wide-area Link 11 operations, the DNCS should be the AEW aircraft (E-3 or E-2 type) when on station.

6346 (NR) (NMM) LINK 11 WAVEFORM

Either Kineplex or Single-tone Link 11 Waveform (SLEW) can be used for Link 11 operations on the HF band, as ordered by the OTC in the OPTASK LINK. However, Kineplex must normally be the standard emission unless OTCs/net controllers have confirmation that all units participating in the Link 11 are capable of HF SLEW operations or a suitably equipped ship is available to act as a gateway between SLEW and Kineplex. Note that Kineplex terminals cannot use SLEW but SLEW terminals can use either SLEW or Kineplex. SLEW is more reliable and uses a narrower bandwidth.

6347 — 6349 SPARE

6350 LINK MANAGEMENT UNITS

Apart from track management on voice nets and data links, the links themselves need to be managed. Several duties describe the management task. These duties may be combined and are ideally vested in the FTC-A.

6351 DATA NET CONTROL STATION (DNCS)

The DNCS is the participating unit in a link organization for air, surface, and subsurface data compilation who performs the technical management of the net.

a. The responsibilities are:

(1) Advise the FTC-A on the use of frequencies and link parameters.

(2) Initiate and terminate the data net, under the overall directives of the OTC.

(3) Control the order in which units are called in Roll Call mode of operation (Link 11).

(4) Monitor and analyze the data nets from link establishment to link termination (technical performance).

b. The DNCS is chosen on the basis of:

(1) Central location relative to other link-fitted units, which it must interrogate.

(2) Radiation hazard and EMCON considerations.

(3) State of equipment.

6352 GATEWAY UNIT

In group working with more than one TDS system (i.e., Link 11) a gateway unit is assigned. A gateway unit is a participating unit that is operating on both links and is responsible for transfer of selected track data between the two link systems. The transfer can be manual or automatic.

6353 LINK BROADCAST UNIT

For Link 11 and Link 14, a broadcast unit may be assigned. This unit will transmit data from his TDS system to other units, who will only receive this data but not answer or retransmit. The receiving units will either plot this data manually or automatically.

6354 GRID REFERENCE UNIT (GRU)

The GRU is the unit designated by the OTC to maintain the OTC's geographical reference point.

a. The GRU is responsible for:

(1) Carrying out general grid locks as ordered by the AAWC/FTC-A.

(2) Acting as reference for individual grid locks where possible.

(3) Monitoring the positional accuracy of transmitted data by link participating units.

(4) Ensuring his data systems' navigational input is both up-to-date and accurate.

b. The GRU should be chosen by the OTC on the basis of:

(1) Position in the force, ensuring:

(a) Good link communications.

(b) Greatest track density coverage.

(2) Large and accurate track reporting capability.

(3) Accurate navigational facilities.

(4) Reliability of link participating unit.

6355 — 6359 SPARE

6360 PROCEDURES

6361 GRID LOCK PROCEDURE

a. Grid Locks. The GRU executes grid locks on completion of the insertion of the DLRP into the various TDS, or after changing the DLRP. Grid locks are also executed periodically to reduce errors in grid reporting.

(1) Individual Grid Lock (Codeword RONSON). Individual grid locks are undertaken:

(a) When a unit joins the force and enters the net.

(b) On request of a misaligned unit.

(c) Whenever the GRU or FTCs detect misalignment of one unit only.

(2) General Grid Lock (Codeword GRID LOCK). General grid locks are undertaken:

(a) When misalignment occurs in several units.

(b) Upon activation of the net and after inserting the DLRP into the various TDSs.

(c) After changing the DLRP.

(d) When requested by FTC-A.

b. Execution of Grid Locks. The procedure of executing grid locks differs between TDS and non-TDS units.

(1) TDS Units. This is the simple matching of the position of a single track reported over the data link by the GRU or another unit with the same locally held radar contact in the unit(s) carrying out the grid lock. Correction to align the link-reported track over the local contact will be in X and Y coordinates and will be applied according to the individual system design, either by moving the DLRP in terms of own-ship position or by applying the appropriate correction to transmitted and received tracks. Units are to report whether or not satisfactory grid lock has been achieved.

(2) Non-TDS Units. The correct X and Y coordinates of a locally held track are reported by the GRU or another grid locking unit, and units adjust their grid accordingly.

NOTE

The responsibility for keeping the picture aligned lies with the individual unit(s).

c. Locking Non-TDS Aircraft Into Grid. The appropriate aircraft control unit (ACU) can lock aircraft into grid by five methods:

(1) Radar Grid Lock. On joining and after full identification procedures, the aircraft will be instructed to stand by for grid lock and X and Y coordinates are issued.

(2) Reverse Radar Grid Lock. If for some reason the ACU is unable to use radar, a reverse radar grid lock is executed. This requires the aircraft to use its radar and take bearing and distance from QQ or ZZ as applicable. It is essential that the aircraft knows the position of the reference within the force so that the fix is correctly taken.

(3) On Top. If the aircraft has permission to enter the ISR and overfly the force and can identify the ACU, the aircraft may obtain an ON TOP grid position of the ACU.

(4) Tacan Method. EMCON permitting and when a tacan-fitted ship is in the group, an aircraft can obtain a tacan lock of this unit and then be passed its grid position.

(5) Alternative. Individual unit position reports can also be given using bearing and distance from a geographically fixed reference position (e.g., helicopter reference position (HRP)). When this is done, the code word(s) (REVERSE) UPDATE is (are) to be used. An UPDATE can be given by the GRU or another grid locking unit as a bearing and distance from the reference position to the subject unit. If for some reason the GRU or grid locking unit is unable to use radar, a REVERSE UPDATE can be

executed. The subject unit uses its radar to determine the position of the GRU or grid locking unit; the GRU or grid locking unit passes its own position relative to the reference position. This bearing and distance is then used by the subject unit to align its grid.

d. Security of the Grid. Correlation between the DLRP and observed units enables the enemy to break the grid and obtain a missile firing solution on any subsequent unit reporting its grid position. While grid reports which have not been encoded are acceptable for detached units, bogeys, etc., the position of major units must be encoded in a suitable numerical code.

6362 LINK 14 PLOTTING PROCEDURES

The quantity and speed at which tactical information is provided by Link 14 is too great to be displayed manually in an accurate and timely manner. Therefore, there is requirement to limit the information assimilated in the receiving ship. This is accomplished by:

a. Requesting that the Link 14 transmitting unit suppress specific "headers", thus, limiting the information transmitted on the link to all users (e.g., track release criteria).

b. Plotting only those contacts within a selected area determined by each ship from an assessment of the threat and from the capability of the ship's weapons systems and sensors.

6363 PROCEDURES FOR REPORTING OWN POSITION

Units not correctly reported on the net are to report their positions as follows:

a. All ships are to guard or copy the TF/TG reporting HF net.

b. PIMs are to be reported to the OTC when units join. The OTC will:

(1) Relay PIM information to the FTC-S.

(2) Inform transmitting units of the FTC-S frequency and call sign.

c. Periodic position reports are to be transmitted to the FTC on the TF/TG reporting net. Frequency of reporting is as follows unless otherwise directed:

(a) Hourly, from CTGs, CTUs; major units; and all detached units.

(b) Every 2 hours, or when more than 5 miles from reported PIM, from transiting and supporting units.

d. A composite position report is to be made for ships operating in company by the commander of the group.

Units on the link will monitor Link 10/11/14 to check for own-ship position accuracy. Units believing link position to be significantly in error will report correct position to FTC and Link 14 broadcast ship. This procedure will be of particular importance for detached units (e.g., towed array ships) to ensure that they are correctly included in the force surface picture.

6364 — 6369 SPARE

6370 SECURITY AND EMCON CONSIDERATIONS

a. Speed of Transmission Versus Security. The conflict between the need to transmit an enemy report quickly and the need for security has to be considered on each occasion of making an enemy report. The solution will depend on the particular circumstances at the time, unless on-line encryption facilities are available. If the enemy is aware that he has been detected, and especially if he is able to inflict early damage, speed of transmission will be the more important factor. However, it must be realized that enemy reports which are not encrypted may, if intercepted, be valuable to the enemy.

b. Effect of Over-Emphasizing Security. It is important that security classifications are not imposed unnecessarily. Due consideration should be given to the availability of on-line encryption facilities and to type of units concerned with the reports.

c. Reporting Procedures During Restricted EMCON. Modifications to reporting procedures should be anticipated when the force is operating under restrictive EMCON conditions. In particular, the OTC must specify which reports are to be made when the OTC and/or warfare commander's flagships are in EMCON and when the entire force is EMCON (e.g., when only the OTC's flagship is in EMCON for purposes of operational/communications deception); the OTC may require continued reporting by warfare commanders and units, but will not acknowledge receipt or will acknowledge receipt via another circuit. If required by EMCON, RAID reporting responsibility may be passed to the E2C, AWACS, or MPA. Reports, other than initial raid reports, would normally be terminated in this situation.

d. Breaking Radio Silence. Enemy reporting is one of the occasions when radio silence may be broken. This subject is described in more detail in Chapter 5.

SECTION IV — AIR OPERATIONS

6400 INTRODUCTION

The discussion in this section encompasses maritime operations outside of TASMO by aircraft:

1. Organic to a force.

2. Carrier- or land-based providing support to a force at sea.

3. Conducting air operations in the maritime environment.

6401 MARITIME TASKING AUTHORITIES

Maritime aircraft under the operational control of a maritime commander may be tasked by a shore authority if land-based, or by the OTC if shipborne on a force at sea. When tasking maritime aircraft, the tasking authority, MHQ, or OTC should:

1. Employ the appropriate aircraft in a safe manner to accomplish the assigned task.

2. Inform all units of all friendly aircraft operating in the vicinity.

3. Disseminate pertinent information to all units in the area in a timely manner.

4. Liaise with air defense authorities and civil air control authorities including NOTAM actions.

6402 AIR SUPPORT OPERATIONS

Maritime aircraft may be assigned to provide support to forces at sea in one of three forms.

a. Direct Support. Aircraft assigned to direct support of a force at sea will operate under the tactical control of the OTC who is being supported. Operational control will remain with the tasking authority and tactical command may be delegated to the aircraft commander. Direct support operations are normally carried out within the OTC's surveillance area. The radius of direct support operations about the force will be determined by the OTC and will vary according to:

1. The threat.

2. The number and type of aircraft available.

3. Area coverage desired.

4. EMCON plan in force.

The OTC is to inform the tasking authority of the dimensions of his surveillance area and of subsequent changes, emission policy permitting.

b. Associated Support. In specific cases of communications or other control difficulties, associated support may be provided. Aircraft tasked on associated support will operate independently of other forces at sea; however, their tasking is in support of a specific force. They may be tasked to support that force by providing contact information and to receive intelligence from the OTC who is being supported. The aircraft may be tasked to establish communications with the supported force to prevent mutual interference. The OTC of the supported force cannot take tactical control of the aircraft unless

authorized by the aircraft tasking authority. The aircraft commander should be briefed on the degree of support it can give to the OTC.

c. Area Operations. Area operations are conducted in areas within which enemy forces are known to be, through which enemy forces are likely to pass, or within which it is desirable to deny the enemy freedom of action. In addition, operations may be related to the protection of maritime forces scheduled to enter the area in the future or to provide defense in depth to distant forces. Land-based aircraft on area operations are under the operational control of a shore-based authority. Tactical command and control of the aircraft conducting the mission is normally delegated to the aircraft commander by the tasking authority. Aircraft commanders should be briefed on the whereabouts of friendly naval forces and as to whether or not they may react to a request from these forces to assist in the prosecution of contacts within the aircraft's operating area. Notwithstanding such authorization, the original tasking authority has the right to resume control of the aircraft at his discretion.

6403 INFORMING THE OTC OF OPERATIONS IN HIS VICINITY

OTCs are to be informed by the appropriate coordinating authority of any aircraft employed on area operations in the vicinity of their force.

If a force at sea is to be supported by land-based aircraft in associated or direct support, the OTC will be informed by the appropriate coordinating authority of the type and nature of support being provided in response to the support request, using standard RAINFORM formats. In the case of shipborne aircraft support, the OTC of the force providing the support should keep the OTC of the supported force, and, if possible, shore authorities, informed of the flying schedule and intentions using the standard MTMS formats.

6404 SPARE

6405 TYPES OF OPERATIONS

6406 OPERATIONS INTEGRAL TO A FORCE

Helicopter and carrier borne aircraft which are an integral part of the force are under the tactical command of an OTC. They are assigned tasks as directed by the OTC or warfare commander as required. Although the employment of these aircraft is not a support operation, the procedures in this chapter sometimes apply.

6407 SUPPORT OPERATIONS TASKED BY MARITIME AUTHORITIES

a. Air Operations Outside TASMO. Air operations in support of forces at sea outside TASMO, which are controlled by maritime authorities, are normally tasked by standard MTMS or other messages such as the ATO. The tasking authority should stipulate in the FORM GREEN both the form of support of each mission and the specific mission type by promulgating mission designators from Table 6-3.

(1) Mission Designators. The Table 6-3 mission designators can only be changed by the aircraft commander if delegated tactical command. Therefore, if an OTC wishes an aircraft to do more than one mission type, it must be requested in the support request message, FORM GREEN REQUEST. The ASW mission type is subdivided and once the tasking authority has authorized an ASW operation, the supported OTC can modify the ASW tasking during a mission.
(NR) (NMM) Table 6-5 uses the ASW mission designators.

(2) Mission Type. Table 6-3 lists the mission types which maritime aircraft may be tasked. Details on the various scouting missions are in Section II of this chapter.

Table 6-3. Table of Aircraft Mission Designators

FORM OF AIR SUPPORT OPERATION (Notes 1 and 4)	Designator
Area Operations	AQ
Associated Support	AS
Direct Support	DS
MISSION TYPES (Notes 1, 3, and 4)	
Air Surveillance	SV
Antiair Warfare	AD
Antisurface Operations	SW
Area Search	SA
ASW Operations (Note 2): Further amplified with more mission designators in Table 6-4	KS
Attack (Surface Targets)	AT
Barrier	BR
Investigate	IN
Mining Operations	MI
Reconnaissance	RE
Screen	SC
Search and Rescue	SR
Search and Shadow:	
a. Overt search, Identification, and	AR
b. Overt search, covert identification, and low shadow	CP
c. Overt search, covert identification, and low shadow	HR
d. Overt search, covert identification, and low shadow	NV
e. Covert search, identification, and shadow	SX
f. Covert search, identification, and high shadow	WZ
Surveillance	SU
Training	TN

Notes:
1. Tasking authorities are to use mission designators to promulgate the form of air support operation and the mission types in all Forms GREEN.

2. To be used by tasking authority for all types of ASW operations (i.e., ASW surveillance, air-sub operations, area, associated, or direct support operations).

3. Amplification of mission, such as reporting/tracking instructions or attack criteria may be required, e.g., “BR + Report hourly.”

4. These designators may also be used in other message traffic to describe aircraft employment.

b. (NC) (NMM) Antisurface Operations. The aim of antisurface operations by aircraft is to ensure the detection, and early engagement of enemy surface forces in order to deny their effective employment. Aircraft can effectively locate and shadow enemy naval surface forces. In war, aircraft should remain outside the effective envelope of shipborne missile and gun defense systems whenever possible while searching for, identifying, and shadowing and subsequently attacking hostile forces. At times, it may be necessary to establish the identity of contacts detected at ranges in excess of the identification/recognition capability of the aircraft sensors. Ideally, this identification/recognition should be done by a small, high speed, low level, manoeuvrable aircraft equipped with radar, ESM, and ECM for self protection. In some situations, it may be necessary for MPA/MRR aircraft or helicopters to identify the contact, but before ordering such a mission the OTC/MHQ must consider all the factors including the possibility of losing the aircraft to enemy defenses.

c. ASW Operations. Air ASW support operations can be conducted by helicopters or by fixed-wing aircraft. Shore-based aircraft are tasked by shore authorities to support forces at sea. Shipborne aircraft can be tasked by their OTC to provide direct support to support other OTCs.

(NR) (NMM) In either case, standard aircraft tasking formats as detailed in APP-11 should be used.

The tactical procedures to be used on ASW missions are in this publication and appropriate tactical instructions issued by the tasking authority.

(NR) (NMM) The ASW mission designators in Table 6-5 should be used by the OTC to task aircraft on ASW missions and in GREEN REQUESTS. Tactical procedures are also in ATP-28.

There are many occasions when the long-range detection capability of the submarine can be exploited or complemented by the use of cooperating aircraft. The combination of effective detection by the submarine and subsequent rapid response by the aircraft provides a valuable system of defense and surveillance against surface or subsurface enemy forces. In this context, cooperating units must be aware of each other's tactics and limitations.

d. (NC) (NMM) Air/Submarine Cooperation. There are four types of air/submarine cooperation as listed below:

(1) Mutual Cooperation. Mutual cooperation is the highest level of air/submarine coordinated operations and will take place within a JTAA. Cooperating units share waterspace in the JTAA.

(2) Indirect Cooperation. Indirect cooperation typically occurs when aircraft and submarines are operating as independent components in an ASW operation. When ordered, the submarine must be assigned to a JTAA. A series of rendezvous or communication windows may also be specified to enhance tactical flexibility.

(3) Surveillance Support. During surveillance support, the submarine(s) and aircraft operate independently, typically with the submarine(s) and the aircraft operating in adjacent areas. The aircraft is to broadcast contact or situation reports at specified times on designated circuits. There is no planned rendezvous.

(4) Communications Support. In communications support operations, the aircraft is specifically tasked to provide communications relay for the submarine. A typical scenario is covert communications support for submarine(s) engaged on minelaying or special operations. There are two types of communications support:

(a) POSTBOX. POSTBOX procedures are used by a submarine to pass a message to a shore base via aircraft relay.

(b) AIRMAIL. AIRMAIL procedures are used by a shore station (normally an MHQ or SUBOPAUTH) to pass message traffic to a submarine via aircraft relay.

For full details see ATP 28, Chapter 12.

6408 — 6409 SPARE

6410 PROCEDURES FOR AIRCRAFT IN TRANSIT

a. Enemy Contacts. Aircraft commanders are to be briefed before takeoff on action to be taken on contacts gained while in transit. Briefing shall take the form of transit instructions as follows:

(1) Transit Instructions A (TRANSALFA). The aircraft is not to report or investigate enemy contacts. Contacts gained are to be logged and reported after flight. The aircraft is to attempt to adhere to scheduled task times.

(2) Transit Instructions B (TRANSBRAVO). The aircraft is to report enemy contacts to its controlling authority and to the OTC of the supported force. It is not to investigate such contacts and is to continue its briefed mission unless otherwise ordered.

(3) Transit Instructions C (TRANSCHARLIE). The aircraft is to attempt identification and report all enemy contacts. Concurrently with the report, the aircraft shall take the following action:

(a) Submarine — Destroy it whenever possible, unless ASW attack is prohibited by Waterspace Management attack restrictions. In prehostility phase, track it in accordance with Rules of Engagement. The time spent investigating an enemy contact shall be in accordance with preflight briefing or further orders.
(NC) (NMM) (See Article 6734.)

(b) Surface Ships — Endeavour to shadow until further orders are received.

(c) Aircraft — Endeavour to identify and ascertain course and speed.

b. Search for Friendly Force

(1) Not Found. If the force is not found within one hour of the expected time, an encrypted "Not found" message is to be made to the authority ordering the mission. The aircraft may request the OTC to use homing procedure; however, the OTC may not wish to break radio silence to answer the request or to use homing procedure. The aircraft is to continue searching for the force.

(2) When Found. When the force is found, an encrypted "Found" report is to be made only if a "Not found" report has been made previously or if the aircraft has been ordered to make this report. The position of the force is only to be included in a "Found" report when the aircraft commander considers that the estimated position is in error to such an extent that any delay in transmitting this information would adversely affect subsequent operations. The "Found" report, if made, is to be transmitted at least 50 miles from the force. However, once the aircraft is under the tactical command of the OTC, it shall be the OTC's responsibility, considering his EMCON plan, to determine the range from the force at which the "Found" report shall be sent.

6411 — 6414 SPARE

6415 IDENTIFICATION/RECOGNITION OF SUPPORT AIRCRAFT

It is important that all aircraft tasked to support a force at sea, be positively identified as friendly as they close the force. When the aircraft departs from its base/force at sea, its identity is known and the transfer of control and identification/recognition to the supported force can be done by radar handover or nonradar handover procedures.

a. Radar Handover. This procedure is used when there is overlapping radar coverage at the transit altitude between the departure air control area and the air control area around the supported force. The controllers effect a positive transfer of control of the aircraft after mutual self identification.

b. Nonradar Handover. This procedure is used when there is a gap in radar coverage at the transit altitude or when EMCON denies the use of radar and positive handover by controllers is not possible. Aircraft who are tasked to support a force and are controlled by maritime authorities, are to use appropriate self identification and joining procedures listed in Article 6417 and Table 6-4.

(NR) (NMM) Aircraft who are controlled by other air forces will use the procedures in ATP 34.

Table 6-4. Checklist for Aircraft Joining Surface Forces for Direct Support

SERIAL NO.	ACTION UNIT	ACTION
1	OTC/ACU	On receipt of FORM GREEN or ATO, transmit joining instructions message in accordance with paragraph 6419b.
2	MHQ	Relay the joining instructions message to the aircraft. If for any reason the MHQ is unable to relay the message to the aircraft, it is to inform the OTC/ACU.
3	Aircraft	Complete aircraft joining message and transmit it to MHQ for dispatch to ACU. (See Note 5 or Serial 8.)
4	Aircraft	Transit under tactical control of sector operations center (SOC) or MHQ.
5	Aircraft	Select assigned IFF/SIF codes as ordered in FORM GREEN or ATO. Communications should be attempted with the force before the aircraft reaches the gate.
6A	Aircraft	*If radar handover expected*, monitor handover on promulgated handover circuit and establish communications with the force marshaller, nominated controller, or OTC. (See Notes 1 and 2.)
6B	Aircraft	*If nonradar handover expected*, establish communications with force marshaller, nominated controller, or OTC on RATT or voice on ASW or marshalling circuits as promulgated. Pass: type of aircraft, time at gate/ISR, direction of approach, and altitude. (See Notes 1 and 2.)
7	Force Marshaller/ Nominated Controller/OTC	Respond to aircraft (see Note 1); challenge aircraft IFF or pass identity procedure to be done (if required). Pass: a. Call sign and position of ACU b. Direction and distance to patrol area c. Altimeter setting (QNH) d. CSP aspects of EMCON plan e. Inform aircraft if ACU has received FORM GREEN or ATO f. Time check g. Clearance to descend and proceed to patrol area, as required, and h. If required, new control RATT or voice frequency, and control of aircraft to ACU i. Gridlock.

Table 6-4. Checklist for Aircraft Joining Surface Forces for Direct Support (Cont.)

8	Aircraft	Call ACU and ascertain if ACU has received aircraft joining message. If not received, pass all items below; if received, update appropriate items below: a. Sortie number b. Any restrictions to role (see Note 3) c. Serial numbers of OPGEN and OPTASK received d. ON/OFF task times e. (NC) (NMM) Serial number of the latest WSM message received and serial number of SGSA in effect (if any) f. Aircraft data link coordination information. Be prepared to pass following additional information if ACU informs aircraft that no FORM GREEN or ATO was received: g. Aircraft type h. Weapon load i. IFF mode setting.
9	ACU	ACU pass following joining instructions message (See Note 4): a. Identify maneuver if no previous voice communications established. Pass ship's position and clearance to close/ descend. b. Threat assessment, mission designator and employment/ airplan, gridlock (if not already completed by force marshaller), controller grade, control rules in force. c. EMCON d. EW task e. PIM, if different. f. Update important data from OPGEN and OPTASK if different. g. (NC) (NMM) Update important data from JTAA (including any SGSA in effect) or SAA, if different; or pass latest WSM serial number and effective SGSA (if any). h. Update air safety information not previously transmitted, including other aircraft activity.

Table 6-4. Checklist for Aircraft Joining Surface Forces for Direct Support (Concl.)

9 (Cont.)	ACU	i. Lost communication procedures j. Weapons restrictions and rules of engagement **k. (NC) (NMM)** DUSTBIN status and area (if appropriate) m. SITREP, including in TA operations current contact acoustic data (i.e., target sources, frequencies, source levels, aspect dependencies and advice or sensor depth) n. 1. Bathy and active acoustic information if different than predicted range 2. In TAS operations: ambient noise p. Weather, QNH, water depth, and tidal stream q. Call sign and position of important and detached units r. Times of ship/air RATT schedules (if applicable) s. Data link coordination information. **NOTE:** Only information required need be sent.
10	Aircraft	Report to ACU when in patrol area.

Notes:

1. Whenever joining an unsecure voice circuit, proper authentication must be used.

2. Helicopters are too close at altitudes that will allow early radar detection by the force being joined and at speeds below 140 knots.

3. Restrictions should include any significant change in standard weapon load or any unserviceabilities.

4. ACU should not duplicate any information already held by the aircraft.

5. Aircraft joining message is to be:

   a. In accordance with MATELO Handbook

   b. Of IMMEDIATE precedence

   c. Addressed to the OTC/ACU

   d. From the aircraft call sign.

6. The communications security protection (CSP) aspects of an EMCON plan are reflected by RSIs A, D, and X.

Table 6-5. (NU) (NMM) ASW Mission Designator Table

Mission Designator (1) (4)	Mission Aim (2)	Threat (3)	Sensor	Remarks
EM	Deter	All	Radar — may be augmented by sonobuoys	Optimize radar operating mode for deterrence
ZY	Deter and Detect	All	Radar — may be augmented by passive sonobuoys	1. Optimize radar operating for deterrence 2. Patrol at best compromise altitude for radar and sonobuoy detection
NL	Detect and Deter (active and passive)	All	Radar — may be augmented by passive sonobuoys	1. Optimize radar operating for detect 2. Patrol at best altitude for radar detection
JK	Detect (passive)	Primary nuclear	Passive sonobuoys	1. Patrol at altitude for best sonobuoy monitoring 2. May be used against noisy/diesel-electric if known/assessed to be snorting
FE	Detect (passive/active)	Nuclear (and/or diesel-electric)	Passive sonobuoys — may be augmented by radar	Patrol at altitude for best sonobuoy monitoring
SN	Support submarine ASW operations	All	As required	1. May be combined with another compatible secondary mission 2. Patrol at altitude for best sonobuoy/communications monitoring

Notes

(1) Tasking authorities are to use mission designators to promulgate the mission form and mission type (Table 6-2). The OTC will order the specific ASW mission designator (Table 6-4).

(2) Specific requirements to “Report,” “Track,” and/or “Destroy” are to be ordered additionally by the tasking authority, e.g., “ZY + Destroy,” “FE + Track + Report.”

(3) The tasking authority/OTC is to specify the type of threat, if known.

(4) If BLIND BROADCAST, POSTBOX, or AIRMAIL procedures are required, the FORM GREEN is to be amplified accordingly.

(NATO-CONFIDENTIAL) (NMM)

6416 DEFINITIONS

The terms used by maritime aircraft during support operations are listed below and are illustrated in Figure 6-3.

a. Departure Location. The location from which the supporting aircraft departs, including an airfield, a carrier, or another ship.

b. Force Air Coordination Area (FACA). The FACA is that area surrounding a force within which air coordination measures are required to prevent mutual air interference between all friendly surface and air units and their weapon systems. Normally, the FACA will coincide with the AAW area or the area of ASW direct support, whichever is the greater. The size and shape of the area will usually be prescribed by the OTC and will depend upon the limits to which tactical control of aircraft must be exercised. If two or more FACAs overlap, the senior OTC is responsible for overall coordination.

c. Handover Gate. The hand over gate is the point at which the control of the aircraft, if radar handover is used, changes from one controller to another. The handover gate position is determined by agreement between the shore ADC and the OTC.

d. Entry/Exit Gate. The entry/exit gate is the point to which an aircraft will proceed to commence the transit inbound or outbound from an airfield or force at sea. It should be suitably located to make the transit of the supporting aircraft as short as possible and clear of enemy units. Gates are promulgated as fixed geographic positions. Since many aircraft radars cannot detect and identify a surface force at 150 nm, the gate should be promulgated as a range and bearing from PIM and not from ZZ or QQ.

1. The entry/exit gate is 5 nm in radius (10 nm in diameter) from the surface to 25,000 feet MSL and reserved as an MPA climb/descent zone to and from assigned altitudes.

2. The gate will be the only point of entry and departure for aircraft. Altitudes, as specified in RAINFORM GREEN or ATO, should be at or near the upper limit of the gate in order to enable rapid and positive identification by the force and ensure UHF communications.

e. Marshalling Gate. This is the point to which aircraft fly for air traffic control purposes prior to commencing an outbound transit or after completing an inbound transit before landing. Marshalling gates will always be within radar coverage of the designated controller (e.g., airfield/CRP/CRC/SOC/carrier/force marshaller, etc.) and will be defined geographically or relative to the force. The gate is a position clear of enemy units, and suitably located for transit from supporting air departure positions.

f. Identification Safety Range (ISR). The ISR in maritime operations is the minimum range to which an aircraft may close an assumed friendly force without having been positively identified to ensure that the force does not mistake the aircraft for hostile. It should not be confused with the various self defense safety ranges that aircraft are advised to use when approaching/investigating unknown contacts. The ISR normally encompasses the force MEZ if zone AAW coordination is being used. In larger dispositions this may not always be possible. In any case, the ISR must be easily located by aircraft supporting a force. As with entry/exit gates, ISR relative to ZZ or QQ will be difficult to locate accurately when EMCON, large dispositions, and longer ranges are considered. Normally, ISRs should be established relative to the promulgated PIM rather than the position of the force (ZZ or QQ) whose disposition about the PIM is dynamic.

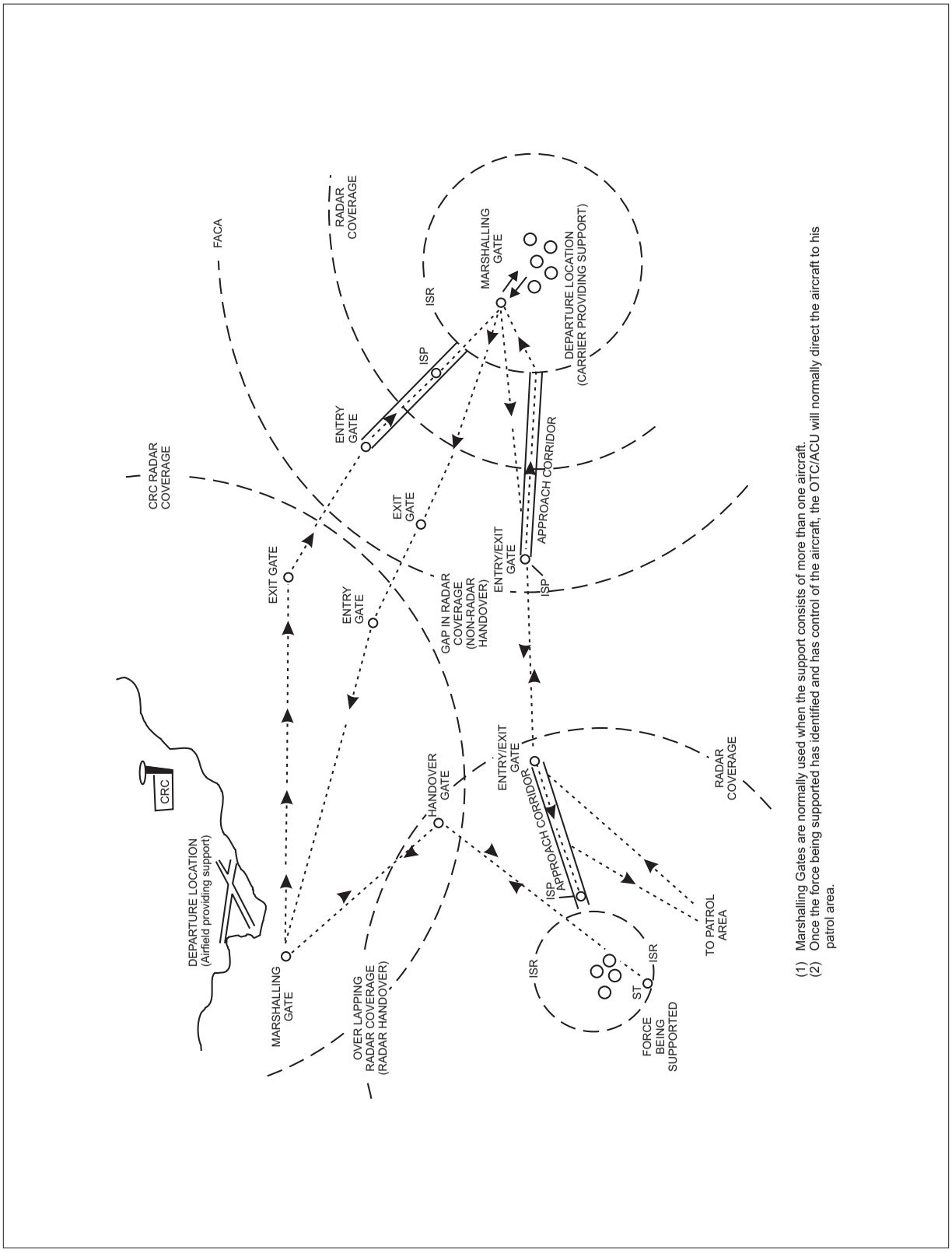


Figure 6-3. Approach Corridors

g. Approach Corridor. The approach corridor is usually established on a line between the entry/exit gate and the force/disposition center. If the force center cannot be determined by the aircraft's radar, the corridor will be on a line between the entry/exit gate and the PIM position. The inner boundary is determined by the ISR. The approach corridor width is normally 5 nm either side of the line. Depending on the mode of promulgation the corridor may be fixed geographically or move in the following manner (see Figure 6-3):

1. If the entry/exit gate and ISR are established relative to force/disposition center, the corridor orientation and dimensions will not change but the entry/exit gate and the corridor will move with the force.

There may be occasions when tactical considerations dictate deviation from the direct route from entry/exit gate to the force/PIM position. In which case, the routing must be included in the OTC's OPGEN/OPTASK updates or agreed to between the shore ADC and the OTC. When establishing approach corridors, the OTC must consider the communications that will be available for joining and marshalling, the direction of the friendly bases from which aircraft might come, threat axis, areas in which support aircraft will be employed once on patrol, location of TOMCAT and AEW pickets in a large disposition, and AAW coordination such as MEZ and FEZ.

h. Identification Safety Point (ISP). When the gate is not within the radar cover of the ships or when two-way communications are not established between the ACUs, the ISP is the point at which aircraft on joining the force will attempt to establish two-way communications with the ships and commence identification procedures. Unless otherwise promulgated the ISP will be a position at 150 nm from ZZ on a direct line between the in-use gate and ZZ. There may be occasions when tactical considerations dictate deviation from the direct route from gate to ZZ. In which case, an ISP may be included in the OTCs AAW update or agreed between the shore ADC and the OTC, otherwise the ISP need not be promulgated.

6417 IDENTIFICATION/RECOGNITION PROCEDURES

Tentative initial identification/recognition of friendly aircraft may be assumed when an aircraft, showing the proper IFF/SIF code, enters and settles down on the heading of the designated approach corridor or sector. Positive identification/recognition will be considered as established when an aircraft has been visually sighted and recognized by CAP, other known friendly aircraft, or a surface ship. If not sighted, positive identification/recognition may be assumed if at least one planned IFF/SIF change or identity maneuver has been made. The following self identification procedures are established:

a. (NC) (NMM) IFF/SIF Identity. This may be ordered by the use of the term "Perform Identity (designation)."

(1) Identity ALFA	— Squawk IDENT
(2) Identity BRAVO	— Switch to Standby for 1 minute.
(3) Identity CHARLIE	— (Wartime Only) Shift for 2 minutes to the wartime mode/code assignments designated for the next half hour period, then return to the current mode.

(NATO-CONFIDENTIAL) (NMM)

b. (NC) (NMM) Identity. If positive identification/rectification cannot be established through IFF/SIF identity, one of the following shall be ordered by the controlling unit.

(1) Identity DELTA	— Carry out one 360 orbit
(2) Identity ECHO	— Carry out a left or right 90 turn holding new heading for 1 minute, returning to corridor at a 45 angle.
(3) Identity FOXTROT	— Carry out encoded vector.

(NATO-CONFIDENTIAL) (NMM)

6418 RESPONSIBILITIES OF THE AIRCRAFT CONTROL UNIT (ACU)

Aircraft on direct support are under the tactical control of the OTC, who in turn normally delegates that function to an Aircraft Control Unit (ACU). General responsibilities of an ACU are as follows:

a. Ordering the tactical employment of aircraft as required by the OTC/AAWC/ASWC/ASUWC and specifying the type of control.

b. Keeping the OTC fully informed on aircraft status and of any other factors affecting air operations.

c. Informing the OTC or air coordinator on movements of aircraft under control and in the operations area.

d. Informing aircraft under his control on movements of other friendly and enemy aircraft; keeping them informed on the tactical situation.

e. Assisting aircraft that are operating independently or are controlled by shore-based authorities.

f. Relaying tactical information to and from aircraft.

g. Safety of all aircraft under his control.

6419 SUPPORT AIRCRAFT JOINING A FORCE

a. Preparation. The OTC will promulgate handover gates, entry/exit gates, altitudes, ISP, ISR, PIM, communication window times, etc., in appropriate MTMS messages. It is essential that the aircraft receive all this information well before takeoff. The FORM GREEN will also provide further information.

b. Joining Instructions Message.

(1) The OTC/ACU should, whenever possible, send a joining instructions message to the tasking authority and the airbase or parent ship to promulgate and update information regarding the mission. The message should contain the information listed in Table 6-3, Serials 7 and 9. The message can be transmitted by any means and should be received by the airbase at least 4 hours before aircraft takeoff.

(2) The signal should be of IMMEDIATE precedence to both action and information addressees. The first words of the text should be "FOR..." (e.g., "FOR NWD GREEN 257 FROM (c/s ACU) TO (c/s MPA)").

c. Approaching the Force. The OTC should establish approach corridors for friendly aircraft to use when joining a force. In extreme conditions of weather and EMCON, he may dictate a rigidly designed flight profile for aircraft joining, operating on station, and departing a task force/task group. The design of such a flight profile must take into account the force composition/disposition with respect to ASW, AAW, ESM, ASMD, and airspace coordination in IMC. In a large disposition, the force AAW posture may permit engagement of MPA or other friendly aircraft attempting to join long before communications have been established or identification has been completed. This is especially true when pickets or deception groups are used. Therefore, it is essential that aircraft remain in these corridors until identified as friendly by the OTC.

(1) Aircraft at ISP. The aircraft should be at the ISP (entry/exit gate if no ISP) at the promulgated ON TASK time and if early it is to hold there until ON TASK time. The aircraft then flies down the approach corridor, attempting to establish communications with the Force Marshaller/Nominated Controller/OTC on the promulgated frequency when closing the force within the approach corridor. If the aircraft reaches the ISR and has not established communications with the OTC and has not been identified as friendly, it is to hold at the ISR within the corridor and continue to attempt communications. If after 15 minutes at the ISR, no communications have been established, the aircraft is to transit towards the entry/exit gate inside the corridor until the aircraft commander considers it safe and:

(a) Unless otherwise directed, carry out an appropriate Airplan beyond the ISR and outside a safe range from unidentified or hostile contacts.

(b) Make periodic attempts to establish communications on the promulgated joining circuit or other force circuits.

(c) If the aircraft commander considers he cannot provide useful support or if his activities may conflict with carrier-based operations, he is to clear the force to a suitable distance and inform MHQ that he is unable to join and request instructions.

(2) Not Found/Found Procedure.

(a) Not found. If the force is not found within 1 hour of the expected time, an encrypted "Not found" message is to be made to the authority ordering the mission.

(b) When found. When the force is found, an encrypted "Found" report is to be made only if a "Not found" report has been made previously or if the aircraft has been ordered to make this report. The position of the force is only to be included in a "Found" report when the aircraft commander considers that the estimated position is in error to such an extent that any delay in transmitting this information would adversely affect subsequent operations.

d. Use of Checklist.

(1) The checklist in Table 6-1 is designed to be for both RATT and voice joining. Whenever RATT is available, it should be used in preference to voice as it is clearer, faster, and reduces traffic on busy voice circuits. The OTC's EMCON plan will indicate which information must be encoded when voice is used.

(2) Whenever voice joining procedures are used, the OTC should consider using the abbreviated format (paragraph e), thereby reducing the time for establishing the aircraft on patrol.

e. Abbreviated Joining Procedure. It is sometimes necessary to expedite joining procedures; for example, when an action is in progress during arrival of aircraft. Such a procedure should include only the following items:

(1) From Aircraft:

(a) Authentication.

(b) Number and type of aircraft/helicopters, identity of senior aircraft/helicopter, persons on board (POB).

(c) Joining from.

(d) Joining for/Request employment.

NOTE

The following additional information should be passed if different from the tasking signals:

Altitude
Weapon load
Off task time.

For helicopters, if applicable:

Observer control grade
Any restriction to aircraft capability.

(2) From Ship:

(a) Authentication.

(b) Identity and ship's position.

(c) Employment/Airplan — including PIM, master/watcher, controller grade, control rules in force.

(d) Clearance to close/descend.

(e) Weapon restrictions if appropriate.

(f) Gridlock.

(g) Data link information if appropriate.

Supplementary information can be passed later when the tactical situation permits.

f. Helicopters. When helicopters join from another task unit within the same task group, the abbreviated joining procedure should normally be sufficient and should therefore generally be used. If the helicopter requires further information, it should request it by reference to the appropriate section in the joining checklist (for example, "HCU FROM HELICOPTER. REQUEST D, H, M, AND N"). (The helicopter requires EW Task, Safety Info, SITREP, and Acoustic Info.)

g. **(NC) (NMM) Covert Joining Procedures**.

(1) The OTC may direct that covert joining procedure is to be used to avoid revealing the presence of joining aircraft. This procedure restricts the aircraft commander from using UHF for voice transmission until he is involved in the active engagement of a contact. However, should the procedure become too restrictive, it may be cancelled by the OTC, ACU, or aircraft commander.

(2) When joining, the aircraft commander will carry out normal joining procedures, but he will not transmit on UHF to establish communications, as outlined for the self-identification procedure. The aircraft commander and ACU will carry out the following:

(a) The aircraft shows the appropriate IFF/SIF.

(b) When the ACU identifies the aircraft he passes patrol instructions using message authentication.

(c) If the aircraft commander understands the instructions, he squawks IDENT (identity ALFA) and proceeds on patrol.

(d) If the aircraft commander does not understand or hear all of the instructions, he switches his IFF to standby for 1 minute (identity BRAVO).

(e) The ACU checks his message to ensure that his instructions are complete and then retransmits. Should the aircraft commander again go to standby (identity BRAVO), it is probable that he is having difficulty reading the ACU, and the ACU should instruct him to close.

(f) The procedure is repeated until the aircraft commander squawks IDENT (identify ALFA) to signify that patrol instructions are understood. In no case should the aircraft overfly any ship unless given permission to do so by the ACU.

6420 — 6424 SPARE

6425 EMPLOYMENT OF AIRCRAFT WHILE ON DIRECT SUPPORT

Employment of aircraft on direct support is determined by the OTC or the ASWC/ASUWC as appropriate. On joining the force, the aircraft will be tasked using an appropriate Airplan based on the mission as promulgated in the tasking signal. The OTC cannot normally task a support aircraft on mission types other than that authorized by the original tasking authority. The only exception to this is when "KS" ASW operations is given, then the OTC can amplify aircraft using the mission designators in Table 6-4. The OTC may change the employment of ASW aircraft by issuing a new Airplan and/or ASW mission designator.

6426 (NC) (NMM) RAPID TASKING PROCEDURES FOR MPA JOINING A FORCE

The procedure permits Maritime Patrol Aircraft (MPA) joining a force to be rapidly tasked, after the authentication/identification phase has been completed, during periods when the use of a full joining message is inappropriate. The procedure can also be used to retask MPA already established on task.

6427 (NC) (NMM) PROCEDURE

The procedure is executed after authentication/identification has been achieved. If subsequently required, additional information may be passed as soon as circumstances permit in order to amplify the tasking.

The procedure consists of a task force "Rapid Tasking Message," a readback of the message by the MPA, and an MPA "Acknowledgement Message."

a. Rapid Tasking Message. The Aircraft Control Unit (ACU) passes tasking information by transmitting a combination of letters and numbers, using the following format:

Rapid Tasking Message				
2 letters	1 number	2 letters	1 letter	1 number
Task Table 1	Weapon Restriction Table 2	Airplan Area Sector Bearings Table 3	Airplan Area Range Table 4	EMCON Table 5

b. Acknowledgement Message. The MPA acknowledges the Rapid Tasking Message in accordance with Table 6.

6428 (NC) (NMM) Task

The task is passed by using two letters from Table 6-5A/1. The mission designators are the same as used in Section IV of this Chapter.

6429 (NC) (NMM) WEAPON RESTRICTIONS

The weapon restriction policy is passed by the use of a single number from Table 6-5/2. Clearance for weapon release will apply to tasked Airplan Area only. When ROEs apply, the use of number "3" from Table 6-5A/2 permits the OTC to deny the MPA clearance to attack until he is satisfied that the MPA is in receipt of the latest ROEs in force. The OTC must also ensure that weapon WSM Attack Rules (Section VII of this chapter) are enforced.

Table 6-5A/1. (NC) (NMM) Task

Letter	Meaning
AQ	AREA OPERATIONS
AR	SEARCH AND SHADOW; Overt Search; Identification and Shadow
AS	ASSOCIATED SUPPORT
AT	ATTACK (surface target)
BR	BARRIER
CP	SEARCH AND SHADOW; Overt Search; Covert Identification and Overt Shadow
DS	DIRECT SUPPORT
EM	ASW Deter; All; Radar may be augmented by sonobuoys; Optimize radar for deterrence
FE	ASW Detect (passive, active); Nuclear (and/or diesel-electric); Passive sonobuoys may be augmented by radar; Patrol at best altitude for sonobuoy monitoring.
HR	SEARCH AND SHADOW; Overt Search; Covert Identification and Low Shadow
IN	Investigate
JK	ASW Detect (passive); Primary nuclear; Passive sonobuoys 1. Patrol at best altitude for sonobuoy monitoring 2. May be used against noisy/diesel-electric if known/assessed to be snorting
KS	ASW Operations
MI	MINING Operations
NL	ASW Detect and Deter (active and passive); All radar may be augmented by passive sonobuoys 1. Optimise radar for detection 2. Patrol at best altitude for radar detection
NV	SEARCH AND SHADOW; Overt Search; Covert Identification and High Shadow
RE	RECONNAISSANCE
SA	AREA SEARCH
SC	SCREEN
SN	Support submarine ASW; All; As required 1. May be combined with another compatible secondary mission 2. Patrol at best altitude for sonobuoy/communications monitoring
SR	SEARCH AND RESCUE
SU	SURVEILLANCE
SV	AIR SURVEILLANCE
SW	ANTI-SURFACE WARFARE
SX	SEARCH AND SHADOW; Covert Search; Identification and Low Shadow
TN	TRAINING
WZ	SEARCH AND SHADOW; Covert Search; Identification and High Shadow
ZY	ASW Deter and Detect; All Radar — may be augmented by passive sonobuoys 1. Optimise radar operation for deterrence 2. Patrol at best altitude for radar detection

6430 (NC) (NMM) AIRPLAN AREA

If the force is using 4W Disposition, Tables 6-5A/3 and 6-5A/4 will be used to task the aircraft in an Airplan Area which approximates as closely as possible to the required grid areas, thus obviating the need to pass a series of encoded grid squares. Full 4W Disposition details can be passed to the MPA when the environment permits.

6431 (NC) (NMM) EMISSION CONTROL

Restrictions on the use of radar and HF by the MPA are ordered to comply with the latest force EMCON policy by passing the appropriate number from Table 6-5A/5. V/UHF communications are assumed to be authorised and IFF is to be used in accordance with SOPs.

Table 6-5A/2. (NC) (NMM) Weapon Restrictions

NUMBER	MEANING
1	CONVENTIONAL WEAPON ATTACKS AUTHORIZED
2	CONVENTIONAL WEAPON ATTACKS ARE NOT AUTHORIZED
3	CONVENTIONAL WEAPON ATTACKS ARE NOT AUTHORIZED UNTIL THE OTC IS SATISFIED THAT THE MPA IS IN RECEIPT OF THE LATEST ROE IN FORCE.

Table 6-5A/3. (NC) (NMM) True Bearing Designators

A	000	G	120	M	240	S	030	Y	045
B	020	H	140	N	260	T	090	Z	315
C	040	I	160	O	280	U	150	AA	Circular Area
D	060	J	180	P	300	V	210		
E	080	K	200	Q	320	W	270		
F	100	L	220	R	340	X	330		

Table 6-5A/4. (NC) (NMM) Range Designators

A	20-50	G	40-70	L	60-90	P	80-120	S	100-140		
B	20-80	H	40-100	M	60-120	Q	80-160	T	100-170	W	120-200
C	20-110	I	40-130	N	60-160	R	80-200	U	100-200	X	140-200
D	20-140	J	40-160	O	60-200			V	120-160		
E	20-170	K	40-200							Y	0-50
F	20-200									Z	0-100

Table 6-5A/5. (NC) (NMM) Emission Control

NUMBER	MEANING
1	UNRESTRICTED RADAR AND HF
2	NO RADAR OR HF
3	UNRESTRICTED RADAR - HF ONLY WHEN > 100 NM ZZ
4	UNRESTRICTED RADAR - NO HF
5	RADAR ONLY WHEN > 30 NM ZZ - NO HF
6	RADAR ONLY WHEN > 30 NM ZZ - HF ONLY > 100 NM ZZ

6432 (NC) (NMM) RAPID TASKING MESSAGE READBACK

To ensure correct reception of the intended tasking, particularly the weapons restrictions, a readback of the Rapid Tasking Message is to be made by the MPA.

6433 (NC) (NMM) ACKNOWLEDGEMENT MESSAGE

The MPA acknowledges receipt of the Rapid Tasking Message with the appropriate response from Table 6-5A/6. As MPA may be able to obtain elements of the PIM from other sources, voice traffic is greatle reduced if MESSAGE A, or even MESSAGE D or E, is used in preference to MESSAGE C.

6434 (NC) (NMM) EXAMPLE OF PROCEDURE

a. Situation. The force has recently been under enemy air and subsurface attack and is currently experiencing communication jamming and deception by enemy airborne assets. The MPA that is joining the force has already received a full Joining Message, but the OTC now wishes to amend the MPA's task. Except for very brief periods, reliable ship-to-air communications cannot be established. The force is on a MLA of 360/10. The MPA has already determined the position of the force but does not know the course and speed.

b. Required MPA Tasking. The OTC wishes to task the MPA with a "deter" mission, using radar augmented by passive sonobuoys against an SSG/SSGN threat. The MPA will be permitted to carry out conventional weapon attacks in the tasked Airplan Area — 40 to 70 nm ahead of the force, 40 degrees either side of MLA. HF is not to be used within 100 nm of ZZ, and radar is not to be used within 30 nm of ZZ.

c. Rapid Tasking Message. The ACU would transmit the following:

"RAPID TASKING MESSAGE — ZULU YANKEE ONE QUEBEC CHARLIE GOLF SIX"

d. Rapid Tasking Message Readback. The MPA transmits:

"I READ BACK — ZULU YANKEE ONE QUEBEC CHARLIE GOLF SIX"

e. MPA Acknowledgement Message. The MPA, after decoding the Rapid Tasking Message, understands the tasking but requests the course and speed elements of the PIM by transmitting:

"MESSAGE ECHO"

f. ACU Response. The ACU responds by passing the course and speed elements of the PIM, appropriately encoded.

g. MPA Acknowledgement Message. The MPA, having received and successfully decoded the course and speed elements of the PIM, acknowledges by transmitting:

"MESSAGE ALFA"

h. On Patrol Call. The MPA proceeds to the Airplan Area and, if communications permit, calls when established on patrol. If necessary, the ACU should amplify the tasking to the MPA when conditions permit.

6435 (NC) (NMM) ASW MISSION DESIGNATORS

a. (NC) (NMM) Maximum Effect From ASW Air Effort. To derive the maximum effect from ASW air effort, it is essential that the purpose and tasks of each sortie be clearly defined. Only by doing so can it be assured that sorties are complementary and that the intentions of the tasking authority are conveyed fully and without ambiguity to the aircraft commander.

b. (NC) (NMM) Type of ASW Operation Ordered. Irrespective of the type of ASW operation ordered, the ASW Mission Designator Table (6-4) specifies one or both of the following mission aims.

(1) Deter — To harass submarines to the extent that they fail to achieve their aims.

(2) Detect — To detect submarines.

c. (NC) (NMM) Tasking Authority Factors. Factors which must be taken into account by the tasking authority when matching each sortie to the intention of the commander include the threat, other friendly forces available, and the environment.

d. (NC) (NMM) Appropriate Designator Letters. Tasking authorities whether shore-based or the OTC will order the missions in Table 6-5 by indicating the appropriate designator letters. Tasking authorities will use "KS" in the mission line of FORM GREEN to order ASW direct support operations. Selection and ordering of the specific ASW mission designator is the prerogative of the supported OTC.

e. (NC) (NMM) Deviation From Specified Sensor. Aircraft commanders may not deviate from the specified sensor(s) without prior approval from the tasking authority/OTC since the use of other sensors may negate the tasking authority's/OTC's intention.

6436 (NC) (NMM) SONOBUOY OPERATIONS

Aircraft tasked with conducting a passive sonobuoy search will normally determine their own sonobuoy spacing and orientation in the light of briefed or measured acoustic information. If the unit is an ASW helicopter, or if the OTC or designated warfare specialist wishes, detailed employment may be specified.

6437 (NR) (NMM) AVOIDANCE OF SONOBUOY MUTUAL INTERFERENCE

The procedure for the avoidance of mutual interference between sonobuoy equipped units operating in adjacent areas is contained in the Sonobuoy Interference Avoidance Plan (SIAP) in Chapter 9.

6438 IDENTIFICATION AND RECOGNITION BY AIRCRAFT

Visual identification/recognition is likely to be extremely hazardous to an aircraft. Covert tactics should therefore be used to force the target to radiate and give the aircraft an opportunity for identification/recognition. High-speed probe aircraft, when available, should be used if visual identification/recognition is essential.

a. Actions on Gaining Contact. On gaining contact, the aircraft should immediately turn away from the target, attempt to fix its position, and recognize the target using ESM. The aircraft should remain outside the potential MEZ and, if covert, operate at minimum operating level or below the ship's theoretical radar horizon.

b. Identification. If unable to recognize using ESM, a positive identification run may be necessary. The aircraft will normally take the following precautions:

(1) Approach from a direction other than that on which the initial detection was made.

(2) Approach at minimum altitude and high speed.

(3) Monitor ESM for fire control radar lock-on and, if detected, alter course approximately 135° and open the target at minimum altitude and high speed.

(4) If no fire control radar is detected, continue the approach until visual identification is obtained or AA range is reached.

6439 SPARE

6440 (NC) (NMM) MPA TO MPA TURNOVER PROCEDURES

MPA to MPA turnover procedures must ensure safety of flight, maintain the tactical problem, and preserve the EMCON policy. MPA controllers shall ensure oncoming aircraft arrive in the assigned area at an altitude above the on-task aircraft, and that the relieving aircraft not expend sonobuoys prior to the on-task aircraft's departure from the operating area. Fifteen minutes prior to the scheduled relief time, the on-task aircraft is to deploy predesignated turnover sonobuoys (A, B, C) or briefed gapped turnover channels, which describe the tactical situation, at the briefed off-task time, to the relieving aircraft. It is imperative that the oncoming aircraft mark-on-top these buoys for flight safety, to ascertain the tactical situation, and to plot-lock buoy patterns for subsequent analysis/reconstruct. The standard altimeter setting during turnover procedures (defined as 30 minutes prior to briefed on-task/off-task time until turnover is completed) is 1013.2/29.92.

6441 (NC) (NMM) TERMINOLOGY

The following terms are used to describe geographic positions that are pertinent to tactical situations.

a. Jig Point. The jig point is a fixed geographic position established by the MPA controlling agency for each sortie at which a crew will be briefed to drop the first buoy (Kingpin buoy) of the briefed cold pattern. Any change of Kingpin position when ordering new cold tactics in flight will be passed relative to the jig point as a range and bearing or as a new latitude and longitude for Kingpin positions.

b. Kingpin. The Kingpin is the master buoy position of a cold tactic on which the barrier or field pattern is oriented. The Kingpin will normally be an end or corner buoy of the barrier or field.

c. Pattern Time. Pattern time is the time by which a barrier, wedge, or field must be laid and monitoring commenced. If a crew is unable to meet the criteria, the pattern is to be moved in accordance with the briefed time-late instructions. Air messages revising Kingpin position are to include a time for the completion of the new pattern.

d. Barrier. The term "barrier" is to be used to specify a straight line of buoys. Barrier orientation will be ordered by one true bearing from the Kingpin buoy.

e. Wedge. The term "wedge" is to be used to specify a bent line barrier of buoys. Barrier orientation will be ordered by two true bearings. The first bearing provides barrier orientation from the Kingpin to the center of the wedge. The second bearing provides orientation from the center point to the last buoy.

f. Field. The term "field" is to be used for all patterns that involve more than one row of buoys. The pattern will be ordered by two true bearings. The first bearing will be row orientation from the Kingpin and the second bearing will be the field direction (normally right angles to row orientation). For all fields, the second and subsequent row are normally offset left or right (as specified) by one-half buoy spacing.

g. On-Task Point. The position of the reference buoy in the previous aircraft's turnover pattern is designated the on-task point for oncoming aircraft. An aircraft not relieving another is to use the master buoy (kingpin) from his cold/cold tactic as the on-task point.

h. Reference Buoy. Turnover buoys deployed by the offgoing aircraft will be used as the reference point for the turnover. Though more than one buoy may be used to indicate contact status, the turnover point will be established by a single reference buoy as specified below:

Contact Status	Deployed Buoy	Reference Buoy
HOT/HOT	A, AB, ABC, AC	A
HOT/COLD	B, BC	B
COLD/COLD	C	C

(NATO-CONFIDENTIAL) (NMM)

i. Off-Task Point. A point 30 nm along a vector specified by the controlling authority from the reference buoy dropped by the offgoing aircraft. The aircraft is cleared to commence a climb from FL 140 or below at the off-task point to the return transit level while maintaining the off-task vector. Where possible the off-task vector should be along the target track but optimized to give maximum lateral separation from the track of the oncoming aircraft.

6442 (NC) (NMM) ON-TASK EXTENSIONS

Occasionally the on-task aircraft will be instructed to extend his off-task time. Unless in direct secure communications with the offgoing aircraft, individual initiative on the part of the oncoming aircraft is not to be used in determining early descents, buoy drops, or any other departure from established procedures. Extensions to briefed on-task times may be only authorized by the aircraft's OPCON authority.

6443 (NC) (NMM) PROCEDURES FOR SPECIFIC TURNOVER

To provide safe separation between the oncoming and offgoing aircraft during turnover, it is necessary to establish a direction in which the aircraft must descend or climb when arriving and departing the operating area. To establish this direction, the controlling authority will designate a departure vector for each turnover. The designated vector will be used by the offgoing aircraft to determine the direction of his departure track from the reference buoy and the reciprocal of the vector will be used by the oncoming aircraft to determine the direction in which to descend to the desired on-task altitude. Turnover/takeover procedures are to be flown at FL 140 and FL 150 respectively, unless specified differently in Forms GREEN and briefing signals. Aircraft may not descend from transit to turnover altitude sooner than 30 minutes prior to briefed on-task time, unless the previous aircraft has departed station. For safety of flight, it is essential that aircraft tasked for operations in restricted EMCON ***adhere*** to the procedures outlined below.

a. (NC) (NMM) Procedures for Aircraft at Off-Task Time.

(1) At off-task time minus 30 minutes, the aircraft is to remain at or below FL 140.

NOTE

The off-task time for the offgoing aircraft is the same as the on-task time for the oncoming aircraft in a continuous prosecution scenario

(2) Not later than off-task time minus 15 minutes, deploy the appropriate turnover sonobuoys.

(3) Replace turnover buoys if required.

(4) Depart the reference buoy along the departure vector so as to arrive at the off-task point (30 nm range along the departure vector from the reference buoy) not later than the scheduled off-task time.

(5) Under no circumstances are sonobuoys or stores to be released after the off-task time.

(6) When level at the assigned flight level, proceed to the designated inbound route.

b. (NC) (NMM) Non-Arrival of Relief. If the relief is late, the on-task aircraft is not to remain beyond its briefed off-task time unless specifically ordered by its OPCON

If aircraft-to-aircraft communications have not been established, the departing aircraft should pass appropriate information to the ASWACU for transmission to any subsequent relief.

c. (NC) (NMM) Procedures for Aircraft at On-Task Time.

(1) At the assigned transit flight level, proceed to the on-task point (reference buoy if deployed, or Kingpin position if not relieving a previous event) via the assigned route.

(2) At the on-task point, descend if required, but do not fly lower than the authorized turnover altitude (normally FL 150) until the on-task time.

(3) Monitor turnover buoys and establish the position of the reference buoy by mark-on-top.

(4) At the on-task time, descend to search altitude from the on-task point along the briefed on-task vector.

(5) If the previous event was cold, proceed at the on-task time to the briefed position and commence deployment of the briefed cold search pattern.

d. (NC) (NMM) Restrictions. If, for any reason, the position of the reference buoy cannot be established, the aircraft is to remain overhead the on-task point at or above FL 150 until on-task time plus 15 minutes. After this time the aircraft is cleared to descend and proceed with the appropriate tactics.

6444 (NC) (NMM) SONOBUOY TURNOVER PROCEDURES

a. Non-gapped turnovers should use the sonobuoy turnover patterns specified in Table 6-6.

b. Planned gapped turnovers, when hot, should use the following turnover patterns:

(1) Alpha buoy on the best estimate of the target's position at the off-task time.

(2) Bravo buoy on the best estimate of the target's position at the on-task time of the relieving aircraft.

(3) A five-buoy wedge centered on the Bravo buoy at 2 MDR spacing. The RF channels of the wing buoys of the wedge, Delta-1 and Delta-2, will be designated by the controlling authority. The RF channels of the inner buoys will be at the discretion of the MPA captain.

NOTE

Sonobuoy life settings are to be the minimum that will guarantee RF life for the gapped period and, if possible, the Bravo buoy should be a difar buoy. Crews are to be briefed for gapped turnovers for all events and are to employ gapped turnover procedures it advised that the oncoming aircraft is delayed by more than one hour. A crew taking over a gapped turnover has one hour in which to generate contact. If contact is not gained within one hour, cold/cold tactics are to be employed. Table 6-6

6445 SUPPORT OPERATIONS CONTROLLED BY OTHER AIR FORCES

a. Maritime air operations involving other air forces usually occur as a result of an OTCs/MHQ's request for a specific mission or series of missions to support operations at sea. These maritime missions are controlled by the appropriate air force authority and do not use standard maritime procedures. The procedures to be used are encompassed in the Tactical Air Support for Maritime Operations (TASMO) concept and embraces the organization, procedures, and communications to be used in NATO for land- or carrier-based tactical air support for maritime operations. It does not include procedures for:

(1) Tactical air support for maritime units from their own shipborne air assets.

(2) Employment of any nuclear weapons in support of maritime operations.

(3) MPA operations.

(4) Air coordination and airspace control for amphibious warfare operations.

b. **(NR)(NMM)** Details of TASMO procedures, tasking organizations, and communications are in ATP 34. TASMO message formats, with examples, are in APP-11.

6450 AIR COORDINATION

Air coordination involves the safe employment of aircraft and the coordination of airspace with other users.

a. The OTC has responsibility for:

(1) All aircraft embarked in the force at all times.

(2) All aircraft assigned to the force for tactical command or control from the time when two-way communications are established with any ACU in the force.

b. Safety precautions and measures to prevent mutual interference are in Section VII of this chapter.

Table 6-6. (NU) (NMM) Sonobuoy Turnover Procedures

Turnover Pattern in Water	Meaning	Position
Alpha (only)	Hot localized DP contact at briefed off-station time. Target course and speed uncertain.	On best estimate of target's position at briefed off-station time. (See Notes 1 and 2.)
Bravo (only)	Non-localized contact at briefed off-station time.	On top of buoy having strongest target contact. (See Note 1.)
Charlie (only)	No significant contact held during the on-station period. Charlie buoy deployed for search pattern continuity.	On the end of the pattern closest to the destination air base (or as briefed). (See Note 1.)
Alpha and Bravo Collocated	Hot CZ or BB contact at briefed off-station time. Note: If the air crew is not certain of the type of contact (CZ/BB or DP), assume non-localized contact and drop Bravo buoy as above.	Collocated on last buoy in contact. (See Note 1.)
Alpha and Bravo Not Collocated	Hot localized DP contact at off-station time. Target course and speed known.	Alpha on best estimate of target's position at briefed off-station time. Bravo down target's course at 1 nm for each knot of target's speed. (See Notes 1 and 2.)
Alpha and Charlie Collocated	(Spare)	
Alpha and Charlie Not Collocated	(1) Localized contact, off-going aircraft had to leave station prior or (2) Lost CTC prior to briefed off-target course and speed uncertain.	Alpha on best estimate of target's position at time the aircraft left station or lost contact. Charlie separated from Alpha 2 nm per 15 minutes difference between the time the aircraft left station or lost contact time and briefed off-station time. (See Notes 1, 2, and 3.)
Alpha, Bravo, and Charlie Not Collocated	Same as above, except that target course and speed are known.	Same as above, Bravo down target's course at 1 nm per knot of target's speed. (See Notes 1, 2, and 3.)
Bravo and Charlie Collocated	(Spare)	

(NATO-CONFIDENTIAL) (NMM)

Table 6-6. (NU) (NMM) Sonobuoy Turnover Procedures (Cont'd)

Turnover Pattern in Water	Meaning	Position
Bravo and Charlie Not Collocated	Non-localized contact when leaving (or station lost contact) prior to briefed off-station time.	Bravo collocated on strongest buoy in contact at the time the aircraft left station or lost contact. Charlie displaced from Bravo 2 nm per 15 minutes difference from the time the aircraft left station or lost contact and the briefed off-station time. (See Notes 1 and 3.)
Zulu	Buoy placed 15 minutes of target SOA down track from Alpha buoy.	Buoy positioned to maintain contact on quiet targets.

Notes:

1. Crews are cleared to use any combination of buoy types for turnovers between similarly equipped aircraft as briefed by the operational commander. When turnovers are between different aircraft types, or if any doubt exists on types of buoys to use, lofar or difar will be used with preference given to the use of difar for the Alpha and Bravo buoys.

2. For localized DP contact, the aircraft must have achieved Doppler shift or difar CPA and employed fixing techniques to confirm contact position to within 5 nm.

3. If at all possible, the Charlie buoy should be positioned along the target track to provide an additional opportunity for contact.

(NATO-CONFIDENTIAL) (NMM)

6451 RESPONSIBILITIES OF UNITS CARRYING AIRCRAFT

Any units carrying aircraft are responsible for informing the air coordinator of any unscheduled flights.

6452 TACTICAL PROCEDURES

Tactical procedures are required to prevent tactical deficiencies caused by mutual interference between ships, aircraft, and their weapons systems, and, in particular, to:

(1) Ensure the timely engagement of enemy forces.

(2) Ensure that all weapons of the force can be employed effectively within force and local air coordination areas.

(3) Prevent the force from being alerted and reacting unnecessarily to unidentified forces which are in fact friendly.

(4) Safeguard friendly forces from being engaged by each other.

(5) Provide a safe margin of separation whenever necessary between individual friendly forces and their weapons.

6453 INDEPENDENT OPERATIONS

Independent operations may be planned and coordinated by the shore headquarters, OTC or air coordinator. Independent operations will be necessary when aircraft are operating remote from a surface force and under shore control, or are cooperating with ships and are beyond surveillance or communications range. An aircraft selects its own speed, altitude, and heading; is responsible for its own navigation and collision avoidance; and has tactical freedom to accomplish its task. To implement independent operations, the code word SOLO may be used.

6454 CONTROLLED OPERATIONS

a. Terms and Definitions. The following terms and definitions are used to describe mission and safety related control when ACUs are tactically controlling aircraft.

(1) Close Control. A form of aircraft mission control in which the aircraft is continuously controlled, for altitude, speed, and heading, to a position from which the mission can be accomplished.

(2) Loose Control. A form of aircraft mission control in which the aircraft commander selects his own speed, altitude, heading, and the appropriate tactics required to accomplish the assigned task. The controlling unit will advise the aircraft of the current tactical picture and will provide further advice if and when available.

(3) Broadcast Control. Broadcast control does not require a controller qualification. It is a form of aircract mission control used in the absence of full capability or if the tactical situation precludes close or loose control in which tactical/target information is passed to enable the aircraft to accomplish the assigned task. The controlling unit, when possible, provides adequate warnings of hazards, but the aircraft commander(s) is (are) responsible for aircraft navigation and collision avoidance. Two-way communications are not a prerequisite for this type of control.

(4) Positive. The controlling unit is responsible for taking actions for collision avoidance, such as ordering necessary alterations to heading, speed, and altitude to maintain separation criteria.

(5) Advisory. The controlling unit will provide adequate warnings of hazards affecting aircraft safety. The aircraft commander is responsible for the aircraft's navigation and collision avoidance.

b. Operational Use. These agreed terms and definitions and the operational use of the combinations of the terms listed in Table 6-7 are based on:

(1) The two aspects of tactical control of aircraft, namely the aircraft's mission and the aircraft's safety.

(2) The fact that, notwithstanding the safety aspects covered by the set of standard aircraft tactical control terms, the aircraft commander is ultimately responsible for the aircraft's safety. However, this ultimate responsibility of the aircraft's commander does not relieve the controlling unit from taking any conceivable measure within the range of possibilities to ensure the aircraft's safety.

(3) The fact that other than broadcast control, "control" means any combination of mission related close/loose and safety related positive/advisory control. A combination is normally required to control an aircraft tactically but in exceptional circumstances the terms close, loose, positive and advisory may be used in isolation.

(4) The premise that no further PROWORDs or codewords additional to the combinations listed in Table 6-7 are required to tactically control aircraft.

Table 6-7. Operational Combinations of Terms Which Must be Used To Tactically Control Aircraft

	SAFETY	
MISSION	**POSITIVE**	**ADVISORY**
CLOSE	A form of aircraft mission control in which the aircraft is continuously controlled, for altitude, speed, and heading, to a position from which the mission can be accomplished. The controlling unit is responsible for taking actions for collision avoidance, such as ordering the necessary alterations to heading, speed, and altitude, to maintain separation criteria.	A form of aircraft mission control in which the aircraft is continuously controlled, for altitude, speed, and heading, to a position from which the mission can be accomplished. The controlling unit will provide adequate warnings of hazards affecting aircraft safety. The aircraft commander is responsible for the aircraft's navigation and collision avoidance.
LOOSE	A form of aircraft mission control in which the aircraft commander selects his own speed, altitude, heading, and the appropriate tactics required to accomplish the assigned task. The controlling unit will advise the aircraft of the current tactical picture and will provide further advice if and when available. The controlling unit is responsible for taking actions for collision avoidance, such as ordering the necessary alterations to heading, speed, and altitude, to maintain separation criteria.	A form of aircraft mission control in which the aircraft commander selects his own speed, altitude, heading, and the appropriate tactics required to accomplish the assigned task. The controlling unit will advise the aircraft of the current tactical picture and will provide further advice if and when available. The controlling unit will provide adequate warnings of hazards affecting aircraft safety. The aircraft commander is responsible for the aircraft's navigation and collision avoidance.
BROADCAST	Broadcast control does not require a controller qualification. It is a form of aircraft mission control used in the absence of full capability or if the tactical situation precludes close or loose control in which tactical/target information is passed to enable the aircraft to accomplish the assigned task. The controlling unit, when possible, provides adequate warnings of hazards, but the aircraft commander(s) is (are) responsible for aircraft navigation and collision avoidance. Two-way communications are not a prerequisite for this type of control.	

NOTE: Following combinations of terms will normally be used; however, in exceptional circumstances, either column or line labels may be used in isolation:

1. Close — Positive Control
2. Close — Advisory Control
3. Loose — Positive Control
4. Loose — Advisory Control
5. Broadcast Control

c. Inability to Exercise Control. If at any time the ACU cannot meet the requirement for controlling its aircraft, it is to transfer its responsibility to another unit. If this is not possible, the ACU is to decide whether to recall the aircraft or to order it to operate independently.

d. Change of Type of Control. Subject to control capabilities, all aircraft operating in the same area should, if the danger of mutual interference exists, operate under the same type of control. A change from one type of control to another may be ordered by the OTC, the ACU, or may be requested by an aircraft.

6455 FACTORS DETERMINING TYPE OF OPERATIONS AND CONTROL

The factors that determine the type of operations and control that can be undertaken are:

(1) Operational considerations, such as mission, range, and emission policy.

(2) In-flight conditions.

(3) Tactical situation.

(4) Mutual interference.

(5) Capabilities of ACUs and controllers.

(6) Equipment status of aircraft involved.

6456 COURSES AND TRUE BEARINGS

Both true and magnetic courses and bearings may be used in aircraft operations. In communications with aircraft, courses and bearings are to be suffixed TRUE or MAGNETIC.

6457 — 6459 SPARE

6470 SAFETY PROCEDURES FOR MARITIME AIR OPERATIONS

6471 FIXED-WING AIRCRAFT

Safety of aircraft operating in support of a naval force is achieved by planned air coordination consisting of the organization, procedures, and measures required to prevent mutual interference between surface and air units and their weapons systems. The following procedures are to be used by tasking authorities and OTCs for maritime aircraft to ensure the safety of aircraft from takeoff to landing.

The ultimate responsibility for the safety of the aircraft rests at all times with the aircraft commander.

a. Transit Separation. Tasking authorities and air coordination authorities are to arrange separation for aircraft joining and departing a patrol area or a force at sea. This may be done by ordering routes, handover gates, entry/exit gates, ISP, transit and patrol altitude including upper and lower limits in the appropriate messages. This must be coordinated with the appropriate air defense organizations.

b. Joining Procedures for Shore-Based Aircraft.

(1) Direct Support. Aircraft joining a force for direct support operations are to transit through the entry/exit gate (ISP if promulgated), in the approach corridor to the ISR, at the allocated transit altitude

or flight level until identified as friendly and cleared to ascend/ descend to the patrol area by the Force Marshaller/Nominated Controller/OTC. Aircraft must not leave the approach corridor while closing unless identification has been confirmed by the force. If communication cannot be established with the OTC, the aircraft will transit back towards the entry/exit gate within the corridor and continue operations as detailed in Article 6419.

(2) Associated Support and Area Operations. Aircraft proceeding to an operating area may commence the descent before reaching the patrol area, providing they do not infringe on other aircraft areas. When relieving other aircraft, they are to enter the area through the promulgated entry point at the assigned altitude. The off-going aircraft is to depart through the promulgated departure point, at an assigned altitude normally lower than that of the relieving aircraft. After establishing two-way communication between the aircraft and arranging mutual separation, they may depart the assigned altitudes. If communication has not been established between the aircraft, the relieving aircraft may leave its assigned altitude 15 minutes after the briefed ON TASK time.

(3) Adjacent Patrol Areas. Aircraft patrol areas may be ordered with common boundaries, but to prevent mutual interference between adjacent aircraft, a safety zone must be established 15 nm either side of the common boundary. Aircraft intending to prosecute a contact within this safety zone, and prior to entering an area in which another aircraft is operating must, when the situation and EMCON policy permit, broadcast on the briefed frequency their position, altitude, and intentions, including the position of the contact under investigation, and maintain a continuous radar watch for other aircraft.

Subject to the EMCON plan in effect, ASW aircraft employed on operations in adjacent areas should be allocated tacan channels for use in the air-to-air mode to assist in the safe separation of such units. MHQs should allocate tacan channels to aircraft under their tactical control. Coordination between MHQs and OTCs will normally be necessary to avoid conflict.

NOTE

To use the air-to-air tacan capability between suitably equipped aircraft, aircraft in adjacent areas should be allocated channels with a difference of 63 between channel numbers (e.g., 2 and 84, or 33 and 96).

(4) Aircraft Emergencies. The emergency communication procedures used by the MPA will be in accordance with the procedures contained in ICAO documentation.

6472 HELICOPTERS

a. General. Helicopters may ditch without warning and should, whenever possible, be kept under constant surveillance by a surface unit Helicopters in the dip are to be considered ships not under command. When working at close quarters, it is the responsibility of ships to avoid helicopters. Ships should not pass within 500 yards of hovering helicopters, and should pass preferably on the downwind side. To assist in passing, use should be made of the order FREEZE or JUMP, both of which when given to helicopters are mandatory. The order FREEZE should be followed by the order MELT as soon as the situation allows. Fixed-wing aircraft are not to position themselves so that the slipstream strikes a helicopter or causes a helicopter to maneuver to avoid the slipstream. If, for some reason, it becomes imperative for the helicopter to leave the hover before recovering the sonar transducer, an emergency breakdip may be executed by cutting the cable. The aircraft may also attempt a free-stream recovery by leaving the hover with the transducer still streamed; attempting to recover the transducer in flight. In this situation, the aircraft will transmit “Emergency streamer.” Fixed-wing aircraft within 2 nm are to vacate the airspace below 1,000 feet.

b. Joining Procedures for Helicopters.

(1) (NR) (NMM) Communication Procedures. Communication procedures for helicopters joining or departing a maritime force are detailed in APP 1.

(2) Airmove Messages. Airmove messages may be used to determine and confirm which agency has tactical control when aircraft are being transferred between ships and shore, and to enable overdue action to be initiated at the earliest opportunity.

(3) Transit. In situations where radar coverage of the forces does not overlap, the transit is to be conducted on the transit control frequency. Other aircraft on this frequency may be used to provide communication relay facilities to simplify the transfer of control of the aircraft to the force marshaller. Attention is drawn to the significance of the establishment of two-way communication in the transfer of operational control.

(4) Join/Rejoin. Due to the low altitude of the majority of helicopter operations and the small radar-echoing area of most helicopters, it is unlikely that positive identification/recognition as described in Article 6417 will be achieved at ISRs in excess of 50 nm. However, the slow approach and distinctive emissions associated with many helicopters should greatly assist in identification/recognition after the helicopter has entered the ISR.

Helicopters joining or rejoining a force should obtain clearance from the AAWC or controlling unit to close within ISR. The controlling unit should then order standard identification/recognition procedures in accordance with Article 6417.

When a restrictive Emission Policy is in force or when two-way radio communication has not been established, thus precluding a procedural clearance, the OTC/AAWC should consider the adoption of some or all of the following procedures:

(a) Nominating "slot times" at the ISR for returning helicopters.

(b) Ordering specific approach altitudes and speeds for returning helicopters.

(c) Ordering briefed maneuvers and/or 1FF identifications to be performed every 10 minutes while closing, until identified.

The procedures adopted should be stated in the AAW and tasking messages.

6473 LOW-ALTITUDE RULES (FIXED-WING AIRCRAFT AND HELICOPTERS)

a. Flying of Helicopters. Aircraft approaching a force are to assume that helicopters are flying unless otherwise informed. The appropriate ACU is to inform aircraft on joining, of the state of helicopter flying, and subsequently of any changes.

b. Standard Rules. Unless otherwise ordered, or overriding tactical considerations dictate, the following rules apply when fixed-wing aircraft and helicopters are operating in proximity (in the order of 10 miles):

(1) Maximum altitude for ASW helicopters — 400 feet.

(2) Minimum altitude for fixed-wing aircraft at night or when visibility is 3 nm or less — 700 feet (except for aircraft in the carrier approach and landing patterns). When a fixed-wing aircraft is required to operate below 700 feet, all helicopters and fixed-wing aircraft in the area are to be placed under

positive control whenever practical. However, in many situations, placing helicopters under positive control and fixed-wing aircraft under advisory control will satisfy flight safety requirements without restricting visibility.

(3) Minimum altitude for fixed-wing aircraft by day when flight visibility is greater than 3 nm — l00 feet.

(4) Unless aircraft are cooperating and are on the same frequency, or can see each other, the following minimum lateral or vertical separation is to be arranged:

(a) In the case of a fixed-wing aircraft and a helicopter: 1,500 yards lateral or 300 feet vertical.

(b) In the case of two fixed-wing aircraft: 3 miles lateral or 500 feet vertical.

(c) In the case of two helicopters: 1,500 yards lateral or 300 feet vertical.

(5) Fixed-wing aircraft or helicopters conducting VECTAC or MADVEC procedures may overfly a helicopter in the dip or hover position, but are to maintain a minimum vertical separation of 200 feet.

NOTES

1. When operating with an aircraft towing MAD, the above limitations shall be strictly obeyed. The towed MAD sensor body and cable can trail as much as 120 feet below the aircraft.

2. When aircraft or helicopters are dropping sonobuoys, a lateral separation of 1,500 yards must always be enforced to ensure the safety of aircraft operating at lower altitudes.

3. It is imperative that a force QNH be established by the Air Coordinator (AC) and updated regularly to ensure aircraft separation within the force.

6474 LATERAL AND VERTICAL SEPARATION

a. General. Unless otherwise ordered, such as during tactical maneuvres, the following rules apply when fixed-wing aircraft and helicopters are operating within force-controlled airspace at levels above 2,000 feet in IMC. Either lateral or vertical separation shall be provided. These restrictions do not apply to tactical maneuvres, such as intercepts or rendezvous. Aircraft not in close formation should be separated as follows:

(1) Lateral separation:

(a) At least 3 nm when aircraft are within 40 nm of the control radar.

(b) At least 5 nm when aircraft are beyond 40 nm of the control radar.

(2) Vertical separation:

(a) Helicopters shall be separated by 500 feet.

(b) Fixed-wing aircraft shall be separated by 1,000 feet.

(c) Helicopters shall be separated from fixed-wing aircraft by 1,000 feet.

NOTE

Below 2,000 feet helicopters shall be separated from fixed-wing aircraft by 300 feet.

(d) When aircraft operate within assigned altitude bands, the above safety separation shall be applied between the bands.

The vertical allocation of airspace should be promulgated by the Air Coordinator (AC) for all aircraft operating within the Force Air Coordination Area (FACA). The transition altitude is 5,000 feet unless otherwise ordered. (See ICAO procedures.) Airspace is primarily allocated by task (ASW/AEW/ASUW/CAP, etc.) and type (fixed wing (FW) or rotary wing (RW)). Within the individual altitude/flight level (FL) allocation, further separation may be required to deconflict aircraft of the same task/type. Units operating within the same altitude/FL band must be on a common frequency to permit coordination of standard vertical or lateral separation between units.

b. Infringements in War. On occasions in war, units may urgently require to operate in other than their own allocated airspace, e.g., in order to prosecute a target. On such occasions it may be necessary to infringe another unit's airspace before separation can be arranged. The infringing unit should consider broadcasting its intention on "Guard" and the tactical frequency in use for the area being infringed. Additionally the unit should call when re-established at its originally allocated altitude/FL.

c. Overlapping FACAs. Where FACAs overlap, the senior OTC is responsible for the overall coordination of the mix of aircraft and tasking within the combined area.

d. IMC Vertical Separation Plan. An example of a multiforce IMC vertical separation plan based on semicircular IFR cruising levels is at Table 6-8.

6475 USE OF LIGHTS BY SHIPS AND AIRCRAFT

a. Ship Lights. During a night ASW action and/or when operating close to aircraft, the tactical situation as well as safety-of-flight considerations may dictate the use of the 3600 red masthead light(s). If this use is directed by the OTC, the following meanings apply:

(1) Steady red light(s) — Obstruction warning.

(2) Flashing red light(s) — Ship is in sonar contact and is attacking. (A light that shows a single flash at regular intervals, the duration of light always being less than the duration of darkness, but which shows more than 30 flashes per minute).

(3) Occulting red light(s) — Identification light when required for control of aircraft. (A light that is totally eclipsed at regular intervals, the duration of light always being greater than the duration of darkness and the minimum exposure at light being 3 seconds). A rotating green, amber, or blue beacon may sometimes be used for this purpose.

NOTE

It is often difficult for an aircraft to distinguish between occulting and flashing lights. The appropriate safety warning must therefore always be given prior to carrying out an attack even when the use of the flashing masthead light(s) is authorized.

b. Aircraft Lights. When numbers of aircraft are operating in proximity at night or in poor visibility, the senior officer present may order aircraft to use navigation lights.

Table 6-8. IMC Vertical Separation Plan

Altitude/Flight Level	Aircraft
FL 290+	FW AEW
FL 270-290	FW ASUW
FL 250-260	AAR Tanker
FL 220-240	CAP
FL 200-210	FW AEW
FL 170-190	CAP
FL 140-160	VS/MPA (high)
FL 120-130	FW ASUW
FL 100-110	CAP (low)
FL 80-90	RW/AEW
FL 55-70	VS/MPA (Medium) (See Note 1)
5000	Transition Altitude
2000-4000	RW AEW/ASW (Passive)
700-1500	VS/MPA (Low)
400	RW ASW: Match Lamps
0-300	Dippers

NOTES: 1. Barometric pressures below 983 mb will reduce the separation between VS/MPA and RW ASW (Passive).

2. ASW helicopters in the 0 to 400 feet allocation should be co-operating on the same ASW frequency.

3. Administrative sorties will fly in an appropriate altitude/FL band monitoring the frequency in use, but will use an alternate frequency for routine, non-operational messages.

4. If quadrantal FLs are required, the separation plan must be amended by commencing the FL allotments at 500 feet below the semi-circular plan above, e.g., CAP (Low) becomes FL 95-FI 205.

5. Communications Relay — Provision has not been made in the plan for communications relay aircraft (FW or RW) employed on MIDDLEMAN/AUTOCAT/SATCATS tasks. Often this tasking will be combined with other roles in which altitude allocation the aircraft will operate. If dedicated sorties are required, the Air Coordinator may have to re-allocate airspace accordingly.

Table 6-9. Altitude Separation in HAG Operations

EXAMPLE	HAG 1		HAG 2	
	Altitude (feet)	Sector	Altitude (feet)	Sector
CONTROLLER	800		1,000	
MISSILE CARRIER HELICOPTER	400	045 to 085	600	000 to 040
ILLUMINATING HELICOPTER	1,500		2,000	

6476 HAG OPERATIONS

a. Altitude Separation. See Table 6-9.

1. If more than one helicopter is operating in the same area, an altitude separation of 200 feet must be observed between helicopters.

2. If more than one HAG is employed against the same target, each HAG should be assigned an attack sector. As an additional safety measure, altitude bands should be allocated to the HAG.

3. Any departure from ordered altitude bands requires prior clearance by the ACU or HCU, which then is responsible for horizontal separation.

b. Communications. Each HAG should, if possible, operate on a separate frequency. HAG commanders will man an additional common frequency for coordination.

6477 COOPERATION WITH FIXED-WING AIRCRAFT

If helicopters and fixed-wing aircraft cooperate in engaging a surface target, the following rules will apply. As the supporting aircraft approaches the target area and communications are established, the helicopter will provide all available target information to the supporting aircraft. The helicopter may be requested to illuminate the target, if it is equipped to do so. Special precautions should be observed by attack aircraft, particularly during periods of reduced visibility and at night, to ensure that the helicopter is safely clear of dropped illumination devices, the attack flight path, and weapon effects.

SECTION V — SHIPBORNE AIRCRAFT OPERATIONS

6500 SCOPE

This section covers aircraft operations from carriers and other ships with aircraft embarked. The types and roles of aircraft are varied. Ordinarily the employment and responsibility for such aircraft remains with the task group commander who must exercise care when positioning these ships in the task group to facilitate coordinated flight operations.

6501 SHIP MOVEMENTS DURING FLIGHT OPERATIONS

a. Right-of-Way. Ships engaged in the launching or recovery of aircraft have the right-of-way except over the ships and formations noted in Chapter 2. If a ship must pass a ship which is conducting flight operations, she should pass to starboard when the ship is on the flight operations course or to leeward when the ship is not on the flight operations course.

b. Adjustment of Movements. When carriers are operating aircraft, ships in the formation other than rescue destroyers are to adjust their course and speed to maintain true bearing following minor adjustments made by the carrier. Rescue destroyers shall maintain relative bearing and distance from the carrier. Minor adjustments are defined as alterations of course of not more than ten degrees and alterations of speed of not more than 2 knots from the promulgated flight operations course and speed. During periods of darkness or low visibility, the carrier shall signal impending major course or speed changes to her escorts and receive an acknowledgement before altering her course or speed, using the delayed executive method when EMCON conditions permit, or by flashing light if radio silence is in force. Minor changes should be promulgated as information signals as time permits.

c. Ships Operating Vertical (VTOL) and Short Takeoff and Landing (VSTOL) Aircraft. Ships operating VTOL/VSTOL aircraft are not normally subject to the same constraints as those imposed on a CV operating non-VSTOL aircraft, however, they have to turn towards the wind for takeoff and landing but are unlikely to require high speed. Operating method B (Article 6510) is preferred because of the flexibility of VSTOL.

d. Positioning of Ships Operating Helicopters. Large ships, such as LPH or LHA, will often need considerable sea room and freedom to maneuvre when operating helicopters. They should be positioned in sectors or areas of a suitable size and shape to allow them to remain protected while operating helicopters. They can, if necessary, operate in the same way as a carrier. Commanding officers of such ships should advise the OTC of the size of the sector or area required and the preferred operating method whenever helicopter operations are likely to be prolonged. Escorts will also need sea room, but can maneuvre, launch, and recover helicopters more quickly than larger ships. Their requirements for helicopter operations are unlikely to be a major factor in the tactical positioning of the ships.

e. Landing Circuit. Ships should keep clear of the path normally followed by aircraft in the landing circuit.

6502 HELICOPTER IN-FLIGHT REFUELING (HIFR)

HIFR employed by Task Force units extend helicopter flight endurance. HIFR ships shall be prepared to conduct HIFR operations on 30 minutes notice.

6505 CARRIER OPERATIONS

6506 DUTIES IN A TASK GROUP

a. Ready Deck System. The OTC may order one carrier to keep its landing area ready as a spare landing field for immediate use by aircraft from other carriers.

b. Duty Carrier System. The OTC may divide the operating day among the carriers present with each responsible for providing CAP, tanker, ASW, Middleman/AUTOCAT or surveillance services for the entire force during the period assigned.

6507 — 6508 SPARE

6509 FLYING SECTORS

When two or more ships operating aircraft are in company, each ship is allotted a flying sector for her aircraft. Flying sectors are calculated as follows:

a. Sector Median. The median of each sector will be on the extension of the line joining the center of the formation to the ship concerned.

b. Arc of Each Sector. The arc of each of these sectors will be calculated by dividing the 360 degrees of arc by the number of ships involved. Thus, with two ships, each sector will cover an arc of 180 degrees: with three ships, 120 degrees; with four ships, 90 degrees.

c. Limits. Flying sectors extend upward and outward as far as necessary.

6510 MANEUVERING FOR FLIGHT OPERATIONS

A flight operations course and speed is used for maneuvering ships operating aircraft. Three methods of maneuvering ships for flight operations are available. Unless otherwise ordered by the OTC, Method A is to be used.

a. Method A — Maneuvering the Whole Formation Together. This method usually is employed for all extensive flight operations at night or in low visibility because of the danger of operating ships independently within a formation under such conditions.

b. Method B — The Independent Method. In this method, the ship preparing to operate aircraft drops to leeward within the screen or to the leeward corner of its sector and then turns into the wind and maneuvres independently. This method is particularly suitable when it is desired not to exceed effective sonar speed but where it may be necessary to alter base course during flight operations to keep the ship operating aircraft within her screen. Method B will normally be ordered when one ship only is operating aircraft. It may be used at night at the OTC's discretion. The sector method of ordering a screen is recommended to be used with this method. The instructions in Article 6512 apply.

c. Method C — Methods A and B Combined. The ship preparing to operate aircraft proceeds initially as in Method B. The OTC then maneuvres the whole formation, including the ship concerned. It is used only by day when the OTC is not prepared to accept the risk that the ship operating aircraft may move beyond the screen. This method is not used in low visibility. It normally will be ordered only when one ship is operating aircraft. This method may be ordered if flight operations will be of such length that the use of Method B will necessitate the ship operating aircraft to proceed outside the screen, and it is important to spend as little time as possible off the base course. When executing this method with sector screening,

escorts should proceed to the upwind parts of their sector prior to the ship concerned increasing her speed to operate aircraft.

6511 METHOD A

a. The Guide. The following considerations normally govern the selection of the Guide: (1) If only one ship operating aircraft is present, she is to be designated the Guide. (2) When two or more ships operating aircraft are present, the ship in station zero is made the Guide. (3) If there is no ship operating aircraft in station zero or if a circular formation is not being used, a designated ship is to be made Guide.

b. Signals and Turns. The formation will be to and from the flight operations course by either:

(1) Signalling a turn-together to a definite course and speed at the beginning and at the completion of flight operations, or

(2) Signalling an estimate of the flight operations course and speed beforehand; later turning and adjusting speed by special signals. After turning away from the flight operations course, a new estimate of the flight operations course must be signalled before each successive turn for flight operations.

NOTE

When either of the above is used, it is probable that adjustments of course and speed will be necessary after the initial turn and before or during flight operations. All such adjustments are to be taken as amending the signalled flight operations course.

c. Minor Adjustments. When they are on flight operations course, individual ships operating aircraft have discretion to make minor adjustments of course and speed, but they must remain within 500 yards of correct station. See also Article 6501.

6512 METHOD B

a. Choice of Initial Position. The ship preparing to operate aircraft is to choose an initial position best calculated to complete launching or recovering aircraft within the cover of the screen and cause the minimum interference with other ships of the main body.

b. Bulging the Screen. See Chapter 3.

c. Resuming Station. The ship operating aircraft is to on the assumption that the course and speed of the force will not be altered. On completion of flight operations, she is to resume station with as little delay as possible.

d. Adjusting Course. Should it appear probable during flying operations that the ship operating aircraft will get outside the screen, the OTC may adjust the mean line of advance (MLA) of the Guide by signal. When a screened unit other than the ship operating aircraft is designated Guide, this alteration to the MLA is to be ordered by a TURN and/or SPEED signal addressed to the main body.

The screen commander is not required to reform the screen unless ordered to do so by the OTC.

e. Screen Unit as Guide. When there is no other screened unit to become the Guide, the following procedure is to be used:

(1) Forming or reforming the screen. The OTC is to order the formation of the screen in the normal, way and include the sectors which the screen should cover.

(2) The screen coordinator is to nominate an escort in advance, normally in a central on the screen, to be Guide when position required by the OTC.

(3) When the ship operating aircraft must maneuver independently, the OTC is to make the appropriate escort the Guide. When using a sector type screen, the screen ship designated is to proceed to the center of her sector and then remain within one mile of this position. The Guide is then to be regarded, for station-keeping purposes, as being at the center of her sector at all times.

(4) The screen commander must be ready to nominate a new Guide should the existing one be diverted from her station.

(5) The OTC may order the ship operating aircraft to assume/resume Guide in certain circumstances (for example, to side-step a known submarine threat).

f. Resuming Course and Station. When flight operations have been completed. the OTC will order the force to turn to the course required, adjusting speed as necessary. The ship completing aircraft operations is then to regain her normal station.

6513 METHOD C

a. Choice of Initial Position. Refer to Article 6512.

b. Operating Within the Screen. A ship preparing to operate aircraft is to gain an initial position well to leeward within the screen, changing speed as necessary. On moving to her initial position, this ship is to make the signal Disregard my movements. The procedures laid down in Article 6501 arc to be used in the normal I manner.

c. Maneuvering to Operate Aircraft. The OTC will turn the whole formation, including the ship operating aircraft, as soon as this ship is ready. The ship is then to maneuver as necessary to operate aircraft and the OTC will adjust the speed of the remainder of the force to keep the ship within the screen.

d. Resuming Course and Station. When flight operations have been completed, the OTC will order the force, including the ship completing aircraft operations, to turn together to the course required, adjusting speed as necessary. The ship is then to regain her normal station.

6514 MANEUVERING FOR EMERGENCY LANDINGS

Any ship which must maneuver to land aircraft in distress is to notify the OTC. The OTC may then turn the formation to the flight operations course, or he may order the ship concerned to act independently. In addition, the following special provisions apply:

a. When Formation Is on Flight Operations Course. The ship concerned may proceed to recover the aircraft in distress, provided there is sufficient relative wind or when she can produce sufficient relative wind without moving more than 500 yards out of her assigned station.

b. Independent Action in Peacetime. During daylight hours in peacetime, the commanding officer of the ship concerned has discretion to act independently and at once, if this is necessary in the interest of safety.

c. Rescue Operations. In the event of a forced landing in the vicinity, the destroyer or helicopter (or both) assigned for the purpose should proceed to rescue the crew without further orders (see Section VI).

6515 (NC) (NMM) ANTISUBMARINE PRECAUTIONS DURING DELAYS WHILE OPERATING AIRCRAFT

Prolonged periods on a steady flight operations course may be dangerous and unacceptable from the ASW point of view; therefore, if there are delays in flight operations, it will be wise to order temporary alterations from the flight operations course. The OTC is to be informed at once of the estimated duration of any appreciable delays.

6516 MANEUVERING FOR LOW VISIBILITY RECOVERY OPERATIONS

If, while aircraft are airborne, it appears likely that the task force will encounter fog, snow, or other conditions of low visibility, the OTC may order the task groups to separate and proceed independently in the direction of the best predicted or known clear weather. Airborne aircraft are to be advised of this action, and they are to advise the OTC of any clear areas known to them.

6517 COURSE AND RELATIVE WIND

Normally, the course for launching and recovering fixed-wing aircraft will be such that the ship concerned has the relative wind down the angled deck.

6518 OPERATIONS AT NIGHT

a. Lighting Measures. The OTC will order the degree of lighting to be used for night flying operations. When lighting measures are ordered, ships shall automatically be darkened (except for the lights prescribed by the lighting measure) without further signal unless otherwise ordered by the OTC. Lighting measures are given in detail in Table 6-10. Lighting measure green is the minimum for all normal night operations, even for specially trained pilots, and compelling reasons should exist for selecting a lesser amount of lighting.

b. Flashing Light Communications. Except for signals concerning immediate flight operations or emergency signals, unshielded or omnidirectional flashing light communications shall cease 15 minutes prior to scheduled night air operations and shall not be resumed until ships have signalled completion of flight operations. Infrared light may be used for intership communications.

6519 OPERATIONS IN LOW VISIBILITY

The tactical situation may require shipborne aircraft to be launched and landed under low visibility conditions. Governing considerations are the extent and severity of the weather conditions, the ability and qualifications of the pilots, and the equipment to be used. Adequate preparations can be made when it has been determined in advance that aircraft are to be launched and landed under known low visibility conditions. It is also necessary that standard procedures be established for use when aircraft must operate unexpectedly in unfavorable weather. When low visibility conditions are encountered or appear imminent, an early decision must be reached as to how airborne aircraft are to be handled. One or more of the following procedures may be used depending on existing conditions.

a. Aircraft orbit as directed until own ship has steamed into an area where visually controlled landings can be made.

b. Aircraft land ashore in friendly territory if conditions permit.

c. Aircraft land on other appropriate ships which are operating in an area where visually controlled landing can be made.

Table 6-10. Night Lighting Measures

UNITS		DESCRIPTION OF LIGHTS (1)	LIGHTING MEASURES				NOTES
			WHITE	GREEN	BLUE	(2)	
SHIPS OPERATING AIRCRAFT		Red Truck (Obstruction)	ON	ON	ON	A	(1) Words in brackets are the nearest Royal Navy Equivalent lights.
		Special Operation Task Lights	ON	ON	ON	B	
		Deck Edge (Outline)	ON	ON	ON	C	(2) The OTC may order lights added to (or subtracted from) any lighting measure in force by signaling PLUS (MINUS) followed by letter designators.
		Deck Surface (Outline)	ON	ON	ON	D	
		Stern/Ramp Designation (Round Down After End of Flight Deck)	ON	ON	ON	E	Example: USE MEASURE BLUE MINUS BRAVO MIKE QUEBEC
		Signal Light Bars (Port and Starboard Group)	ON	ON (3)		F	
		Searchlight (Horizon and Sector)	ON (4)			G	
		Center Line Extension Drop Lights	ON	ON	ON	H	
DESTROYERS	RENDEZ-VOUS	Red Truck (Obstruction)	ON	ON		I	(3) As required.
		Dimmed Side Lights	ON	ON	ON	J	(4) ON as required for homing lost planes.
						K	
	RESCUE	Red Truck (Obstruction)	ON	ON		L	(5) Used as ordered by OTC.
		Dimmed Side Lights	ON	ON	ON	M	
						N	
OTHER SHIPS		Red Truck (Obstruction)	ON	ON		O	
		Dimmed Side Lights	ON	ON	ON	P	
AIRCRAFT		Recognition	ON	ON	ON	Q	
		Wing Lights	ON	ON	ON	R	
		Tail Lights	ON	ON	ON	S	
						T	
		Rescue Helicopter	(5)	(5)	(5)	U	

d. Aircraft land on designated appropriate ships, using a ship-controlled type of low visibility approach.

e. Aircraft land on designated appropriate ships using an aircraft-type low visibility approach.

f. Aircraft abandoned by ditching or bailing out in an area designated by the OTC.

6520 (NC) (NMM) AIR OPERATIONS IN A CONVOY

a. (NC) (NMM) Carrier in Situation A. The normal station for a carrier in Situation A (Chapter 1) is within the "box". During flight operations, the carrier should operate in the area astern of the convoy, remaining within the "box" whenever possible. Except during flight operations, the carrier, when in the "box", is to maneuver with the convoy. The carrier is not to pass between ships or between lines in a convoy formation unless ships are spaced 2,000 yards or more apart.

b. (NC) (NMM) Duties of Carrier With a Convoy. The carrier will normally assume the following duties:

(1) Aircraft Control Unit and in addition:

(a) Provide and control carrier aircraft within the requirement laid down by the OTC

(b) Coordinate the homing of land-based aircraft conducting joining procedures

(c) Control aircraft in search and rescue duties.

(2) AAW Commander. Except for those duties relating to the control of emissions, and the control of EW equipment, these particular duties remain the responsibility of the OTC unless specifically delegated.

c. (NC) (NMM) Carrier in Situation B or C. The relationship between the responsibilities of the OTC of a carrier group and the OTC of a convoy are described in Chapter 1.

d. (NC) (NMM) Procedures for Aircraft Operating With Convoy. Detailed procedures for aircraft joining and departing convoys are given in Section IV of this chapter.

6521 — 6529 SPARE

6530 CARRIER AIR OPERATIONS

6531 OFFENSIVE AIR OPERATIONS

a. Strike Formations. The purpose of strike formations is the destruction of enemy surface targets. They are comprised of:

(1) Attack aircraft equipped with weapons which have a high capability of destruction.

(2) Escort aircraft, including fighter aircraft, which protect strike aircraft against enemy opposition.

b. Sweep Formations. The purpose of sweep formations is the destruction of enemy aircraft. They are comprised of fighter aircraft and support aircraft (AEW and EW).

6532 (NC) (NMM) COMMAND OF AIR FORCES

Figures 6-4 and 6-5 illustrate the command organization of aircraft for offensive, strike, and sweep operations. See also Article 1220 for command of aircraft.

a. (NC) (NMM) Airborne Coordinator. When a succession of strikes is initiated, or when several targets exist in one area, the task force commander is to designate an airborne coordinator and a standby airborne coordinator. The duty of the airborne coordinator is to direct all aircraft formations in the target area to the best advantage, thereby ensuring that no important target is missed and that no part of the strike is wasted on targets already destroyed. He is to fly with an escort, in the most suitable position for observing the strike, without seeking combat himself, and is to report all special circumstances in the target area that may affect the arming, briefing, or conduct of future strikes. The task force commander may also designate an airborne coordinator when a large-scale fighter sweep is contemplated. The airborne coordinator's aircraft may require additional communications equipment.

b. (NC) (NMM) Strike Commander. A strike commander for the aircraft from each task group taking part in a particular strike is designated by each task group commander. The strike commander leads the strike aircraft to and from the target and is responsible for the conduct of the strike, subject to the orders of the airborne coordinator, if present. Each task group commander also designates a standby strike commander. The strike commander or standby strike commander is normally either the attack leader or the escort leader.

(1) Attack Leader. The attack leader is designated by the task group commander and is in command of all attack aircraft from the task group. He may also be the strike commander, if so designated by the task group commander. Attack aircraft from each ship will be led by their leader to report to the attack leader for the strike.

(2) Escort Leader. The escort leader is designated by the task group commander and is in command of all fighter aircraft assigned to escort the attack aircraft from the task group. The escort leader may also be the strike commander if he is so designated by the task group commander. Fighter aircraft from each ship assigned to the escort will be led by that ship's fighter leader to report to the escort leader for the strike.

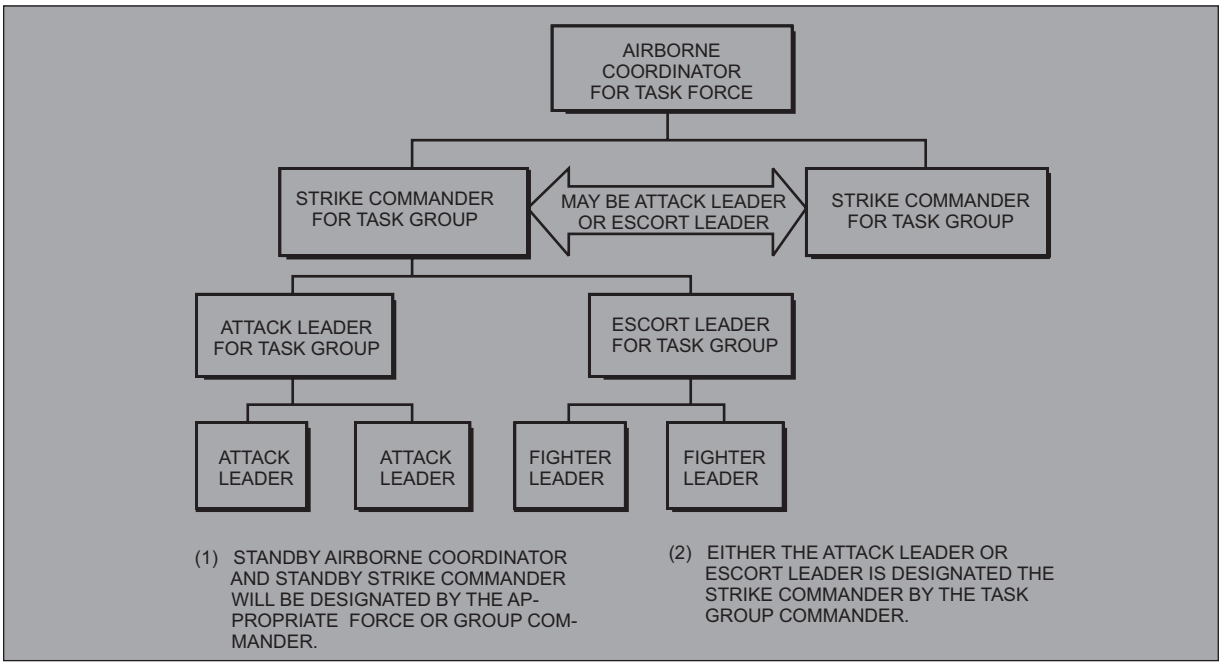
c. (NC) (NMM) Sweep Commander. A sweep commander for the aircraft from each task group taking part in a particular sweep is designated by each task group commander. The sweep commander is responsible for the conduct of the sweep subject to the orders of the airborne coordinator, if present. Each task group commander also designates a standby sweep commander.

6533 (NC) (NMM) OFFENSIVE OPERATIONS

The organization for offensive carrier air operations depends on many factors: the nature of the targets, whether surface or air, the time within which the required results will have to be achieved; the constraints of the defensive organization of the force; and the availability of other aircraft. Offensive air operations generally fall into two categories, strike or sweep.

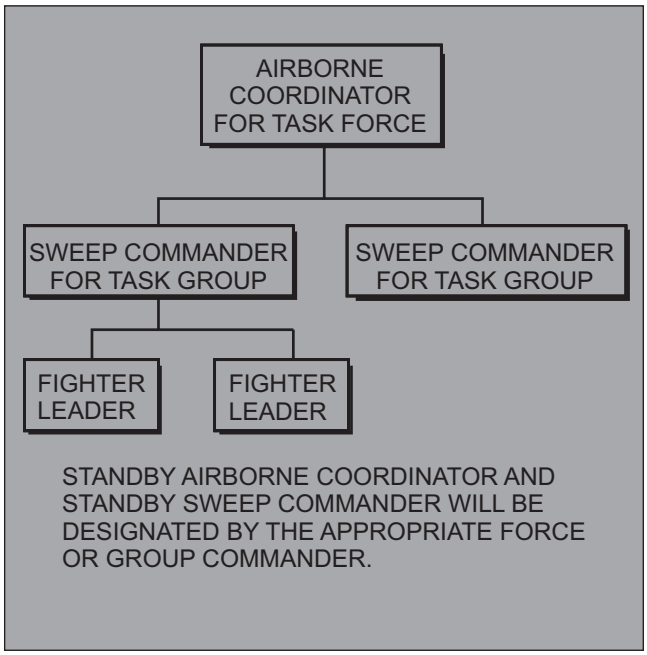
a. (NC) (NMM) Strike Operations.

(1) Major Strike. An action in which there is a coordinated attack by a large number of aircraft, often from multiple air wings. In addition to attack aircraft, other aircraft included are fighter escort, target CAP (TARCAP), barrier CAP (BARCAP), and support aircraft, all deployed in a single formation or multiple formations. A major strike is normally recovered on a ready deck prior to launching of the next formation.



(NATO-CONFIDENTIAL) (NMM)

Figure 6-4. (NU) (NMM) Air Strike Command



(NATO-RESTRICTED) (NMM)

Figure 6-5. (NU) (NMM) Air Sweep Command

(2) Limited Strike. An action which consists of a coordinated attack, similar to a major strike; but with a smaller number of aircraft. This type of strike is preferred for sustained operations, or when the requirement is to get a moderate number of aircraft to the objective in the shortest possible time (e.g., for the neutralization of an enemy airfield over a sustained period). Aircraft engaged in a limited strike are normally recovered after another formation is launched.

(3) Continuous Operations. An arrangement that permits offensive air operations to be conducted over an extended period. This method is used when the destruction of the objective(s) can be achieved by the concentrated firepower of major or limited strikes. Each recovery is preceded by the launching of a similar number and type of aircraft.

b. (NC) (NMM) Sweep Operations. Sweep operations are designated to eliminate the enemy's air capability and are organized in a similar fashion to strikes. The principle difference is in the composition of the formations that are launched. The deck load consists primarily of fighters and escort aircraft selected for the specific mission. Escorts usually include AEW and EW aircraft.

6534 — 6539 SPARE

6540 (NC) (NMM) REQUEST FOR CV AIRCRAFT

a. (NC) NMM) Requests for CV Aircraft. Carrier-based air assets will be requisitioned through the AREC. That coordinator will endeavor, insofar as possible, to meet the several warfare command's requests, and will issue and promulgate to the OTC and warfare commanders the daily airplan. In order to aid the AREC in his planning and ensure that their own requirements are entered into this planning, each warfare commander should provide the AREC a message request of projected aircraft requirements for inclusion in the next day's airplan. Requests should reach the AREC about 1800 local time. The OTC should receive an information copy. Needs will change, and these changes should be communicated to the AREC.

b. (NC) (NMM) Requests for Tactical Aircraft. Requests for tactical aircraft embarked aboard ships other than the CV (e.g., HARRIERs on board RN CVs) will be directed to the AREC. Marine aircraft (fixed-wing and helicopters) remain under the command of the landing force commander. Requests for marine aircraft by warfare commanders/coordinators should be coordinated by the AREC and submitted to the Tactical Air Coordinator embarked with the landing force commander.

c. (NC) (NMM) Alert Requirements. Alert requirements should be included in the hard copy message provided by the warfare commanders to the AREC for determining the next day's airplan. Changes in alert requirements will be of most immediacy, and must be rapidly communicated to the AREC. The OTC will resolve any conflicts in alert requirements and will retain alert launch authorization until specifically delegated to the particular warfare commanders (see Tables 1-2 to 1-5). Even when this authorization is granted it must be used with caution. Warfare commanders should consider, and the AREC should make them aware of, major disruptions to scheduled launches which may be caused by too great a frequency of alert launches.

6541 — 6549 SPARE

6550 AIR TRAFFIC CONTROL

6551 (NC) (NMM) SHIP CONTROL ZONES (SCZ)

a. (NC) (NMM) General. SCZ is an area activated around a ship operating aircraft, which is not to be entered by other aircraft without permission.

b. (NC) (NMM) Fixed-Wing Operations. For ships operating fixed-wing aircraft, a zone of 10 nm radius from sea level to 5,000 ft MSL is established. These are nominal values and may be changed as the situation dictates. Outside the SCZ, there are special additional rules such as those for returning friendly aircraft. These rules will apply out to a considerable distance, depending on weather conditions, and will be promulgated separately. A SCZ may be permanently activated when continuous flying is taking place or aircraft are at alert states.

c. (NC) (NMM) Helicopter Operations. For ships operating helicopters, a zone of 2 nm radius from sea level to 500 feet AMSL will be activated.

6552 AIRCRAFT LAUNCH/DEPARTURE

a. Fixed-Wing Aircraft. When launched from CVs, all jet and turboprop aircraft normally proceed directly to a point at least 7 miles ahead of the ship at an altitude of 300 to 500 feet, then jets fly a 10-mile arc, turboprops a 7-mile arc to intercept the departure radial. Propeller aircraft proceed to a point 5 miles ahead, fly a 5-mile arc to the departure radial, maintaining an altitude of 300 to 500 feet. High performance VTOL/VSTOL aircraft operating from ships other than CVs shall comply with launch/departure procedures delineated for CVs. Jet and turboprop aircraft rendezvous between 20 and 50 miles, and propeller aircraft rendezvous between 10 and 50 miles from the ship along the departure radial.

b. Helicopters. Helicopters may be operated either from the CV or other ships within the CV control zone. ASW helicopters may also be operated tactically within the zone. Precise procedures to suit every circumstance cannot be defined, but the following rules apply:

(1) All helicopters within the zone are to be under either positive or advisory control.

(2) Helicopters should normally be operated or transited through the control zone below 300 feet.

(3) Helicopters are not to approach within 5 nm of the CV unless cleared and/or operating under the control of the CV.

c. Unscheduled Launch and Recovery Operations. Ships are to activate control zones by INTENT message. Control zones around CV/LPH/LHA ships will be permanently in force unless otherwise ordered.

(NR) (NMM) Detailed procedures for activation of control zones are provided in ATP 34.

6553 PROCEDURE FOR RETURNING AIRCRAFT

Aircraft returning from strikes and sweeps are to rendezvous on the way back from the target area and return in formations appropriate for mutual defense, proper recognition, and fuel economy via the Tomcat if one is stationed, and if they are so directed. To assist in the establishment of their friendly character, aircraft make their final approach to each task group on a bearing and at an altitude previously specified, and squawking IFF.

6554 MARSHAL PROCEDURES

a. Marshaling is the procedure whereby aircraft are controlled on a predetermined flightpath by an ACU prior to commencing an outbound transit or after completing an inbound transit prior to recovery.

b. The location for this process is known as the marshaling gate and will be within the radar coverage of the ACU.

c. On entering the ship's control area, organic aircraft shall normally be turned over to marshal control for further clearance to the marshal pattern. The marshaling gate may be overhead or on an assigned radial at an appropriate distance/altitude to facilitate an orderly approach.

6555 APPROACH

Usually, under daylight/visual conditions, the aircraft approach the ship, enter a circling pattern, and land in sequence. During night/instrument conditions, approaches will normally be under the guidance of the approach control center on board the respective ship.

6556 (NC) (NMM) CARRIER APPROACH PROCEDURES

Aircraft approaching a carrier force, after completing a transfer joining procedure, may be ordered to close by an approach corridor or an approach sector. These are specific safety sectors for carrier approach. Land-based aircraft would normally be required to adopt these procedures.

a. (NC) (NMM) Approach Corridors. These corridors are assigned in conjunction with specified check-in points based on Tomcats. The latter should be tacan-equipped pickets and ideally should be SAM ships. (If non-tacan-equipped ships are used, procedures must be modified.) Figures 6-6 and 6-7 show multi-Tomcat and single Tomcat approach corridors, respectively.

Corridors 1 through 4 are established as radials of Tomcat tacan; corridors 5 and 6 are radials of the tacan of the CV(s). Bearings of corridors 3 and 4, which may be rotated by up to 20° toward the axis to provide the least deviation for returning friendlies. Additional corridors may be established, ir required, in the rear hemisphere; such corridors are defined as tacan radials from the CV. All corridors are 10 nm in width. Corridors from Tomcats to the 30-nm arc of the CV's tacan may vary in direction, depending on the CV's movements. If the CV's tacan is not in operation, pickets will steer returning aircraft to marshal.

Checkpoints may be established at 150, 100, and 50 nm from the Tomcat or CV tacan as appropriate. These points are designated by corridor number followed by ALFA, BRAVO, CHARLIE, respectively. At each checkpoint self-identification procedures are carried out either by changing IFF/SIF settings or by aircraft maneuver.

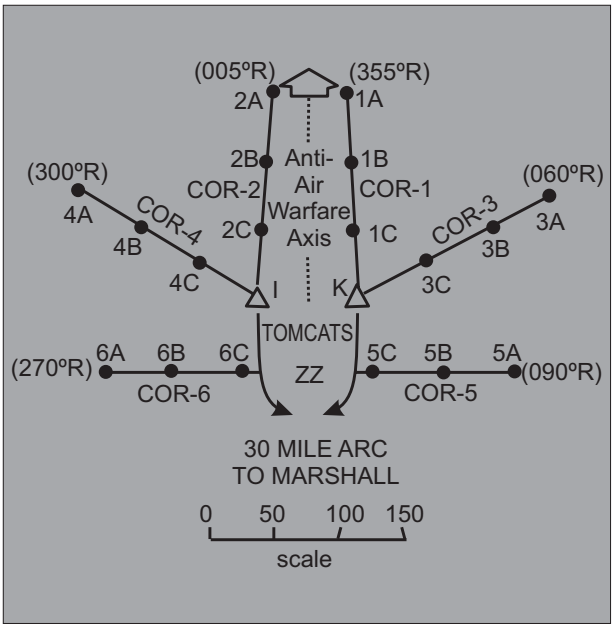
Tacan will normally be operated by Tomcats during periods when aircraft are returning from the attack area. It will not be used by CVs when under air or submarine threat, except when the safety of aircraft so dictates.

The OTC or AAWC may select any of the corridors for each day of a particular exercise or operation. Corridors activated are normally promulgated indicating the corridor by number, the call sign of the Tomcat, and its tacan channel.

b. (NC) (NMM) Approach Sectors. These sectors are more flexible than fixed-approach corridors and may be assigned in conjunction with tacan approach control pickets for each sector. Initial reporting distances form each approach control unit will be promulgated by the OTC. The essential difference between this system and fixed-friendly approach corridors is that the aircraft may return from any bearing within the specified sector, the position of each aircraft being reported on AAW nets.

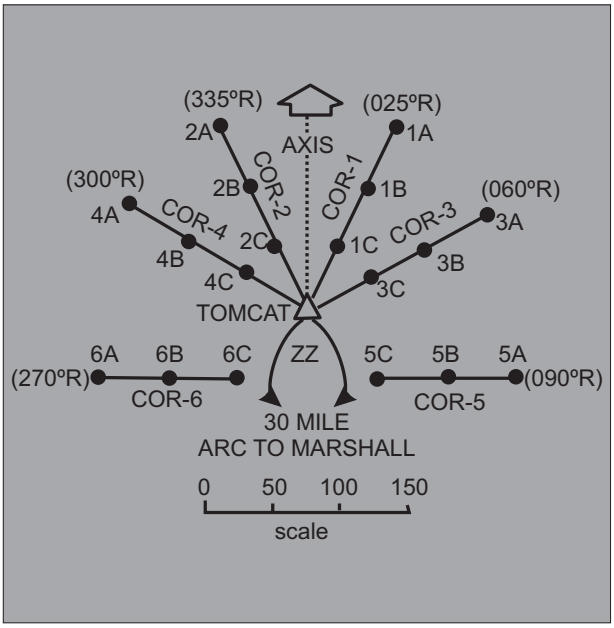
(1) Identification/recognition and self-identification procedures are identical to those described in Article 6417 and 6556a except that:

(a) Aircraft must report initially at a specified tacan distance from the sector tacan picket.



(NATO-CONFIDENTIAL) (NMM)

Figure 6-6. (NU) (NMM) Muti-Picket Approach Corridor



(NATO-CONFIDENTIAL) (NMM)

Figure 6-7. (NU) (NMM) Single Picket Approach Corridors

(b) Friendly aircraft will be designated track numbers and shall be reported and plotted by all units.

(2) The use of approach sectors is particularly applicable to formations where dispersion is minimized and aircraft normally return directly to the force. Friendly aircraft may transit missile engagement zones on direct return routes when directed by the AAWC or SAAWC.

6560 (NC) (NMM) SILENT AND DARKENED HELICOPTER OPERATIONS

This section provides a standard operating procedure for ships launching and recovering helicopters by day or night in a tactical environment. Its use limits emissions by both ship and aircraft and thus reduces the chance of detection by an enemy.

6561 (NC) (NMM) FACTORS

a. Before deciding whether a silent and/or darkened procedure is to be used, or alternatively whether limited lighting and radio assistance to the helicopters is necessary, careful consideration must be given to such factors as:

(1) experience of aircrew, flight deck personnel and Command team;

(2) recent operational flying practice;

(3) weather conditions, particularly visibility and sea state;

(4) number of aircraft airborne in the vicinity;

(5) ship/aircraft equipment fit.

b. EMCON. Although EMCON restrictions may be superimposed on the ship's equipment, aircraft not fitted with autonomous recovery aids cannot operate in IMC in complete EMCON silence.

c. National regulations may prevent aircraft from complying fully with these procedures. In this instance, aircraft are to comply as far as possible in order to achieve as high a degree of standardization as possible.

d. Aircraft visiting or operating from other nations' ships may be unable to comply with these procedures due to dissimilar equipment fit.

e. IFR Separation. If considering fully silent and darkened operations, full IFR separation in accordance with para 6474 should be applied.

6562 (NC) (NMM) METHOD OF EXECUTION

Implementation of these procedures is to be ordered by the force/ship commander to ensure commonality of operations throughout the force.

a. Deck Moves. The position of the aircraft either on deck or in the hangar will be determined by the meteorological conditions and the required alert state. Aircraft moves and spreading/folding of rotors should be carried out with minimum use of light.

b. Manning Aircraft

(1) Hangar and flight deck lighting Off.

(2) Aircraft navigation lights Off; internal lighting at a minimum.

c. Aircraft Start

(1) Aircraft navigation lights remain Off.

(2) FDO to use dimmed wands.

(3) A check call on UHF may be made before launch, otherwise no radio transmissions are to be made either from or to the helicopter. Routine voice communications should be made only via telebrief systems (see para. 6561.c).

d. Aircraft Launch

(1) Deck status lights at dim.

(2) When ready to launch, pilot should flash downward directed light. This is also to be used to check disengagement of the harpoon where fitted.

(3) As downward directed light goes on, the Horizon Bar should be switched On.

(4) Once the aircraft has launched and is clear of the deck, the Horizon Bar should be switched Off.

(5) Radio transmissions should not be made when the helicopter is in the immediate vicinity of the ship. If HF is required for the mission and EMCON is restricted, the aircraft should call on HF and the ship reply on UHF.

(6) Helicopter radars should not be switched to transmit until the helicopter has cleared the force/ship by the range dictated by the EMCON Plan.

(7) IFF/Transponder equipment should be set to transmit on completion of the launch maneuver and in accordance with the EMCON Plan.

(8) Navaids (e.g., TACAN) in ships and aircraft should only be used in accordance with the EMCON Plan.

(9) Aircraft navigation lights should be in accordance with the OTC's EMCON policy.

e. Aircraft Recovery

(1) Helicopter radars should be set to Standby when the helicopter closes the force/ship to the range dictated by the EMCON Plan. This also applies to aircraft lights, as ships may be identified by visually tracking aircraft back to their parent units.

(2) Navaids (e.g., TACAN) in ships and aircraft should only be used in accordance with the EMCON Plan.

(3) Radio transmissions should be avoided when the helicopter is returning to the ship and maximum use made of visual recovery aids. Meteorological conditions may make the use of radio communications essential; if so, transmissions should be kept to an absolute minimum.

(4) When the helicopter is estimated to be at 4 nm range or ETA minus 2 minutes, the controller orders Masthead Obstruction Lights to occulting until the aircraft is established in the circuit.

(5) When the ship is steady on the flying course and ready to recover the GSI should be switched On.

(6) At approximately ½ nm the helicopter switches the navigation lights On and the ship responds by switching On the Horizon Bar.

(7) Once on deck, if harpoon fitted, the helicopter should flash a downward directed light to check the engagement of the harpoon.

(8) Deck lighting should not normally be used; all lighting should be turned Off on completion of the landing.

(9) No radio transmissions should be made on deck; all voice communications should be via telebrief systems.

SECTION VI — AIRCRAFT EMERGENCY AND RESCUE

6600 AIRCRAFT EMERGENCYAND RESCUE

The measures set forth in this section cover the more common problems encountered and the procedures used in handling aircraft in distress.

6601 GENERAL PROVISIONS

a. Emergency Landing Ship. Whenever possible, the OTO should make specific provision for emergency landings by designating another appropriate ship as the emergency landing ship. This assignment should be on a rotation basis and integrated into the flight schedule (for helicopter operations, use OPTASK AIR HELO, paragraph H1). This allows maximum aircraft usage from all ships in company with minimum inconvenience to each.

b. Lost Aircraft Control. The OTC may detail one ship as lost aircraft control to coordinate the homing of all lost aircraft. However, any ship which has lost an aircraft should begin to identify it and home it, and the ship should immediately notify lost aircraft control of the steps that are being taken.

c. Continuous Watch on Airborne Aircraft. Ships are to maintain a current estimate of the time of return of their aircraft and keep, insofar as possible, a continuous watch on their movements. They are to be alert for emergency IFF or other indications of aircraft in distress and are to plot and report such signals, taking further action as conditions indicate.

d. Escort Aircraft. Whenever possible, an escort aircraft will accompany the aircraft in distress back to the force; assist in the emergency landing procedure as directed, or as conditions indicate; remain with the distressed aircraft until it enters the landing circuit; and maintain watch until the emergency landing is completed.

e. Aircraft Not Involved to Keep Clear. Whenever other aircraft become aware of an emergency landing in progress, they must keep clear of the entire operating area concerned.

f. Rescue Destroyer and Helicopter. The duties of rescue destroyers and rescue helicopters are described in Article 6603.

6602 COMMUNICATIONS DURING AIRCRAFT EMERGENCIES

The following provisions apply to aircraft in distress requiring an emergency landing and to the ships involved:

a. Responsibility.

(1) Escort. The escort of an aircraft in distress assists by sending or relaying radio, radar, or visual messages, using the same procedures as described for the aircraft in distress.

(2) Ship. Ships must be alert for radio, radar, or visual indications of aircraft in distress and assist in relaying messages between the distressed aircraft, the OTC, and the parent ship as conditions indicate.

b. Emergency IFF. An aircraft in distress is to turn on its EMERGENCY IFF and set in Code 77 on Mode 3. In daylight operations, if the aircraft is within visual range of the ship, the use of EMERGENCY 1FF is optional.

c. Pilot Voice Report. If possible, the pilot of an aircraft requiring an emergency landing is to inform the ship with which he is in communication as to the nature of the trouble. He must state whether he requires an IMMEDIATE or DEFERRED emergency landing and whether or not he can take a wave-off. The pilot is then to furnish such amplifying information as conditions permit or require.

d. Minimum Voice Transmission During Aircraft Emergencies. Voice transmission should be clear, concise, and kept to a minimum consistent with safety. Aircraft and ships not concerned in the emergency must keep silent on the frequencies in use for the emergency.

e. Maximum Use of Visual Signals. During a landing with radio failure or lost communications, the use of appropriate visual signals is mandatory. To expedite landings the visual signals in Tables 6-11, 6-12, and 6-13 are to be used by NORDO aircraft and ships involved. The same signals will be used by NORDO aircraft which are additionally in distress.

f. Establishing Visual Contact. The aircraft in distress and the ship should establish visual contact with each other as far in advance of the emergency landing as is practicable. When initial visual contact is to be made with the rendezvous destroyer or other ship, the aircraft in distress should start signaling as soon as it approaches within reasonable visual range of the ship.

g. MAYDAY. The international distress call MAYDAY should only be used when an aircraft is threatened by serious and imminent danger and is in need of immediate assistance.

6603 RESCUE OPERATIONS

A destroyer or helicopter (or both) should be assigned for rescue duties to a ship operating aircraft. Any ship or aircraft is to report immediately if it sees an aircraft land in the sea. The parent ship is to inform the rescuing ship or helicopter as to the number of men in the aircraft. Rescue operations are carried out as described in the following paragraphs.

a. Rescue Destroyers.

(1) During daylight operations when rescue helicopters are not available or need to be augmented, rescue destroyers may be assigned to ships operating aircraft. These rescue destroyers shall be stationed at distances from the ship operating aircraft and on bearings relative to the flight operations course with the exception of rescue destroyer stations 2SNX and 3SNX which are based on bearings relative to the course of the ship operating aircraft. Rescue destroyer stations are as shown in Figure 6-8 and are also listed in Table 6-14.

(2) Slide-back techniques in station 1SN may be used whenever speeds in excess of 22 knots are required. The use of the slide-back technique must be specifically authorized by the OTC.

(3) At night, rescue destroyers may be assigned the additional function of acting as reference ships to indicate the horizon for takeoff and the landing pattern for recovery operations. Rescue destroyers shall conform to the lighting measures in force at all time.

(4) If it is desired that the rescue destroyers have more boiler power than that required for screening operations, the OTC shall so advise. Rescue destroyers are to have boats manned and ready for lowering while flight operations are in progress.

(5) After flight operations, rescue destroyers are to remain with the designated ship until released by her.

Table 6-11. Signals from Aircraft in Distress

SIGNAL	MEANING OR PURPOSE
1. Rocking wings	Initially, to attract attention and help establish visual contact. Subsequently, to acknowledge receipt of signals. On crosswind leg of landing circuit, indicates inability to take a wave-off.
2. Firing RED flare	Require emergency landing. Considered IMMEDIATE unless other information is received.
3. Firing GREEN flare	An early landing is necessary in the interest of safety, but can orbit for a short time.
4. Series of SHORT flashes	Require IMMEDIATE emergency landing.
5. Series of LONG flashes	Require emergency landing but can accept short delay.
6. Fly up the port side of the ship, low and close aboard, rocking wings, in a landing configuration with hook DOWN. Navigation lights BRIGHT and STEADY with anticollision lights ON. If turning final in the VFR pattern or approaching final on a CCA, momentarily turn on the taxi light, if available.	I desire IMMEDIATE landing.
7. Fly up the port side of the ship with landing gear UP, hook DOWN, navigation lights BRIGHT and STEADY, and anticollision light OFF while abeam the ship.	I desire to land but can wait for the next recovery.
8. Fly up the port side of the ship, rocking wings, with landing gear and hook UP, navigation lights BRIGHT and STEADY, and anticollision light ON. If fuel state and the nature of the emergency permit, continue making passes until joined by a wingman. Upon reaching BINGO fuel state, proceed alone, setting IFF/SIF to emergency when departing.	I am proceeding to the BINGO field.
9. Flashing R	To acknowledge receipt of message.
10. (Helicopter) Fly close aboard starboard quarter, remaining clear of other traffic, with gear DOWN and floodlights/landing light ON. With complete electrical failure, fire a RED flare to seaward.	I require IMMEDIATE landing.
11. (Helicopter) Fly by or hover on the starboard side of the ship, low and close aboard, with navigation lights BRIGHT and FLASHING and anticollision lights ON.	I desire to land but can wait for the next recovery.

Table 6-12. Signals From Rendezvous Destroyer or Other Ships

SIGNAL	MEANING OR PURPOSE
Flashing WHITE R	Initially, to confirm visual contact. Subsequently, to acknowledge receipt of signals from aircraft in distress.
Flashing RED G	The OTC has given permission for aircraft in distress to approach recovering ship.

Table 6-13. Signals From Ship to Aircraft in Distress

SIGNAL				MEANING OR PURPOSE
OPTICAL LANDING SYSTEM	**ALDIS LAMP	BLINKER		
1. Flashing cut and wave-off lights.	Flashing RED light	M,M	.....	*BINGO — Proceed to alternate landing field.
2. Flash, cut lights.	N/A	N/A	.....	Add power — (jets and turbo props only).
3. N/A	Steady GREEN light	C -·-·	.....	CHARLIE — Cleared to board.
4. Flashing landing area lights.	Steady RED light	D -··	.....	DELTA — Delay in landing. Enter DELTA pattern and maintain visual contact with the ship.
5. Landing area lights off. (Night only)	N/A	N/A	.....	Closed deck. Do not land.
6. N/A	Z --··	Z --··	.....	Do not land. Ditch or bailout/eject in the vicinity of the ship.
7. Steady (3 sec.) cut lights.	N/A	N/A	.....	LSO has control of the aircraft on final approach at approximately 1-1/2 miles.
8 N/A	H ····	H ····	.....	Lower hook.
9. N/A	W ·--	W ·--	.....	Lower wheels.
10. N/A	F ··-·	F ··-·	.....	Lower flaps.
11. N/A	G --·	G --·	.....	Jettison disposable fuel tank.
12. N/A	Q --·-	Q --·-	.....	Jettison ordnance.

OTHER	MEANING OR PURPOSE
13. Series of GREEN flares (day only in wartime).....	Ship ready to receive aircraft for IMMEDIATE emergency landing.
14. Series of RED flares	Do not land even if previous authorization has been given.
15. Flag: EMERG FOXTROT (aircraft) ..... EMERG HOTEL (helicopter)	Have emergency landing in progress. (Aircraft not involved keep clear.)

*Signal is given only when ordered by the air officer.
**Aldis lamp may be located on the LSO platform, in the tower, or on the signal bridge.

(6) Sufficient stations are provided in Figure 6-8 and Table 6-14 to permit the OTC flexibility in assigning available rescue destroyers as appropriate.

(7) The ship operating aircraft shall indicate estimated course and speed to be used during impending flight operations in sufficient time to permit rescue destroyers to take and maintain proper station. The ship shall also indicate readiness to operate aircraft at least 10 minutes prior to commencement of flight operations.

(8) Rescue destroyers shall be in assigned stations at the time flight operations are scheduled to commence. When assuming slide-back station 1SN, the destroyer takes a station that will result in a relative bearing 35° on the bow of the ship operating aircraft when the formation turns into the wind.

(9) A rescue destroyer, having taken station, is to maintain that station relative to the flight operations course and is to maneuver to maintain station without further orders on each occasion that the flight operations course is altered by signal whether flying operations are actually in progress or not. The

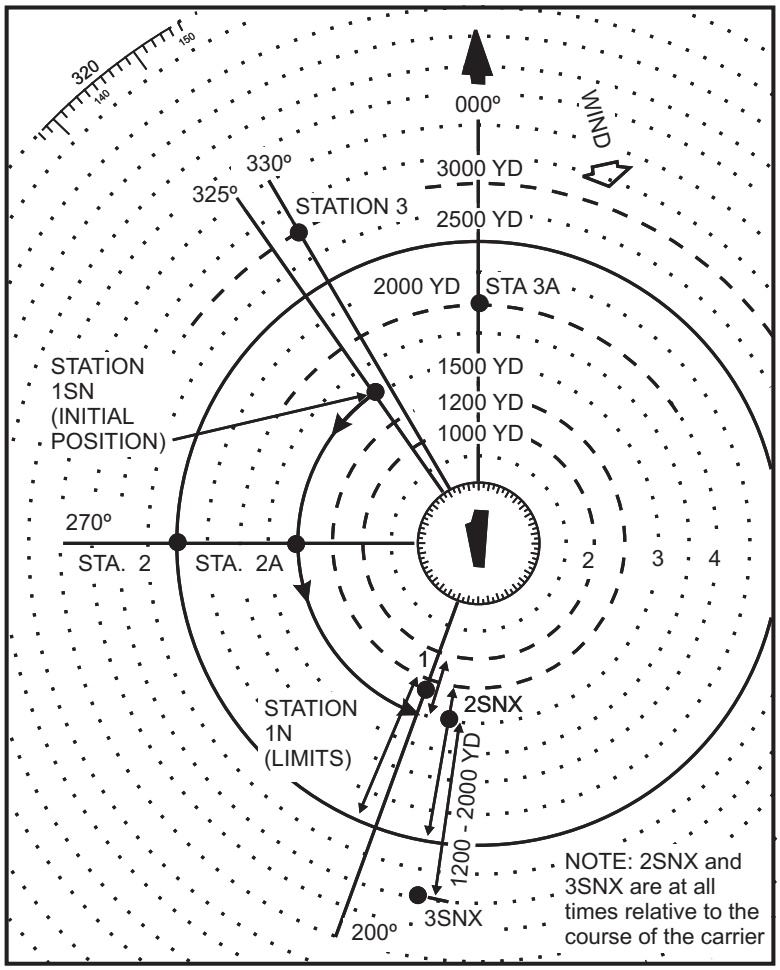


Figure 6-8. Rescue Destroyer Stations

exceptions to this rule are stations 2SNX and 3SNX in which the rescue destroyer maintains station relative to the course of the ship operating aircraft and is to maneuver to maintain station without further orders by wheeling maneuvers. See Article 6501 regarding minor adjustments in course and speed.

(10) During night operations, the ship operating aircraft shall, except in emergencies, wait until rescue destroyers are on proper station before maneuvring to conduct flight operations.

(11) The commanding officer of a ship operating aircraft shall be responsible for keeping the rescue destroyer(s) informed of his ship's course and speed changes and for issuing timely orders to prevent the development of a dangerous situation which might arise from misunderstanding his intentions.

(12) During night operations, rescue destroyers shall remain on station while aircraft are airborne unless otherwise directed.

b. Helicopter Rescue Station. The rescue helicopter is under positive control of the ship operating aircraft at all times. During launching and recovery operations, the helicopter is airborne on rescue station. The rescue station is a circular flight pattern on the starboard beam of the ship, 1 mile in diameter. This pattern will normally be flown in a clockwise direction at an altitude of 200 feet.

Table 6-14. Rescue Destroyer Stations

Station Number*	Bearing Relative to Flight Operations Course	Distance from Operating Aircraft (yards)	Station Limits (yards)	When Stationed
NORMAL RESCUE DESTROYER STATIONS				
1	200°	1,000 to 1,500		Day/Night
2	270°	2,500		Night
2A	270°	1,500		
3	330°	3,000		Night
3A	000°	2,000		
SUPPLEMENTAL RESCUE DESTROYER STATIONS				
1N	200°	Distance (yards) = (ship speed x 100) - 300.	Not less than 1,200 nor more than 2,500**	Day/Night
1SN	Initial station bears 325°; rescue destroyer slides back to station bearing 200°	Initial distance is 1,500 yards; the rescue destroyer steams at a speed less than signaled speed and the ship operating aircraft overtakes her. During the slide-back, the rescue destroyer maneuvers to maintain the 1,500 yard distance. Time required to complete slide-back may be controlled by using a speed of relative motion commensurate with the estimated time required to complete the launch or recovery. When the slide-back is completed, distance is determined using the distance formula for station 1N.	Not less than 1,200 nor more than 2,500**	Day
2SNX	190° (relative to course of carrier)	1,500 (normally)	1,200 to 2,500	Day/Night
3SNX	190° (relative to course of carrier)	3,000 (normally)	1,200 to 2,000 (from station 2SNX)	Day/Night
4SNX	The rescue destroyer operates on a station which has an inner limit of 2,000 yards and an outer limit of not more than 6 minutes from the ship. The destroyer gains the outer limit of its station upwind and drops back at such a relative speed that the outer downwind limit will not be exceeded, passing the ship not closer than 2,000 yards. If the destroyer has not dropped back to the outer limit of station by the time the launch/recovery has been completed, the destroyer turns ealier or faster to facilitate gaining the outer limit of station. On downwind courses, the destroyer repeats the procedure in reverse (that is, sliding back from the outer limit downwind of the ship to the outer limit upwind, passing the ship not closer than 2,000 yards). When winds are light and variable and the ship turns toward the destroyer to hunt for the wind, the destroyer maneuvers clear promptly. When the ship's sled is in use on courses out-of-the-wind, the destroyer maneuvers to clear the sled by at least 3,000 yards.			

* Number and number-letter stations are not occupied simultaneously. ** OTC may specify maximum distance.

c. Rescue Stations (Helicopter Ship Operations).

(1) Rescue ships normally are not required during daylight helicopter operations of helicopter ships.

(2) At night, it may be necessary in certain circumstances to detail a rescue ship. Rescue ships may be assigned the additional functions of action as reference ships to indicate the landing pattern for recovery operations. These ships shall be stationed at distances from the helicopter ship on a bearing relative to the helicopter ship's air operating course as shown in Table 6-15. The number of stations used depends on different conditions of visibility, horizon, and the desires of helicopter squadron commanders.

d. Rescue in the Vicinity of Ships Operating Aircraft.

(1) If forced landing occurs in the vicinity of a ship operating aircraft, the rescue destroyer, of helicopter (or both), proceed(s) to rescue the crew without further orders. First to arrive becomes on-scene commander and directs all supporting forces. The commanding officer of the destroyer is to assume on-scene command when ready to avoid any maneuver that might endanger the helicopter. The helicopter shall approach from downwind of the scene. The destroyer shall remain at least 500 yards upwind of the scene.

(2) The helicopter shall be the primary means of rescue during day or night operations except when weather conditions preclude safe flight. During peacetime, the rotating anticollision lights will be turned OFF indicating yielding of primary means of rescue to destroyer and/or motor whaleboat.

e. Rescue Outside Screen. In the event of a forced landing outside the screen, the nearest screen ship is to proceed to rescue the crew without further orders. If more than one ship starts the rescue, the senior of such ships will determine who is most suitably placed to continue the rescue, thus expediting the recovery of personnel and at the same time ensuring that only one ship leaves the screen.

f. Ship Operating Aircraft to Make Signals. In the event of an aircraft landing in the sea from the flight deck, the ship is to make the necessary signals to indicate the occurrence. In addition, the ship should mark the location in the most appropriate manner, whenever circumstances permit.

g. Condition of Rescued Personnel. The parent ship is to be informed as soon as practicable as to the number and condition of rescued personnel.

6604 DITCHING, BAILOUT, AND EJECTION

a. Ditching. The following procedures are designed to facilitate the safe landing and subsequent rescue of the crew of an aircraft which must ditch at sea.

(1) Location. The pilot should attempt to ditch in a location most favourable for rescue operations.

(2) In a Rough Sea. If the sea is rough, a ship may be detailed to make a slick when time is available. The pilot of the ditching aircraft should time his approach to land in the slick when it is in optimum condition for a water landing. A destroyer (or helicopter) is to be detailed to takeup a rescue station about 1,500 yards downwind of the ship making the slick. When the landing is made, the destroyer or helicopter should proceed to rescue the crew without further orders.

(3) In an Emergency. In an emergency or when the tactical situation does not permit the foregoing preparations to be made, aircraft forced to ditch near the fleet should try to land about 2,000 yards on the lee bow of one of the leading destroyers of the screen.

(4) At Night. The pilot should first attempt to establish visual contact. He should turn on all available lights and try to land about 2,000 yards ahead of a destroyer in the rear semicircle. After landing, he

Table 6-15. Night Rescue Stations (Helicopter Ship Operations)

Station Number	Bearing Relative to Flight Operations Course (degrees)	Distance From Helicopter Ship (yards)
1H	180	1,000
2H	270	1,000
3H	000	1,500
4H	090	1,000

should signal his position in the water if it is at all possible to do so. The nearest destroyer in the screen is to proceed to rescue the crew without further orders.

b. Bailing Out or Ejecting. The following procedures are designed to facilitate the rescue of personnel who must abandon aircraft by bailing out or ejecting:

(1) Location. Pilots who must bail out or eject should try to do so in such a location that the aircraft will crash well clear of any ship, and that they themselves will land in a location most favourable for rescue operations, preferably near one of the leading destroyers of the screen. Modern aircrew emergency equipment contain an emergency transmitter beacon, sending a signal on 243.0 MHz. A DF position should be established to help locate the aircrew.

(2) Escort Aircraft. One or more other aircraft or part of the CAP should standby the aircraft in distress while the crew bails out or ejects and visually locate the parachute's water entry.

(3) Establishing Watch Over Personnel in the Water. The escort aircraft should establish a watch over survivors in the water; the watch should be relieved on station and a continuous watch should be maintained, insofar as practicable, until the survivors are rescued.

(4) Marking Location of Survivors. Dye markers, smoke floats, and smoke lights should be used to mark the position of survivors in the water, as conditions indicate.

6605 DIVERSION OF SHIP TO LOCATE SURVIVORS

a. When radio communications cannot be established with a surface ship which an aircraft wishes to divert, the aircraft should first establish self-identification and then indicate the location of survivors by:

(1) Circling the ship at least once at low altitude.

(2) Flying across the bow of the ship at low altitude and, at the same time, rocking the aircraft.

(3) Sending a message by visual signalling or dropping a message if possible.

(4) Heading in the direction of the incident.

(5) Dropping smoke floats in the direction of the incident if possible.

b. This procedure should be repeated until the ship acknowledges by following the aircraft or by hoisting the international flag NOVEMBER to indicate that it is unable to comply. In either case, the ship is to report her actions to the OTC. Crossing the wake of the ship close astern at low altitudes, opening and closing the throttles, or changing the propeller pitch and rocking the aircraft means that the assistance of the surface ship is no longer required.

SECTION VII — SAFETY PRECAUTIONS AND MEASURES TO AVOID MUTUAL INTERFERENCE

6700 SCOPE

This section details responsibilities and procedures for the establishment and use of safety zones and areas, and measures necessary to ensure safety of friendly air, surface, and subsurface forces from mutual interference.

6701 IMPLEMENTATION OF PROCEDURES

a. This section contains rules and procedures for both peace and wartime.
(NC) (NMM) Wartime procedures will be implemented at NATO Reinforced Alert or earlier, if ordered, by a Strategic Commander or his designated subordinate.

b. The transition from peace to wartime procedures will have an effect on:

(1) SUBNOTE procedures.

(2) Restricted areas.

(3) **(NC) (NMM)** Water space management (WSM) areas:

(a) Submarine action areas (SAAs).

(b) Joint action areas (JTAAs).

(c) ASW free areas (ASWFAs).

(d) Task group submarine area (TGSA).

(4) Permanently and temporarily established exercise areas.

(5) VDS/DTAS NOTE, CATAS ADVISORY, and Surface Ship Notes.

(6) SMAA functions.

6702 IMPLEMENTATION OF WATER SPACE MANAGEMENT (WSM) PROCEDURES

Normally water space is managed by NOIs, VDS notes, SUBNOTEs, etc.
(NC) (NMM) In a period of increasing tension, WSM procedures may be implemented at any time but should be in force shortly after Simple Alert is declared.

6703 — 6709 SPARE

6710 GENERAL CONSIDERATIONS

The complexities of modern warfare necessitate promulgation of certain basic doctrines applicable to all services and commands to prevent or minimize mutual interference during operations. Measures to prevent or minimize mutual interference are those coordinated actions required of appropriate commanders to ensure that the operations of forces under their direction are conducted in such a manner as to prevent or minimize the adverse effects of actions of any one unit upon the operations of others.

6711 AUTHORITY

Basic rules for measures to avoid mutual interference are prescribed on the basis of joint and combined agreements. Detailed rules and procedures in consonance with the basic rules are promulgated in appropriate service publications and by subordinate commanders as specified in Article 6712. During an emergency, and when, in the judgement of the commander involved, time does not permit reference to higher authority, the specified rules and procedures may be temporarily set aside. When such action is taken, the commander involved must notify other appropriate commanders, setting forth the reasons for the change.

6712 RESPONSIBILITY

Each commander shall ensure that such detailed rules, procedures, plans, and methods of operation, as he considers necessary for dissemination at his level of command, are in consonance with those of higher echelons and are coordinated with parallel echelons. Moreover, dissemination shall leave no doubt as to the responsibilities which result. Commanders down to the lowest echelons of a force are responsible for making certain that adequate measures are taken to prevent or minimize interference with the operations of other friendly forces.

6713 TYPES OF MEASURE

Measures to prevent or minimize mutual interference include, but are not limited to, the following:

(1) Assignment of nonconflicting missions insofar as practicable.

(2) Designation of relative importance of missions where conflict of missions must occur.

(3) Scheduling of tactical tasks so as to limit conflict in space, time, or area.

(4) Provision of adequate recognition and identification procedures.

(5) Timely provision of essential operational data by controlling authorities and a similar exchange between forces where interference may occur.

6714 COMPROMISE

In the event of compromise of any of the provisions or measures to prevent or minimize mutual interference, commanders are responsible for seeing that immediate action is taken to notify the authority establishing the particular measures and other commanders who may need to know.

6715 IDENTIFICATION/RECOGNITION

The proper use of the procedures prescribed for identification/recognition is an essential feature in avoiding mutual interference. Friendly submarines are to steer the promulgated safety course while identification/recognition procedures are being carried out.

(NR) (NMM) Identification/recognition procedures for friendly aircraft are in Article 6417.

6716 INITIATION OF SELF-IDENTIFICATION

The responsibility for initiation of identification procedures is assigned below and has universal application:

(1) Aircraft identify themselves to friendly surface units.

(2) Aircraft determine identity of surface units and of other aircraft before attacking.

(3) Aircraft and ground forces are mutually responsible for establishing their own friendly identity.

(4) Ground forces and surface forces are mutually responsible for establishing their own friendly identity, except where special instructions for harbor entrance control are effective, or when special orders are issued for specific operations.

(5) Submarines identify themselves to friendly surface ships and aircraft, except in submarine safety lanes.

(NR) (NMM) Additionally, they do not identify themselves in submarine action areas.

(6) When ships of different size encounter each other, it is normally the responsibility of the smaller ship to establish its friendly identity to the larger ship.

(7) Within similar types, there is a mutual responsibility for establishing friendly identity; that is, air-air, ship-ship, submarine-submarine, and ground-ground.

6720 ROUTES AND REFERENCE POINTS

Routes and reference points are established for the purpose of facilitating control of surface, air, and subsurface traffic so as to reduce interference between forces making passage in the same area. Routes and reference points are established by appropriate commanders. Common routes and reference points should be promulgated when necessary to ensure understanding between forces operating in adjacent areas. Information concerning common routes and reference points should be disseminated to forces about to enter or leave an area, as well as to appropriate commands in adjacent areas. When no conflict with established routes and reference points would result, appropriate commanders may promulgate additional routes and reference points for the temporary use of their own forces.

See also Chapter 2, Section I.

6730 RESTRICTED AREAS

a. Commanders establishing restricted areas shall:

(1) Advise other commanders sufficiently in advance to permit dissemination of restrictions to all personnel concerned,

(2) Specify the geographic limits and, if appropriate, the altitude limits of the restricted areas, and

(3) Provide for the timely disestablishment of a restricted area as soon as conditions no longer require its existence.

b. Safety zones are normally used for non-combat operations.

c. Air and surface restricted areas include:

(1) Controlled airspace, air corridors, and safety sectors.

(2) Shore bombardment and bomb lines.

(3) Blind bombing zones.

6731 CONTROLLED AIRSPACE, AIR ROUTES/AIR CORRIDORS, AND SAFETY SECTORS

Controlled airspace, air routes, air corridors, and safety sectors are used to provide the safe transit of aircraft. Inputs for coordination and deconfliction of airspace requirements, of all services involved in an operation, are required by the designated airspace control authority for the establishment and dissemination of the airspace control plan. Further details are found in ATP 40.

a. Controlled Airspace. Prior coordination with the appropriate authority is required when a controlled airspace is used by tactical or formation flights. Aircraft using a controlled airspace shall not be subject to attack by friendly surface, submarine, or air forces unless positively identified as enemy or unless they commit a hostile act. Controlled airspace will be in accordance with those published in appropriate flight information or ICAO publications or as promulgated by appropriate commanders.

b. Air Routes and Air Corridors. Ships and ground batteries are forbidden to fire at any aircraft in air corridors. The defense of air corridors against incursion by enemy aircraft is the responsibility of a combat air patrol (CAP) established for that purpose. Ordinarily, air corridors are established only when a major air operation is involved, and then only when it is essential that the participating aircraft pass near own ground and sea forces. Included within the concept of air corridors is a low-level transit route (LLTR), defined as follows: A temporary corridor of defined dimensions through the areas of organic low-level air defenses of surface forces. For more details, see ATP 40.

c. Safety Sectors. Safety sectors are employed in AAW areas and are not the same as airways.

d. Identification Coordination. When maritime units are operating within, or in the vicinity of airspace controlled by other agencies, it must be ensured that identification criteria are coordinated between all agencies concerned, and known by all users of that particular airspace.

6732 SHORE BOMBARDMENT AND BOMB LINES

Shore bombardment and bomb lines are used in coordinated operations with ground forces. The policy regarding establishing and using these lines shall be at the discretion of the appropriate commanders. Tactical and forward (safe) bomb lines are normally prescribed by a troop commander according to his assessment of the requirement for coordinating air strikes with his ground forces.

(NC) (NMM) (See ATP-8 and AARTYP-1).

6733 BLIND BOMBING ZONES

Blind bombing zones are used to permit aircraft to conduct operations unimpeded by the danger of attack by friendly forces. Rules governing actions within blind bombing zones follow:

a. Aircraft may attack any target encountered in a blind bombing zone without inquiry as to its identity, except for a submarine in a moving haven established by a SUBNOTE, or a surface ship in an area of operations about which the aircraft have been notified (see Article 6734).

b. Surface Ships shall normally keep clear of blind bombing zones. When surface ships must enter such a zone, the correct notice procedures must be followed. Surface ships may attack any submarine encountered, except for a submarine in a moving haven established by a SUBNOTE (see Article 6734).

c. Submarines shall normally keep clear of blind bombing zones; when submarines must enter such a zone, they shall be protected by a SUBNOTE. During an emergency, a submarine entering a blind

bombing zone without prior timely notification (normally 24 hours is required) must accept the risk of attack by friendly aircraft.

(NR) (NMM) Targets that a submarine may engage should be those permitted in Article 6734.

6734 CONTROLLED WATERSPACE, WATERSPACE MANAGEMENT AREAS, AND ASW WEAPON RESTRICTIONS

a. Waterspace Management (WSM)/Prevention of Mutual Interference (PMI). Effective WSM and PMI are essential to ensure safety of friendly submarine and surface forces. A clear understanding of each function is required by all commands involved with submarine and/or ASW operations. WSM and PMI are the responsibilities of the area SUBOPAUTH. When authorized by the SUBOPAUTH, an OTC may assume local WSM and PMI responsibilities for designated task group submarines.

(NC) (NMM) See Table 1-1, Function 144.

NOTE

For the purpose of WSM and ASW weapons restrictions, an ASW weapon is any weapon used by a friendly platform against a submerged or surfaced submarine.

(1) (NC) (NMM) Waterspace Management. WSM is an essential element of the overall battle-space control plan required for any maritime operation. Its principal purpose is to allocate waterspace in terms of ASW attack restrictions to permit the rapid and effective engagement of enemy submarines while preventing inadvertent attacks on friendly submarine and surface forces. Essentially, WSM is a set of specifically defined submarine and ASW force operating areas and attack rules. WSM procedures are implemented by the SUBOPAUTH on the behalf of the area commander. They should be in place whenever ASW attack by any type of platform becomes probable. WSM may be applied on any scale — local, regional, or theater-wide — depending on the crisis situation, the existing or projected submarine threat, and requirements of the area commander. Areas are published by geographic reference or grid specified by the theater commander. Elements of WSM may be implemented individually or in combinations to provide measures appropriate to operations ranging from peace support to hostilities. Figure 6-9 illustrates WSM areas and rules.

(2) (NC) (NMM) Prevention of Mutual Interference. For submarine operations, PMI procedures are specifically intended to prevent submerged collisions between:

(a) Friendly submarines.

(b) Submarines and friendly surface ships' towed bodies.

(c) Submarines and any other submarine hazards (e.g., detonations, submersibles, oil drilling operations, etc.).

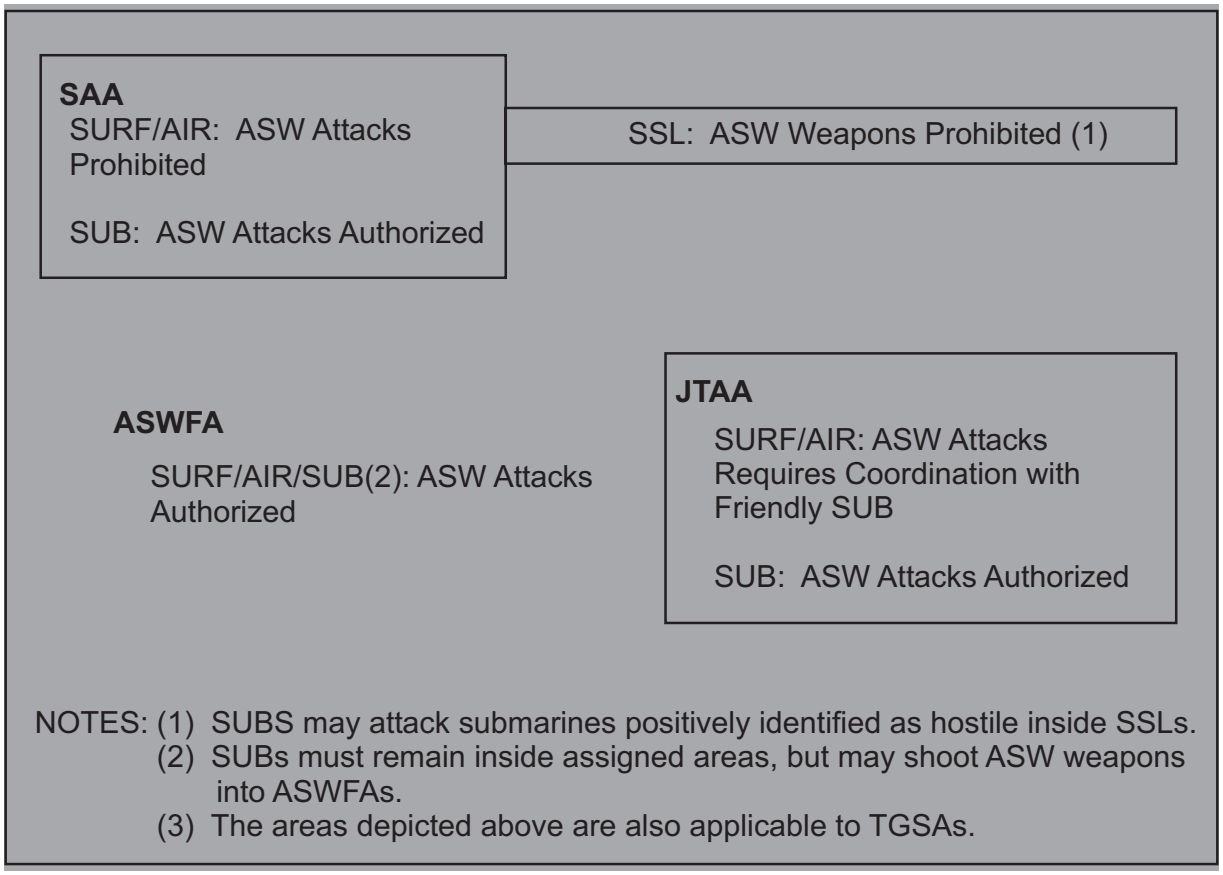
(d) Submarines and friendly towed and autonomous bodies (e.g., naval mines, UUVs, ROVs, naval minesweeping gear, VDS, etc.) (see Article 6781).

NOTE

PMI using STOVEPIPE procedures can be found in Article 9139.

b. (NC) (NMM) Definitions of Principal WSM Areas. ASW attack rules apply to attacks against all contacts classified as submarine regardless of whether they are surfaced or submerged.

(1) ASW Free Area. An ASW free area (ASWFA) is one in which no friendly submarines are operating. There are no ASW attack restrictions except when operating in the vicinity of a boundary with a



(NATO-CONFIDENTIAL) (NMM)

Figure 6-9. (NU) (NMM) Waterspace Management Areas

SAA, JTAA, SSL, or other activated submarine operating area when the necessary ASW weapon compensatory allowances must be applied (see Article 6761).

(2) Submarine Action Area. A submarine action area (SAA) is an area that contains one or more friendly submarines. Only submarine-launched ASW weapons are authorized within the SAA.

(a) Submarines are allocated submarine patrol areas (SPAs) and moving havens (MHNs) within an SAA to avoid mutual interference between submarines. While the locations of SAAs are promulgated by the SUBOPAUTH to all friendly forces in the region, the specific locations of SPAs and MHNs within SAAs are normally only passed to the submarines concerned and appropriate submarine movement authorities.

(b) Surface or air ASW attacks are prohibited in an SAA.

(c) Surface forces should not normally enter an SAA.

(3) Joint Action Area. JTAA is an area in which a single friendly submarine is operating in coordination with air and/or sirface forces. Air and surface ASW attacks are prohibited throughout the JTAA unless NOTACK area or a Submarine Generated Search Area (SGSA) has been established.

(a) A separate JTAA is to be established for each submarine with which coordinated operations are planned or envisaged. Note that JTAAs may be used for submarines tasked in primary roles other than ASW; e.g., ASUW, strike warfare, special operations, etc.

(b) Surface forces should normally not enter a JTAA unless the submarine operating in the JTAA is conducting associated support, direct support, or integrated operations with this force and provisions for implementation of SGSA procedures have been made.

(4) ASW Area of Responsibility. The ASW area of responsibility (ASW AOR) of a surface force is a geographically fixed region or specified area around PIM in which the OTC, as opposed to an area commander, exercises ASW responsibility. Size and configuration is determined by the OTC based upon the nature of the threat and assets available to counter. Ideally, the ASW AOR should be an ASWFA that permits unrestricted use of air and surface ASW weapons. If an SAA or JTAA waterspace is included in or overlaps the ASW AOR, strict compliance with ASW attack rules is required (see Figure 6-9 for ASW attack rules).

(5) Submarine Safety Lanes. Submarine safety lanes (SSLs) are available as a set of lanes superimposed on the grid, or geographically described, and may be activated completely or partly by message. If activated, SSLs are special cases of SSAs. A submarine in an activated SSL shall not attack another submarine unless it is positively classified as hostile. ASW attacks by aircraft and surface ships are prohibited in an activated SSL

(6) Task Group Submarine Area (TGSA). A TGSA is an area designated by the SUBOPAUTH in which one or more submarines are operating under TACOM of the task group OTC. WSM and PMI requirements within this area are the responsibility of the OTC or specified subordinate commander. TGSAs are established based on the mutual consent of both the OTC and SUBOPAUTH to allow the on-scene commander to control WSM and submarine movements. A TGSA may be established at any time before or after the implementation of full WSM procedures. Further discussion of TGSA procedures is contained in ATP 18.

c. Havens. Static havens and moving havens (MHNs), which may be stationary, are established to provide a measure of security to submarines and surface ships in transit through areas in which existing attack restrictions would be inadequate to prevent attack by friendly forces. Additionally, moving havens in peacetime prevent or minimize mutual interference among friendly submarines or among friendly submarines and ships operating VDS/DTAS systems. Submarines can be made available for exercises with other forces during transit only when prior arrangements have been made. Ships operating towed acoustic devices under circumstances where a VDS/DTAS NOTE is required should be routed in moving havens. (See Article 6780.)

(NR) (NMM) See also paragraph (4) below.

(1) Static Havens (Used only during wartime or during periods of potential hostilities). Static havens may be established by a SUBOPAUTH or task group commander. Offensive operations within a static haven are limited as follows:

(a) Under no circumstances shall ships or aircraft attack a submarine within a static haven. Nor shall they attack a surface ship unless the target is positively identified as enemy. Additionally, surface ships shall not enter a static haven without the permission of the commander who established the static haven.

(b) Submarines shall not attack other submarines or surface ships unless they are positively identified as enemy.

NOTE

(NC) (NMM) Static havens are used to provide protection to friendly submarines during multi-national operations which include non-NATO partners. During this type of operation, standard WSM areas (SAA, JTAA and ASWFA) will continue to be promulgated by the SUBOPAUTH or (when TACOM has been delegated) the OTC or SOCA. Additionally, the commander promulgating WSM allocation and status message to NATO units will establish static havens which encompass submarine WSM areas (SAAs and JTAAs) and disseminate the locations of these static havens to all units operating in the area of concern. This commander shall also take positive steps to ensure that units which are not informed of WSM status remain clear of static havens and do not conduct unauthorized attacks on submarines and surface ships operating within these static havens.

(2) Submarine Moving Havens (MHNs) (Wartime or Peacetime Use). MHNs may be assigned by the SUBOPAUTH to submarines to prevent mutual interference or minimize the risk of attack between friendly submarines.

(NC) (NMM) Submarine MHNs are established by BARNSTORM procedures in ATP 18 or by a Submarine Notice (SUBNOTE) promulgated in accordance with the procedure in Article 6771. The sides of the submarine MHN are always described in the following sequence — miles ahead, miles behind, and miles on either side of the submarine's ordered position.

(a) Wartime. The dimensions of MHNs will be dictated by operational requirements. Unless otherwise specified, the standard wartime submarine MHN has the following dimensions from the submarine's ordered position:

i. Outside the Mediterranean and Baltic Seas: 50 miles ahead, 100 miles behind, and 15 miles on each side.

ii. In the Mediterranean Sea east of longitude 05°55'W (except for the Aegean Sea) and in the Baltic Sea entered in latitude 57°45'N: 20 miles ahead, 40 miles behind, and 15 miles on each side.

iii. In the Aegean Sea: 5 miles ahead, 10 miles behind, and 3 miles on each side.

(b) Peacetime. In peacetime, SUBOPAUTHs are requested to restrict the size of the MHN to the minimum to meet the submarine's operational requirements — preferably an area 20 miles ahead, 30 miles behind, and 5 miles on either side of the submarine's ordered position. In peacetime, the shape of the MHN may be varied to suit operational requirements, in which case the dimensions are to be stated in the SUBNOTE.

(c) In Restricted Waters. MHNs should be reduced in size in restricted waters, in which case the dimensions must be stated in the SUBNOTE. They shall be established for submarines in transit even though they are under escort.

(d) Request for Change to SUBNOTE. A submarine is responsible for remaining within the submarine MHN established by the SUBNOTE. When unable to do so, the submarine shall request a change to the SUBNOTE from the SUBOPAUTH under whose operational control he is operating and, in peacetime, with information to the SMAA. Such requests for changes to a SUBNOTE will include the reason therefore, and will be assigned a precedence consistent with the urgency of the situation, up to and including IMMEDIATE if necessary.

(3) (NC) (NMM) Operations Within a Submarine Moving Haven in Wartime. In wartime, operations within a submarine MHN are limited as follows:

(a) Aircraft and Surface Ships. ASW attacks are prohibited.

NOTE

For procedures when surface forces require access to an SAA or JTAA, see paragraph e. below.

(b) Submarines. A submarine in a MHN shall not attack another submarine unless it is positively identified as enemy.

(4) (NC) (NMM) Surface Ship Moving Havens. In wartime, surface ship moving havens are established by surface ship notices, which will be promulgated in accordance with Article 6737. In peacetime, they will be established by a VDS/DTAS NOTE in accordance with Article 6780 or a MW NOTE in accordance with Article 6781. A surface ship moving haven will normally be a circle centered

on the ordered position of the ship (or Guide of a group of ships). The OCA or ship originating a surface ship moving haven notice will determine the radius of a circular haven, taking into consideration such factors as the size of a group of ships and the probable tactical maneuvers. The size of surface ship moving havens should be kept to the minimum consistent with the foregoing requirements in order to minimize the area of prohibited attack. A surface ship is responsible for remaining within its established haven. When unable to do so in wartime, the ship shall inform the OCA concerned as soon as practicable and designate new planned positions. In peacetime, Articles 6780 and 6781 are to be followed. Within surface ship moving havens, offensive operations are limited so that surface ships will not be attacked unless positively identified as enemy or unless they commit a hostile act. Attacks on aircraft and submarines will be governed by the designation of the surrounding zone or area. When the movements of cartel ships, enemy hospital ships, neutrals, etc. are known, they can best be safeguarded by the dissemination of a notice of surface ship moving haven.

d. (NC) (NMM) Considerations in Area Allocations.

(1) Communication schedules and maximum speeds of advance will affect the planning and promulgation of changes in submarine area allocations.

(2) The inherent difficulties in providing adequate information exchange with a covert submarine demand that communications be limited and strictly scheduled. Additionally, although a submarine may receive a message after a short while after release, it would not normally transmit an acknowledgement for OPSEC reasons. These constraints dictate that a SUBOPAUTH cannot normally assume receipt of a message, transmitted by broadcast to a submarine, for at least 12 hours after initial transmission.

(3) For both operational effectiveness and survivability, a submarine is restricted in speed. Limitations may be imposed for sonar search purposes, to ensure continuous communications, to conserve battery capacity, or to minimize snorkel periods. A low speed of advance by submarines is a sensible planning assumption.

(4) OTCs and MHQs should therefore give the SUBOPAUTH the earliest possible notification of desired routes and water assignments. The SUBOPAUTH will acknowledge requests as soon as possible (normally within 4 hours of receipt). The acknowledgement will be either a WSM Allocation and Status message or a denial.

(5) Own mining operations are to be conducted only after preliminary coordination with the appropriate SUBOPAUTH. This is also valid for the conduct of mine countermeasures to a limited extent as discussed in Chapter 13.

e. (NC) (NMM) Procedures for WSM Allocation.

(1) Procedures for Use When Surface Forces Require Access to a Submarine Action Area or Joint Action Area (other than one established for their use). The procedure to be followed depends upon the notice that can be given, measured from the time of receipt and time of new requirement.

(a) More Than 24 Hours From Receipt of Requirement. When more than 24 hours notice can be given, the OTC must decide whether the aim of the mission is best served by seeking separation or mutual support from submarines within SAAs. He must request an ASWFA or JTAA.

(b) Less Than 24 Hours But More Than 18 Hours From Receipt of Requirement. It is emphasized that the following is an emergency procedure and might be impossible to implement. In this case the OTC may request Operation GRASSHOPPER from the SUBOPAUTH. This orders all affected submarines to move to a small preplanned part of their allocated area. The duration of GRASSHOPPER and the area required must be defined. See Article 6736 for detailed instructions for Operation GRASSHOPPER.

(c) Less Than 18 Hours Notice From Receipt of Requirement. An alteration of the plans at this notice is not sufficient for any course of action other than for the force to prohibit ASW attacks. It must be emphasized that the short notice might be insufficient even to warn friendly submarines of the transit of friendly submarines of the transit of friendly surface forces. Ships must be aware that they may be open to attack by a friendly submarine and therefore must make every attempt to make their identity known.

NOTE

DTAS/VDS-fitted ships that are passing through an SAA or JTAA must retrieve the DTAS/VDS system unless GRASSHOPPER is in force. If a CATAS system is considered a hazard to certain classes of submarine, the SUBOPAUTH will advise of any requirement to retrieve the CATAS. CATAS-fitted ships must recognize the possibility of damage or loss unless the system is retrieved.

(2) Procedures Within a Joint Action Area. By definition, a JTAA will always contain a single friendly submarine. Accordingly, air and surface ASW attacks are prohibited throughout a JTAA until such time as an SGSA or NOTACK area is established by the submarine.

(3) Procedures Within an ASW Area of Interest.

(a) The SUBOPAUTH operating submarines within the ASW AOI may be requested by the area or surface force commander to provide associated support to the force. If assigned, the SUBOPAUTH must designate the submarine operating area as an SAA or JTAA.

(b) To provide maximum ASWFAs for forces in transit, JTAA sizes for submarines are to be kept as small as feasible considering the requirements of submarine operations.

(c) If the transiting force stops to carry out local operations, JTAAs or SAAs in the vicinity may be modified to provide support more appropriate to stationary PIM operations.

(4) Procedures for ASW Aircraft.

(a) In an ASWFA. No ASW restrictions apply for ASW aircraft in an ASWFA.

(b) Over an SAA. ASW aircraft should not normally be tasked over an SAA. If such occurs, however, aircraft ASW attacks are prohibited.

(c) In a JTAA. Attacks by ASW aircraft are prohibited until such time as a NOTACK area is established by the submarine. SUB/AIR cooperation procedures in accordance with ATP 28, Chapter 12, apply when so ordered.

NOTE

A minimum of 12 hours notice must be given to a submarine ordered to execute SUB/AIR cooperation procedures.

(5) Procedures for Submarines Within an SAA/JTAA. Submarines shall consider as enemy and may attack any target encountered, subject to specific orders to the contrary from higher authority and the current interpretation of international law. Submarines shall not attack ships believed to be neutral or ships encountered along a route or in an area of friendly ship operations about which they have been notified. No ship encountered under the circumstances set forth in the preceding sentence shall be attacked unless the ship has been identified as enemy beyond possibility of doubt.

f. (NC) (NMM) Coordination Responsibilities.

(1) The SUBOPAUTH will:

(a) Implement and promulgate SAAs, JTAAs, SSLs, and widely and on a regular basis ASWFAs on behalf of the area commander.

(b) Order Operation GRASSHOPPER.

(c) Promulgate to appropriate authorities SPAs and MHNs within SAAs.

(d) Liaise with other authorities over cooperation within JTAAs.

(2) OTCs and MHQs can:

(a) Request ASWFAs or JTAAs.

(b) Request Operation GRASSHOPPER.

(c) Establish and promulgate ASW AOIs.

(d) Seek arbitration as appropriate.

g. (NC) (NMM) Operations After Loss of Submarine Command and Control. The SUBOPAUTH will ensure ASWFAs are promulgated by regular message. In the event of loss of submarine command and control, unrestricted ASW operations can continue in ASWFAs using the information contained in the last promulgation message. These operations must remain outside SSLs.

6735 (NC) (NMM) PROCEDURES FOR REQUEST AND ALLOCATION OF WSM AREAS

a. Procedures.

(1) Purpose. The purpose of this paragraph is to formalize the procedure to be followed when requesting or allocating ASWFAs, JTAAs, and SAAs.

(2) Aim. The aim is to provide a standard method to divide water effectively between the commands involved.

b. Considerations.

(1) In order to reduce message traffic, WSM messages will initially not be addressed lower than CTF/CTG level of any ASW capable force. CTGs and sub-area commanders are responsible for further dissemination as required.

(2) To ensure uniformity of WSM plots, the SUBOPAUTH will issue a serialized WSM message for his area of responsibility at an interval not exceeding 24 hours. If a new WSM message is not issued within 24 hours, the last WSM message remains effective.

(3) If required the SUBOPAUTH will issue numbered amendments to serialized WSM messages when time does not allow waiting for the next serialized WSM message.

(4) After a new serialized WSM message has become effective, the former serialized WSM messages and amendments are automatically cancelled.

(5) WSM requests received by the SUBOPAUTH will be acknowledged as soon as practicable (normally within 4 hours of receipt) by IMMEDIATE message. The acknowledgement will be in the form of:

(a) An amendment to a serialized WSM message, or

(b) A denial of a request.

c. Format for WSM Messages. Formats for WSM messages are in accordance with APP-11 and ATP-18.

6736 (NC) (NMM) EMERGENCY TRANSIT OF SURFACE FORCES THROUGH SAAs OR JTAAs

a. Operation GRASSHOPPER.

(1) Purpose and Aim. To allow a transiting surface force, at short notice, the maximum freedom for the use of ASW weapons by minimizing the size of SAAs or JTAAs in the quickest possible way.

(2) Considerations.

(a) This operation is to be regarded as an emergency procedure.

(b) If a STOVEPIPE Plan is in force, GRASSHOPPER may be requested, but cannot be authorized unless the STOVEPIPE plan can be cancelled.

(c) The submarine's ability to operate effectively will be significantly reduced during the execution of these procedures.

b. Execution of Operation GRASSHOPPER.

(1) Description. When surface forces are required to enter an SAA or JTAA at short notice, the SUBOPAUTH can order a submarine to withdraw into a preplanned part of its SPA, defined as a MEADOW.

(2) Definition of a MEADOW. A MEADOW is a static submarine haven that is effective only during the period and in the area in which Operation GRASSHOPPER is in effect. MEADOWs will be defined by the Area Commander when he promulgates the ASW grid.

NOTE

If a submarine has been allocated only a part of a grid area (in which case the SAA or JTAA boundary is cutting through the MEADOW), this MEADOW is cancelled.

(3) Submarines.

(a) Within the area in which GRASSHOPPER is effective, submarines withdraw into the MEADOW or into any part of their SAA or JTAA which lies outside the GRASSHOPPER area and remain there throughout the time specified in the execution message.

(b) When the effective GRASSHOPPER time expires, submarines again occupy their SAA or JTAA as previously allocated.

(4) Surface/Air Assets.

(a) Within the time and area specified in the GRASSHOPPER execution message, attacks with surface and air ASW weapons are prohibited within the MEADOW.

(b) Surface assets should normally remain clear of MEADOWs.

(c) During the time GRASSHOPPER is effective, no restrictions are imposed in the GRASSHOPPER area on VDS/DTAS, etc., outside the MEADOW.

(d) When the effective GRASSHOPPER time expires, the ASW weapon restrictions of Article 6735 apply. (Surface/air ASW attacks are prohibited within the SAA. NOTACK or SGSA is required for attacks within a JTAA).

c. Method of Requesting and Ordering Operation GRASSHOPPER.

(1) Request for GRASSHOPPER. The OTC or ASWC of a surface force that has to proceed through an SAA or JTAA at a notice between 18 and 24 hours may request the SUBOPAUTH to execute GRASSHOPPER using the message format in APP-11.

(2) Method of Ordering. The SUBOPAUTH orders GRASSHOPPER using the message format in APP-11. When so ordering, the SUBOPAUTH must provide the coordinates of the center and the size of each active MEADOW and the time they will be active.

6737 PROCEDURES FOR SURFACE SHIPS ENTERING RESTRICTED AREAS

a. Surface Ship Notices. When surface ships must enter a blind bombing zone, the commander ordering the movement shall notify, as far in advance as possible, the theater, fleet, or equivalent commander concerned and the commander controlling aircraft movements in the area. The commander ordering the surface ship movement shall state either the route to be followed, given speed of advance (SOA) and times of passing reference positions, or the area in which the surface ship operations are to be conducted. During an emergency, surface ships entering a blind bombing zone without prior timely notification (normally 24 hours is required) must accept the risk of attack by friendly aircraft.

6738 — 6739 SPARE

6740 SAFETY PROCEDURES

a. Safety procedures are established to:

(1) Safeguard friendly forces from attack by each other; prevent needless alarms; prevent expenditure of unnecessary effort on the part of friendly forces by the approach of other forces not yet recognized or identified as friendly.

(2) Provide confidence in identification, thereby ensuring the immediate effective engagement of enemy forces.

(3) Ensure the safety of friendly forces in routing operations and exercises.

b. Safety procedures applicable to specific operations are established in appropriate publications. Safety procedures for maritime air operations are detailed in Article 6470.

(NR) (NMM) Safety procedures for submarine operations in Article 6760.

6745 SAFETY OF AIRCRAFT

6746 WEAPON RESTRICTIONS — GENERAL

Weapon restrictions apply to aircraft, SAMs, and guns and may be ordered to allow the operation of friendly aircraft, especially within MEZs. They are promulgated by AAWCs, each at his own level and in his own area, as the occasion demands. They may be ordered in a general sense, or specifically for a given area, or for a given type of weapon.

6747 WEAPON CONTROL STATUS

a. Weapon Control Status. The following weapon control status may be given, prefixed by weapon code words:

(1) … FREE. Fire may be opened on any target(s) that has (have) not been identified as FRIEND.

(2) … TIGHT. Do not open fire unless target(s) has (have) been identified as HOSTILE.

(3) … SAFE. Do not open fire/cease firing. Fire may be opened only in self-defense or in response to a formal order.

b. Qualifying Weapon Control Status. Weapon control status may be qualified by one or more of the following:

(1) A *sector*.

(2) A *safety sector*.

(3) A *period of time*.

-Example-

"WEAPONS TIGHT 5 SECTOR 2."

Meaning: Do not open fire in safety sector 2 for 5 minutes.

c. Changing Weapon Control Status. A weapon control status is changed by directing another weapon control status.

6748 WEAPON CONTROL ORDERS

a. Weapon Control Orders. Independent of weapon control status, the following weapon control orders may be directed by the AAW:

(1) HOLD FIRE. Do not open fire/cease firing (missiles in flight must be destroyed). The direction to hold fire should be repeated at the end of a transmission.

(2) CEASE FIRE. Do not open/cease firing (missiles in flight continue to intercept).

b. Qualifying Weapon Control Orders. Weapon Control orders may be qualified by one or both of the following:

(1) A particular unit.

(2) A particular contact (track number or position).

-Example-

HOLD FIRE ON TRACK 1247, HOLD FIRE."

Meaning: Do not open fire/cease firing on track 1247 (missiles in flight must be destroyed).

Note: If AAWC directs a weapon control order in general it accounts for all units and all contacts.

-Example-

"W this is AW, HOLD FIRE, I say again, HOLD FIRE."

Meaning: All units hold fire on all contacts (missiles in flight must be destroyed).

c. Cancelling Weapon Control Orders. A weapon control order can only be cancelled by the AAWC, using the prefix "NEGAT" to the weapon control order.

-Example-

"W this is AW, NEGAT HOLD FIRE, I say again, NEGAT HOLD FIRE."

Note: A specific weapon control order can exist within a weapon control status.

-Example-

"WEAPONS FREE, HOLD FIRE ON TRACK 1644."

6750 SPECIAL SURFACE SHIP PRECAUTIONS

6751 SURFACE SHIP NOTICES AND ADVISORIES

Surface ship notices or advisories will only be required for those specific instances in which surface ships are towing acoustic devices in peacetime under the provisions of Article 6780 or are required to enter blind bombing zones or submarine patrol areas in wartime, or in peacetime are towing acoustic devices (see article 6780) or are conducting MW operations (see article 6781).

(NR) (NMM) (See Article 6734.)

6752 RADIATION HAZARDS (RADHAZ) TO PERSONNEL

a. Ships Fitted With High-Power Transmitters and Personnel. Ships are typically fitted with high-power transmitters such as radio communications, radar, acoustic and electronic warfare equipment. The same ships also carry personnel. The radio frequency (RF) fields produced by these transmitters can cause general or localized heating in personnel from the induced currents. In exposure conditions that exceed the national standards, or the Personnel Exposure Limit (PEL) of STANAG 2345, can be hazardous to personnel. The commanding officer of each unit is responsible for the safety of his own personnel and those of surrounding units, from RADHAZ produced within his unit. AECP-2, Volume I provides engineering derivations for RADHAZ protection for personnel and AECP 2 Vol I Supp-1 provides Practical Operational Guidance and procedures for fleet use. It is the responsibility of each commanding officer to warn other units when his unit is within the range that powerful transmitters could create a RADHAZ to personnel on other units.

b. Instructions.

(1) Identify and attenuate potentially hazardous RF fields by physical controls wherever possible, protective equipment, administrative actions, or a combination thereof.

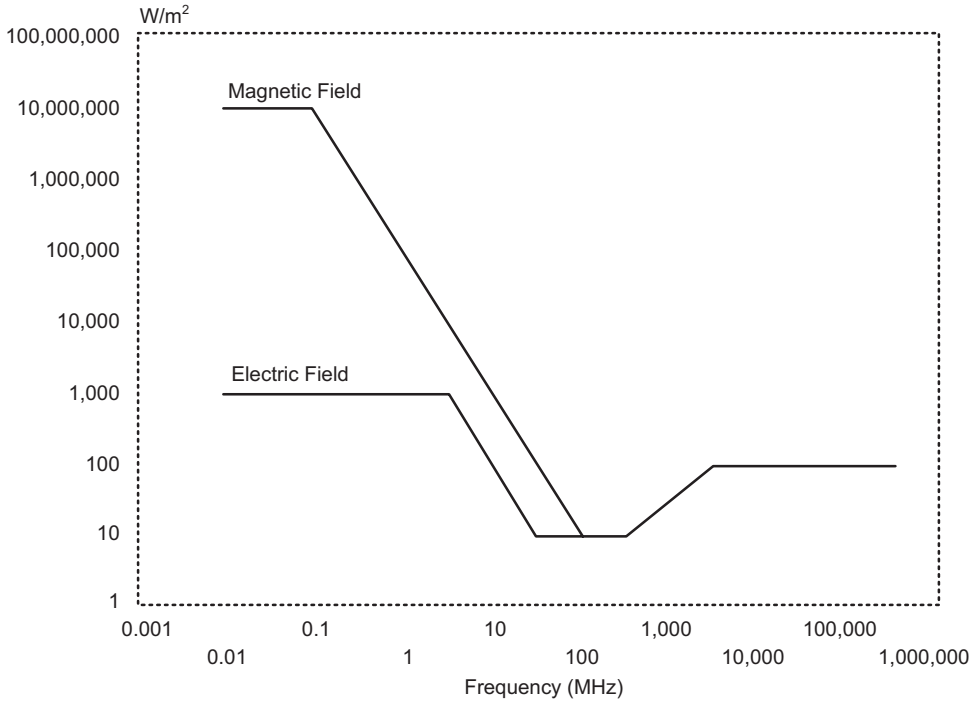
(2) Limit RF field exposure of personnel to levels that do not exceed the PELs given in the following figure.

(3) Define and control areas in which RF exposure of personnel could exceed the PEL. Ensure that personnel are aware of potential RF exposures in their workplaces and duty assignments.

(4) Investigate, document, and present recurrences of RF overexposure.

(5) Use RF Hazard Warning Signs as shown in STANAG 1379 RAD, or the national standard to warn personnel of hazardous areas.

(6) The following figure gives the Personnel Exposure Limit expressed as equivalent power density.



(7) For RF Induced and Contact Current restrictions, use the following table:

Frequency Range (f) (in MHz)	Maximum Current Through both feet (mA)	Maximum Current Through Each Foot (mA)	Contact Current (mA)
0.003 - 0.1	2000*f	1000*f	1000*f
0.1 - 100	200	100	100

6753 RADIATION HAZARDS (RADHAZ) TO MATERIEL

a. Ships Fitted With High-Power Transmitters and Carrying Materiel: Ships are typically fitted with high-power transmitters such as radio communications, radar, acoustic and electronic warfare equipment. The same ships also typically carry naval stores including weapon systems and ordnance that may contain electro-explosive devices (EED), or other materiel containing Safety Critical Electronic Systems (SECS), defined here as, *materiel*. The radio frequency (RF) fields produced by these transmitters can cause inadvertent initiation or dudding of EEDs. The commanding officer of each unit is responsible for the safety of his own materiel, and those of surrounding units, from RADHAZ produced within his unit. AECP-2, Volume I provides engineering derivations of RADHAZ protection for materiel and AECP-2, Vol. I Supp-1 provides Practical Operational Guidance and procedures for fleet use. It is the responsibility of each commanding officer to warn other units when his unit is within the Safety Distance of RF transmitters that could create a RADHAZ to materiel on other units. It is also the responsibility of each commanding officer to warn other units of RF sensitive materiel held in such a location that they could be hazarded by RF transmissions from other units.

b. Instructions: Referring to the operational guidance in Volume I Supp-1 of AECP-2, each unit should construct a set of tables such as described in Section 8.

(1) Susceptibility RADHAZ Designator (SRAD) codes for RF sensitive materiel are provided to fleet units by each nation's appropriate engineering authority for materiel safety. Section 8, Table 2 is a collection of each unit's SRAD codes for their ammunition allowance list. This table is used to inform other units of the SRAD of materiel when approaching another unit.

(2) Transmitter RADHAZ Designator (TRAD) codes for each unit's transmitters are provided by each nation's appropriate engineering authority for electronic systems. Section 8, Table 3 is a collection of each unit's TRAD codes unique to the emitters and antenna suites of that unit. This table is used to compare to the SRAD provided from an approaching unit (platform). If a unit's TRAD is higher than any corresponding frequency SRAD of an approaching unit (platform), then the appropriate safety distances established by Table 1 must be observed. If this is not possible, one of the options of paragraph 3.2. b) must be achieved.

(3) A table unique to each platform, such as that in Table 4, can be prepared in advance once the unit's TRAD codes are known by filling in the matrix with values extracted from Table 1: Safety Distances. Since a Safety Distance of 3 meters is a minimum separation between a transmitting antenna and materiel or aircraft structure, only values >3 meters need be considered.

6754 RADIATION HAZARDS (RADHAZ) TO FUEL

a. Ships Fitted with High-Power Transmitters and Fuel. General instructions regarding the control of RF transmissions to avoid RADHAZ to fuel and flammable materials pertain only to flammables with flash points less than (<) 60° C. These fuels have to be in shielded, closed containers when there is a possibility of being exposed to electromagnetic radiation.

b. Instructions. To avoid causing a hazard during fueling operations on vessels in close company, the following more detailed procedures should be observed for flammable materials with a flash point below or equal to 60° C when they are exposed to RF transmissions during fueling, defueling, and handling operations and ship-to-ship replenishments. These procedures apply too, when there is any leakage of flammable materials (flash point > 60° C) from a damaged container.

(1) Radar and Satellite Communications. Radar main beams and radiations from other directional aerials of own or other ship must not illuminate fueling points, fueling rigs, aircraft, vehicles or craft being fueled, defueled or replenished within 300 m for radars of average power greater than 500 W and within 100 m at lower powers.

(2) Radio Communication (omnidirectional).

• Within 10 meters of fueling point, fueling rig or nearest point of aircraft vehicle or craft being fueled, or replenished, no transmissions at all from own or other ship are authorized.

• Between 10 and 30 meters, transmissions are allowed from own and other ship up to 250 W per transmitter (no limit to the number of transmitter).

• Above 30 meters, no restriction. Transmitters connected to a dummy load do not cause RADHAZ risks and are not restricted by the above precautions.

6760 (NC) (NMM) SAFETY PROCEDURES FOR SUBMARINES

Procedures for preventing engagement of friendly forces are of critical importance and must be conscientiously followed, especially within JTAAs. Air and surface units shall not conduct ASW attacks inside the JTAA unless prior coordination has been conducted with the submarine per the procedures of this chapter. Likewise, submarines shall employ ASW and ASUW weapons with due regard for friendly surface units that may be operating within or in the vicinity of the JTAA. Within a JTAA, two types of area — submarine-generated search area (SGSA) and NOTACK — are used to prevent inadvertent engagement of friendly submarines. SGSA procedures allow rapid engagement of hostile submarines by other ASW platforms without having to BELLRING the friendly submarine, while NOTACK procedures allow direct coordination between the friendly submarine and an attacking ASW platform. The two procedures complement each other and maximize the operational flexibility of both submarines and other ASW units.

6761 ASW COMPENSATORY ALLOWANCES

a. For any ASW engagement, air and surface units shall apply a compensatory allowance which minimizes the risk of that weapon inadvertently entering an area containing a friendly submarine.
(NC) (NMM) Conceptually, a compensatory allowance is a weapons danger zone with a navigation safety buffer which applies to SAA, JTAA, activated SSL, MEADOW, NOTACK, and SGSA boundaries.

b. The weapon danger zone is based on the type of weapon, method of employment, run pattern, and estimated acquisition range. This danger zone is not intended to be the maximum possible weapon run, but an area which will protect the submarine from a properly operating weapon. Weapon danger parameters are derived from ASW weapon employment publications, and may also be specified by the ASWC.

c. Submarines shall remain clear of their area boundaries by at least their assessed navigation error and take appropriate precautions to prevent its own ASW weapons from endangering friendly submarines and surface units.

d. Figure 6-10 illustrates compensatory allowances.

6762 (NC) (NMM) SUBMARINE-GENERATED SEARCH AREA (SGSA)

An SGSA (code name: BULLPEN) is a stationary, geographically defined area within a JTAA in which the submarine will operate for a specified period of time. While the SGSA is in effect, an SGSA

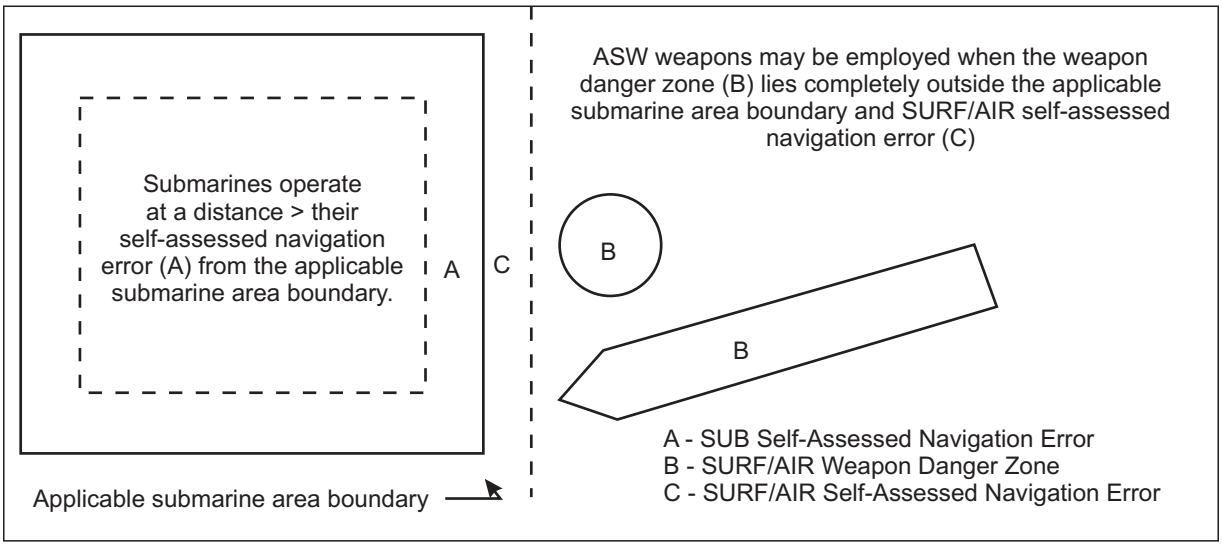


Figure 6-10. ASW Compensatory Allowances

Coordinating Authority/Unit authorizes and controls all non-submarine ASW attacks within the JTAA. The manner in which SGSA procedures are implemented depends on whether the submarine is operating with a task group or independently in cooperation with MPA or other land-based tactical aircraft in area operations. All voice message formats associated with SGSA establishment, cancellation request, and JTAA attack authorization are found in APP-1.

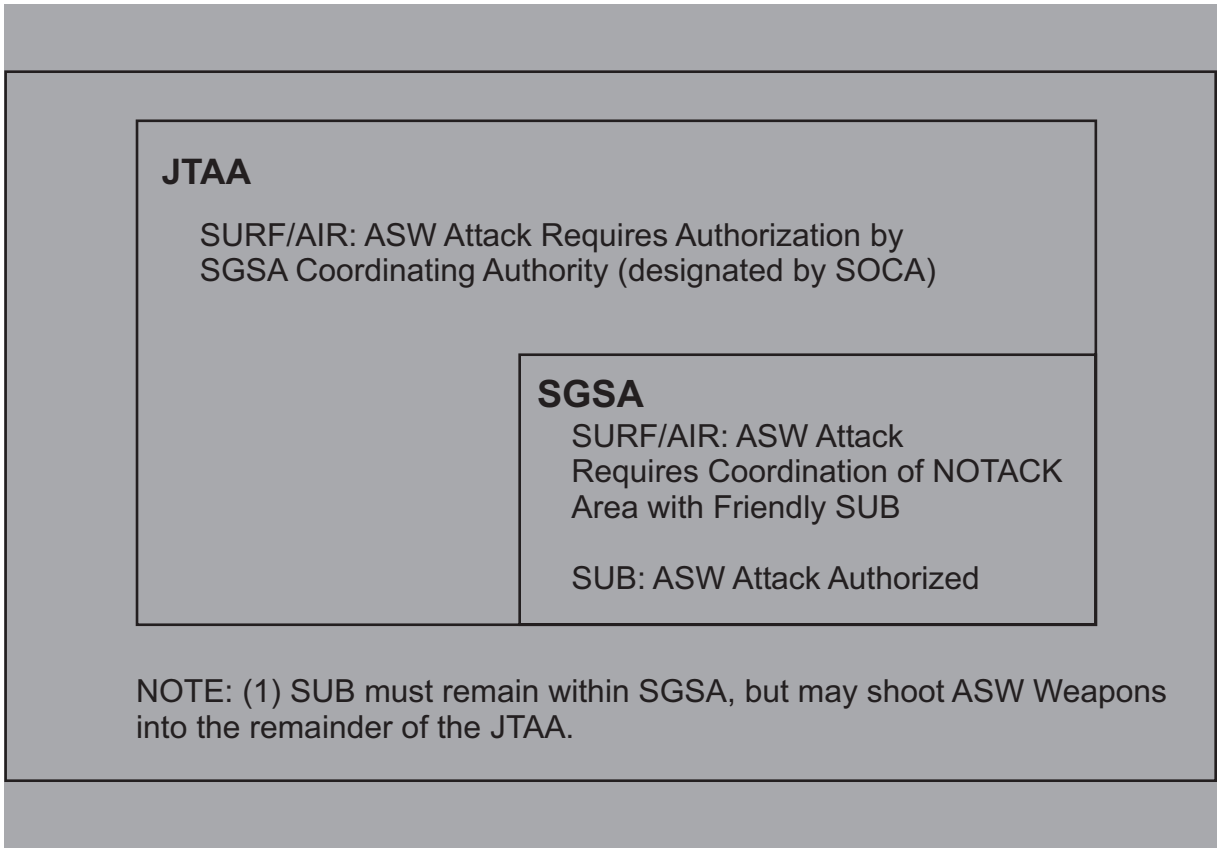
a. Definitions.

(1) SGSA Coordinating Authority/Unit is the designated command or platform that controls employment of air and surface ASW weapons within a JTAA when SGSA procedures are in effect. It is normally a command or platform with whom the submarine is conducting coordinated operations.

(a) Task Group Operations. When a submarine is operating with a task group, a specified commander is to be designated as the SGSA Coordinating Authority. This authority coordinates with the submarine regarding establishment of SGSAs and, when ASW weapon employment is required by air/surface units, coordinates and authorizes ASW engagements in the portion of the JTAA that lies outside the SGSA. SGSA Coordinating Authority responsibilities will normally be assigned to the SOCA. When ASW weapons are to be employed and the submarine is inside the task group's ASWC AOR, this should be the task group's ASWC. If delegated, these functions shall be performed by a responsible command in the ASWC's chain of command, normally no lower than a sector ASWC.

(b) Area Operations. When a submarine not operating with a task group is conducting coordinated operations with MPA or other land-based aircraft, a single on-station aircraft shall act as the SGSA Coordinating Unit. Responsibilities are the same as for a task group SGSA Coordinating Authority.

(2) FREEWHEEL. FREEWHEEL is the code word used by an SGSA Coordinating Authority/Unit to confirm cancellation of an SGSA. It is sent to the submarine ***only*** *a*fter verification that no air



(NATO-CONFIDENTIAL) (NMM)

Figure 6-11. (NU) (NMM) Submarine-Generated Search Area

or surface ASW attacks or engagements are in progress or authorized in the JTAA and outside an SGSA. Upon receipt, the submarine is free to maneuver throughout the JTAA.

NOTE

SUB must remain within SGSA, but may shoot ASW Weapons into the remainder of the JTAA.

b. SGSA Utilization. Submarines are authorized to use SGSA procedures any time when operating in a JTAA. The submarine commanding officer is the final authority in the establishment of an SGSA. During task group operations, he will do so, in liaison with the SGSA Coordinating Authority, to meet task group requirements consistent with submarine safety and his ability to complete assigned tasking. In this regard, any request or directive to a submarine to establish an SGSA should provide sufficient rationale such that the commanding officer understands its intentions and can assess and advise the SOCA on issues that may affect submarine safety. The SGSA may also be used for an area deconfliction purposes other than those strictly associated with ASW. Examples include:

(1) Establishing a specified segment of a JTAA required by a submarine for ASUW, strike warfare, intelligence surveillance, special operations, etc.

(2) Clearing a portion of a JTAA for surface ship transit or emergent submerged interference advisory event, aircraft emergency ordnance jettison, or live fire training exercises.

c. SGSA Configuration.

(1) SGSA Size and Location. The requirements of the task group and the submarine's search capability are the primary factors in determining SGSA size and location. Creating an SGSA that is larger than the submarine can reasonably use for the performance of its mission during the given time period may unnecessarily restrict employment of other assets. Conversely, an SGSA that is too small or poorly situated may inhibit the ability of the submarine to carry out assigned tasks and defeat the purpose of coordinated or cooperative operations altogether.

(2) SGSA Boundary Definition. The SGSA is always defined by specific geographic reference: latitude and longitude, grid, circle, or line. In addition to prescribing derivatives of the standard methods, the OTC or SUBOPAUTH may establish other appropriate means of identifying a specific SGSA; e.g., preplanned areas identified by number or code name. When used, preplanned areas should overlap to allow creation of sequential SGSAs.

(3) SGSA Duration. The effective period for an SGSA is defined using specific Start and Stop times. Duration should normally be equal to or less than the submarine broadcast cycle (usually 8 to 12 hours) but greater than 2 hours. If duration is longer than the communication interval, the submarine is not required to communicate each cycle solely to confirm SGSA duration.

(a) When operating with a task group and two-way communication with the SGSA Coordinating Authority has been established, the submarine should obtain concurrence to the SGSA before leaving communication depth to ensure that parameters conform to the force's operational requirements.

(b) To facilitate SGSA continuity, the submarine may set more than one SGSA in a single establishment message so long as only **one SGSA is effective at a time**. Similarly, as SGSA Stop time may be set to overlap the next tactical communications window.

(c) Submarines shall specify a Stop time for SGSA duration. The term, "Until further notice," shall not be used in order to prevent confusion which could result if communications with the SGSA Coordinating Authority are lost prior to JTAA expiration.

(d) In area operations, the SGSA expiration time should be no later than the MPA off-station time (includes the period of continuous on-station relief aircraft). This is to preclude periods when the JTAA outside the SGSA would not be covered by either submarine or MPA.

(e) The SGSA Coordinating Authority/Unit may cancel an SGSA at any time. The submarine may initiate the cancellation procedure by sending an SGSA cancellation request message (see APP-1). Once the SGSA expires or is cancelled, the entire original JTAA reverts to an area in which non-submarine launched ASW attacks are prohibited unless a NOTACK area is established by the friendly submarine (see Figure 6-7).

(4) Prescheduled SGSAs. Use of prescheduled (suggested) SGSAs can be used by the OTC for the coordination of ASW and WSM schemes, however, these prescheduled (suggested) SGSAs have no status nor do they become effective until the SGSA is established by the submarine via the SGSA establishment message (see APP-1 for message format).

d. Coordinating Authority/Unit Requirements. A submarine shall coordinate with only one on-scene task group SGSA Coordinating Authority or area operations SGSA Coordinating Unit at a time. The SGSA Coordinating Authority/Unit shall maintain a plot showing the location and Start and Stop times of each SGSA and an engagement authorization log listing the attacking unit, location, and expiration time for use in coordinating and responding to attack requests.

e. SGSA Establishment. SGSAs are to be established with the SGSA Coordinating Authority/Unit using the message format in APP-1. Messages are normally sent via designated tactical circuits and may be included in routine submarine SITREPs. Use of SSIXS by submarines so equipped is also allowable during task group operations. SUBOPAUTH should immediately relay such messages sent via SSIXS to the SGSA Coordinating Authority by the fastest means possible. Once the submarine transmits an SGSA establishment message, it shall not leave the SGSA until the area either expires or is cancelled. This includes situations in which no acknowledgement of the SGSA establishment message is received.

(1) Task Group Operations. A submarine operating with a task group shall establish the SGSA with the SGSA Coordinating Authority, who may then authorize ASW attacks.

(2) Area Operations. AIR/SUB cooperation procedures per ATP 18, Chapter 12, are used in coordinated area operations. An on-station aircraft in the JTAA acts as the SGSA Coordinating Unit. Note that for area operations, SGSA procedures are executed by the submarine with a single on-station aircraft, which is to coordinate and authorize all attacks outside the SGSA — its own as well as those of other ASW aircraft. This duty may be turned over to a relieving aircraft.

f. SGSA Cancellation Procedure . To terminate an SGSA, the submarine must send an SGSA cancellation request message to the SGSA Coordinating Authority. The message should be sent via tactical communications. Use of SSIXS is also allowable during task group operations. If SSIXS is used the SUBOPAUTH should immediately relay such messages to the SGSA Coordinating Authority by the fastest means possible. Upon receipt of an SGSA cancellation request message, the SGSA Coordinating Authority shall verify from the SGSA plot and attack authorization log that no ASW attacks have been authorized outside the SGSA and inside the the submarine's JTAA.

(1) If no ASW attacks have been authorized, the SGSA Coordinating Authority shall concur with SGSA cancellation request for concurrence message (brevity word freewheel). Once the submarine has received "freewheel" it may operate anywhere in the JTAA.

(2) If ASW attacks have been authorized, the SGSA Coordinating Authority shall acknowledge receipt of the submarine's message and advise that engagements are or may be in progress outside the SGSA (specify location). Only after all ASW attack authorizations have been cancelled or completed can the SGSA Coordinating Authority/Unit concur with an SGSA cancellation request.

Note

The submarine shall not leave its SGSA until in receipt of cancellation request concurrence message (brevity word FREEWHEEL) from the SGSA Coordinating Authority per message format in APP-1, or until the stop time of the SGSA.

After the SGSA is cancelled, the SGSA Coordinating Authority shall not authorize ASW attacks inside the JTAA until a new NOTACK area or SGSA has been established by the friendly submarine.

g. Use of SLOT Buoys. At the submarine commanding officer's discretion, an SGSA Establishment Message may be sent by SLOT buoy provided communications have previously been established with the SGSA Coordinating Authority/Unit. The message must include an encoded position element that must be check decoded on the submarine before the buoy is released. SGSA messages passed by SLOT buoy need not be acknowledged until the two-way communications opportunity if the SGSA is still in force. *SLOT buoys shall not be used to cancel an existing SGSA.*

h. SGSA Modification. SGSAs shall not be modified. Changing an existing or pre-established SGSA requires cancelling the existing or pre-established SGSA and establishing a new one.

i. SGSA Cancellation by the SGSA Coordinating Authority. When the SGSA Coordinating Authority desires to cancel an SGSA, he must first ensure that no attacks have been authorized outside the SGSA and inside the submarine's JTAA. Once verified, the SGSA Coordinating Authority shall inform the submarine of SGSA cancellation via local communications or advise the SUBOPAUTH to relay the cancellation on the submarine broadcast.

j. SGSA Attack Rules. Attack rules associated with SGSA procedures apply only within JTAAs and are not applicable to SAAs and ASWFAs. *NOTACK area procedures always apply inside an SGSA and throughout the JTAA whenever an SGSA has not been established by the submarine*. Unless a NOTACK area is in effect, *the SGSA Coordinating Authority/Unit alone must grant permission before any air or surface ASW engagements are conducted within a JTAA*. Units desiring to conduct an attack will request attack authorization subject to the following:

(1) If an SGSA has not been established or the target is inside the SGSA, the SGSA Coordinating Authority/Unit shall positively deny the request, provide the last known position and intentions of the submarine, and direct that a NOTACK area be coordinated with the submarine prior to ASW weapon release.

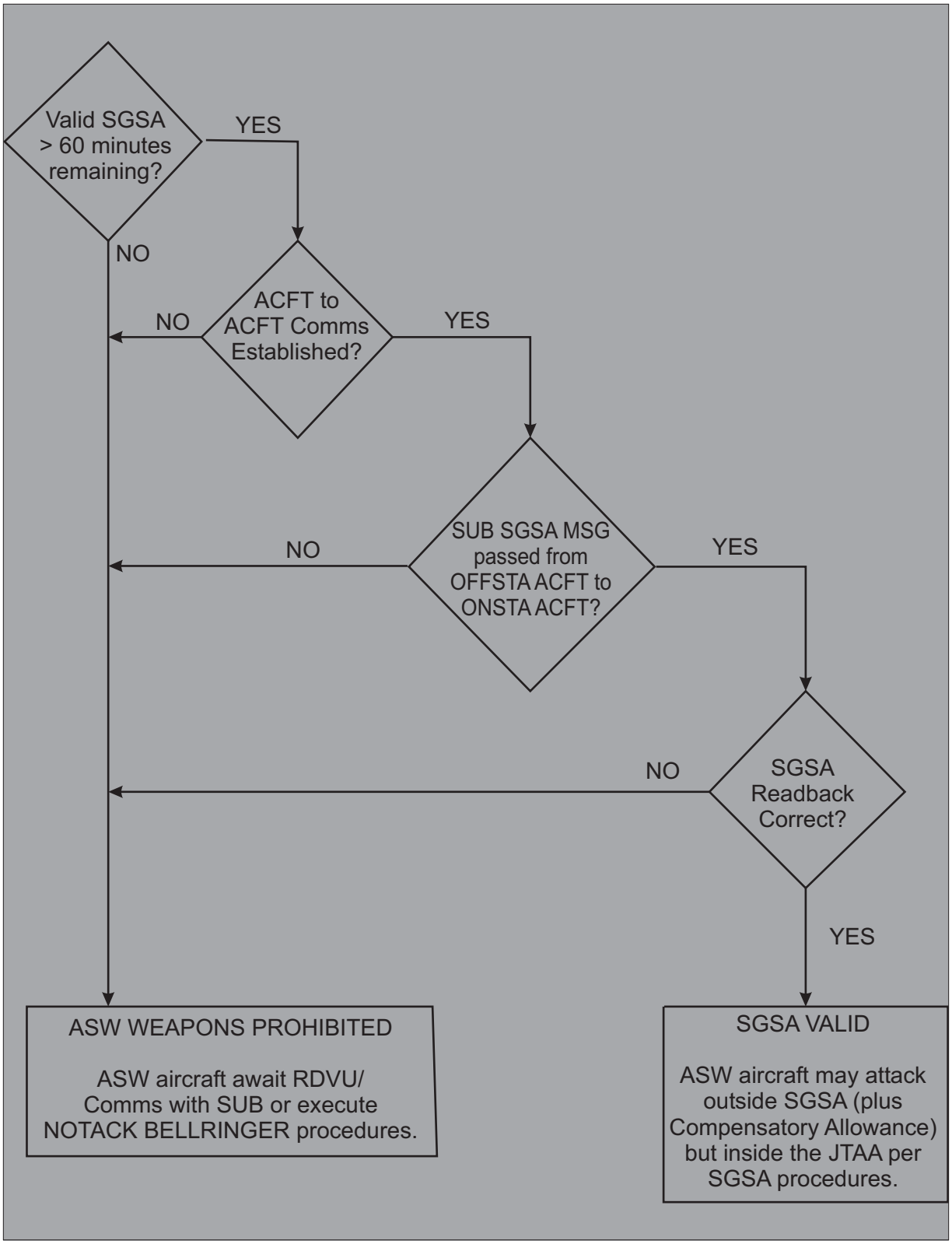
(2) If an SGSA has been established and the contact is within the JTAA but outside the SGSA, the SGSA Coordinating Authority/Unit shall *transmit SGSA coordinates and Stop time to the requesting unit* and may authorize engagement. If the coordinates along with the serial number or code name of the SGSA currently in effect have already been passed to the attacking platform, only the serial number/code name and Stop time need be transmitted. The attacking platform, in addition to the SGSA Coordinating Authority, must verify that the target is in the portion of the JTAA that is outside the SGSA. Compensatory allowances must be considered in determining whether an attack can safely be made if the target is in the vicinity of the SGSA boundary.

(3) In that SGSA parameters are set or cancelled by the submarine with an SGSA Coordinating Authority/Unit, the details of the SGSA geographic position may or may not be an aircrew pre-flight briefing item. In any event, SGSA location and attack authorization must be obtained from the SGSA Coordinating Authority/Unit before any air or surface ASW weapons are released inside a JTAA.

k. Aircraft-to-Aircraft SGSA Handover During Area Operations. Figure 6-12 defines the rules for handing over SGSA from one SGSA Coordinating Unit to another during area operations. It applies specifically to situations in which an on-station MPA is being relieved by another aircraft during independent AIR/SUB cooperation. These rules do not apply during associated support, direct support, or integrated submarine operations.

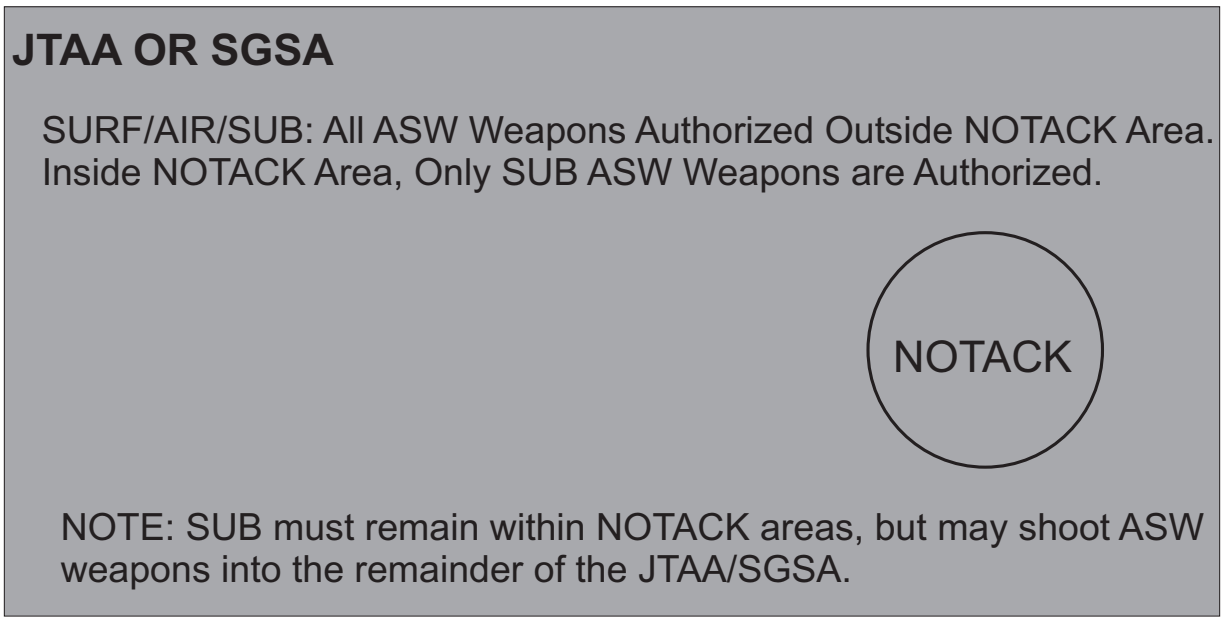
6763 (NC) (NMM) NOTACK AREA

a. NOTACK Area Specified. In certain circumstances, it is desirable to use other force assets to prosecute contacts within the JTAA or SGSA. Protection of the friendly submarine is maintained by establishing a smaller, stationary area within the JTAA or SGSA around the submarine known as the NOTACK area. The protected submarine is the only unit authorized to release ASW weapons within this area. Establishment of a NOTACK area requires a relative plot lock between the submarine and another unit, so that navigation inaccuracies are reduced over a short period of time, and so that positive identification of a submerged contact as a non-friendly submarine can be established. Unless otherwise specified by the submarine, a NOTACK area has a 10-nm radius and exists for a period of 2 hours (unless cancelled by the submarine). Attack rules for NOTACK areas within JTAAs and SGSAs are illustrated in Figure 6-13.



(NATO-CONFIDENTIAL) (NMM)

Figure 6-12. (NU) (NMM) Air-to-Air SGSA Handover During Area Operations



(NATO-CONFIDENTIAL) (NMM)

Figure 6-13. (NU) (NMM) NOTACK Area

NOTE

Only the submarine may establish a NOTACK area in its JTAA or SGSA.

b. Requesting a NOTACK Area. A request to establish a NOTACK area will be signalled to the submarine by any means available that has been authorized by the OTC. Careful consideration should be given to the method used in order to maximize the ability of the submarine to remain as covert as possible. In addition to two-way communications, other methods of transmitting the request are PROBE ALERT/ATAC/long-range call up (LRCU), SUS/ESUS, and keyed sonar.

c. Submarine Responsibility in Establishing a NOTACK Area. The submarine will acknowledge a NOTACK area request by either:

(1) Establishing a NOTACK area, or

(2) Informing the ASW unit of own intentions to prosecute the contact.

d. NOTACK Area Procedures.

(1) Establishing a NOTACK Area. The submarine may use two-way UHF voice or a SLOT buoy to establish a NOTACK area. The former requires the submarine to come to communication (periscope) depth and establish two-way communications with the requesting unit on assigned ASW coordination frequencies. This may degrade the submarine's ability to continue its search/prosecution of a contact it may hold.

(2) Announcing. The submarine must announce the initiation time and its position using the NOTACK message format in APP-1.

(3) Remaining in the Area. The submarine must remain within the NOTACK area.

(4) Scene-of-Action Commander (SAC). The submarine will be the SAC for the water space within the NOTACK area.

(5) Size of the NOTACK Area. Since NOTACK area rules preclude attacks within the NOTACK area by other than the submarine, the submarine may elect to adjust the size of the area to other than the standard 10-nm radius.

NOTE

A NOTACK area does not move. If the submarine must compensate for intended movement during NOTACK area duration, a larger NOTACK area should be specified.

(6) Changing a NOTACK Area. The submarine may elect to change the time, location, or dimension of a NOTACK area. This is accomplished by cancelling the old NOTACK area and establishing a new NOTACK area.

(7) Cancelling the NOTACK Area. The submarine may cancel a NOTACK area at any time. Acknowledgement of the cancellation by the ASW unit is required before the submarine may depart the NOTACK area.

e. Aircraft Responsibility in Establishing a NOTACK Area. ASW aircraft which request a NOTACK area must:

(1) Mark-on-top the submarine or the SLOT buoy and establish a plot lock.

NOTE

Plot lock may be considered established if the aircraft's position is positively confirmed to the aircraft by the submarine, whether or not the aircraft is able to mark-on-top.

(2) Ensure that the time and position passed by the submarine equate to the check-sum digit provided for each.

NOTE

An incorrect check-sum invalidates the NOTACK message and a new request to establish a NOTACK area must be initiated.

(3) Plot and maintain the NOTACK area for its specified duration.

(4) Add weapon stand-off distance to the radius of the NOTACK area.

(5) Add navigational drift error for the aircraft.

NOTE

Any element above that is missing or cannot be accomplished results in automatic cancellation of the authorization to attack within the JTAA and a request for a new NOTACK area must be initiated.

(6) Once these conditions are met, ASW attacks may be conducted against targets in the remainder of the JTAA or SGSA outside the NOTACK area.

f. Coordinated Aircraft/Surface Unit Attacks. A situation may exist in which other ASW units are in position to launch an attack against an enemy submarine within a submarine JTAA or SGSA. Thus, the attacking platform may be other than the one marking-on-top the submarine. In this case, the SAC is the unit conducting the plot lock with the submarine and the SAC must ensure that the requirements above are met.

g. NOTACK Area Message. The specific message format is for voice, but the same procedure is applicable for recorded communications with the appropriate modifications.

(1) If a NOTACK area message is received via two-way voice, the aircraft should read back for verification. If a SLOT buoy is used, the establishment message should be recorded twice using a 30-second interval to enable the aircraft to copy without a delay. Additionally, the SLOT buoy message must be independently copied by two separate crew members with an identical match of message content.

(2) NOTACK message format and procedures are given in APP-1.

h. Use of Satellite Positioning System. In lieu of establishing a relative plot lock, a geographic plot lock (i.e., the passing of a submarine's position to the cooperating unit) is permissible provided both the aircraft and submarine are equipped with fully functional satellite positioning systems (e.g., GPS). During NOTACK establishment, the submarine shall use the brevity word "GLOBAL" to indicate that its position has been established with GPS.

6764 SAFETY LANES

Safety lanes are used to facilitate submarine and surface ship operations. Rules governing actions within activated submarine and surface ship safety lanes follow:

a. Submarine Safety Lanes (SSLs). SSLs are available as a set of lanes superimposed on a grid, or geographically described, and may be activated wholly or in part by message. SSLs may be used to prevent or minimize mutual interference among friendly submarines, ships and aircraft. Offensive operations within activated SSLs are limited as follows:

(1) Aircraft. ASW attacks are prohibited.

(2) Surface Ships. ASW attacks are prohibited.

(NC) (NMM) Procedures for use when surface forces require access to an SAA are described in Article 6734. OPERATION GRASSHOPPER or designation as a JTAA are not applicable to SSLs.

(3) Submarines. A submarine in an SSL shall not attack another submarine unless it is positively identified as enemy.

b. Surface Ship Safety Lanes. Offensive operations within a surface ship safety lane are limited so that surface ships will not be attacked while in the lanes unless they are positively identified as enemy or unless they commit a hostile act. Attacks on aircraft and submarines will be governed by the designation of the surrounding zone or area. Cartel ships, enemy hospital ships, and neutral shipping may be routed along surface ship safety lanes.

(NC) (NMM) However, surface ship moving havens are more appropriate for the previously mentioned vessels.

6765 COMMAND RELATIONSHIPS OF TRANSITING SUBMARINES

The OTC of all escorted submarine moves is normally the escort commander. In the case of unescorted moves or when the submarines part company with the escort for any reason, the senior submarine commander present shall assume the duties of OTC. The commander of an area through which submarines are transiting will provide routing instructions for the SUBOPAUTH.

6766 RESPONSIBILITY TO ASSIST DISABLED SUBMARINES

Any friendly ship or aircraft meeting a disabled friendly submarine is to make every effort, so far as circumstances permit, to ensure the subsequent safe passage of the submarine.

6768 — 6769 SPARE

6770 SPECIAL PRECAUTIONS FOR SUBMARINE OPERATIONS IN PEACETIME

This section contains additional procedures for promulgating NATO submarine movement information. It also provides a system that meets the requirements for an orderly transition from peace to war. The primary reason for accurate and timely promulgation of submarine movement information is to prevent submerged mutual interference. Secondary reasons are to provide information for intelligence plots so that submarine contact reports may be properly evaluated and to establish a search area in case of SUBLOOK/SUBMISS/SUBSINK based on the routing information given in the SUBNOTE.

6771 SUBMARINE MOVEMENTS

a. Authorities. Authorities who have responsibilities with regard to submarine movements are the Submarine Operating Authorities (SUBOPAUTHs), Submarine Movement Advisory Authorities (SMAAs), and Submarine Exercise Area Coordinators (SEACs).

Allied nations are responsible for informing relevant SMAAs about those national submarine exercise areas which have been established permanently as agreed by the nations concerned and are under the control of SEACs. SMAAs are responsible for monitoring submarine and VDS ship movements and for informing SEACs, SUBOPAUTHs, and units concerned of possible mutual interference. NATO SMAAs have no authority to control submarine movements. The procedures required below will neither infringe on national prerogatives, infringe on the freedom of the sea, nor release submarine commanders from their responsibilities regarding the International Law of the Seas. They do place a moral obligation on all Allied SUBOPAUTHs to declare accurately their submarine operations and in sufficient time to permit the widest promulgation to “need to know” addressees.

b. SUBNOTE Procedures. Submarines are routed in peace and in war by means of SUBNOTEs that must clearly and accurately define the route to be followed.

(NR) (NMM) Details are in this section and APP-11.

c. Notice of Intention (NOI). When exercises are being planned it may be considered advisable to establish a temporary submarine exercise area and/or to promulgate the intended track of the submarine well in advance. This should be done by issuing an intention message to appropriate addressees in advance of promulgating a SUBNOTE. This message should state the limits of the area and the duration of its use and/or intended track.

(NR) (NMM) Details are in APP-11.

d. Diving Restrictions. It is assumed that the submarine will proceed along its promulgated track dived. Those portions of the route that must be transited surfaced are to be specified in the

SUBNOTE. Should it be necessary to route the submarine dived through permanently established exercise areas, the provisions of Article 6772 apply.

6772 ACTION ON SUSPECTED MUTUAL INTERFERENCE

a. Outside Established Submarine Exercise Areas. The SMAA will advise SUBOPAUTHs as soon as interference is suspected. However, an interference situation may become evident to SUBOPAUTHs concerned as soon as SUBNOTEs or changes thereto are promulgated, in which case they should initiate action to eliminate the suspected interference situation without waiting for a message from the SMAA. There are no set parameters for determining when an interference situation is deemed to exist, and the good judgement of the authorities involved will determine the necessary action.

(NR) (NMM) As a minimum, however, interference should be considered to exist when the edge of a moving haven, SPA, or temporary exercise area is within 10 miles of another moving haven, SPA, or temporary exercise area.

b. Inside Permanently Established Submarine Exercise Areas. The SEAC will be best informed concerning the movements of his own submarines within an established exercise area. On receipt of information of a submarine transiting through the permanent exercise area, the SEAC is, if interference is possible, to recommend avoiding action to the SUBOPAUTH involved, keeping the SMAA informed.

c. Inside Temporarily Established Submarine Exercise Areas. The commander establishing a temporary submarine exercise area by a notice of intention (NOI) will be best informed concerning the movements of exercise submarines within the area. On receipt of information of a nonexercise submarine transiting through the temporary exercise area, the SMAA is responsible for advising the commander who established the area and the appropriate SUBOPAUTH. The commander who established the area is to decide if interference is likely and to recommend to the appropriate SUBOPAUTH, keeping the SMAA informed, whether or not avoiding action is required.

6773 OPERATIONS INHERENTLY DANGEROUS TO SUBSURFACE OPERATIONS

a. Various peacetime operations scheduled by surface and air commanders are inherently dangerous to submerged submarine passage when the whereabouts of the submarines are unknown to these commanders. Such operations include:

(1) Streaming/deployment of VDS, minesweeping or minehunting gear, or other underwater devices/bodies.

(2) Scheduling of live air-to-surface, surface-to-surface, or antisubmarine weapon firings.

(3) Hydrographic survey explosive ranging.

(4) Mine warfare operations.

b. Recipients of SUBNOTEs should further disseminate submarine movement information to those authorities normally involved in scheduling these operations in order to avoid mutual interference.

c. It is incumbent on surface and air commanders to send a message to the appropriate authorities informing them of their intent to schedule operations which may be inherently dangerous to submerged operations. In the case of surface ships streaming VDS or other towed underwater devices/bodies, the requirements of Article 6780 shall be followed. Mine warfare operations are described in article 6781. In all other cases the SUBDANGER format from APP-11 should be used. In the case of live weapon firings, the time and geographic area involved should be included. Commands scheduling hydrographic survey explosive ranging operations should include track information, speed of advance, times for explosive ranging, and size and detonation depth of charges to be used.

d. Operations inherently dangerous to submerged submarines are frequently undertaken by civil authorities. These operations require separate consideration by authorities with responsibility for submarine safety.

e. Deleted by Change 1.

6774 (NC) (NMM) ACTION AT TIME OF INCREASED TENSION

a. Wartime procedures will be implemented when ordered by a Strategic Commander (SC) or his designated subordinate. They will also be implemented at NATO Reinforced Alert. Timely implementation of Waterspace Management (WSM) procedures which should be in force shortly after NATO Simple Alert is declared or earlier, will facilitate the transition from peacetime to wartime procedures.

b. The order will be promulgated in time of tension when a greater than normal number of submarines of NATO nations have begun deployment and when some of these submarines have been transferred to NATO command and control. In a situation in which a submarine is operating in a stationary MHN (i.e., at speed zero), or in a differently shaped MHN that is not moving, the MHN will be confined to the specified area in which the submarine is operating at the time of execution of the order. When the SUBNOTE in effect has the submarine scheduled to remain in a stationary MHN for an extended period of time, it is incumbent upon the SUBOPAUTH to issue an amendment to the SUBNOTE which changes the MHN to the standard wartime size and delineates clearly how it is to be oriented. When the submarine is operating within a published local submarine exercise area at the time the order is to be executed, the local exercise area in which the submarine is operating will become an MHN until such time as the submarine departs the exercise area and a normal MHN is in effect. MHNs are described in detail in Article 6765.

c. The order will contain a time of execution and will be promulgated well in advance so that authorities and submarines can take appropriate action at the same time. Normally a new SUBNOTE should be issued to reflect the change in area and to reflect the different addressees.

d. BARNSTORM procedures in ATP 18 are the preferred means of promulgating specific submarine area assignments, once WSM procedures are in force.

(R) 6780 PREVENTION OF MUTUAL INTERFERENCE BETWEEN SUBMERGED SUBMARINES AND SURFACE SHIPS WITH TOWED ACOUSTIC DEVICES STREAMED

a. Safety measures prescribed below shall be enforced to prevent mutual interference between submerged submarines and surface ships with Variable Depth Sonar (VDS), Depressed Towed Array System (DTAS), and Critical Angle Towed Array System (CATAS) devices streamed when operating in nonexercise situations in peacetime. This coordination is required to enhance safety, surveillance coverage, and avoid conflicts of interest, but is not intended to prejudice national prerogatives or inhibit freedom of the seas.

NOTE

Towed torpedo decoys are excluded from these requirements

(1) Submarine commanding officers must assume that all ships which are operating sonar have streamed a towed acoustic device unless positively known otherwise and that ships do not know the submarine's position. A submarine hearing sonar transmissions or other signals is to remain clear, keeping

in mind that the subject unit may be trailing an acoustic device up to 4,000 yards astern. A surface ship with contact on a friendly **submarine** must keep his ship and towed array clear of the submarine.

(2) VDS may be employed in the active or passive mode. No active sonar transmissions or other signals are required, provided the response to the VDS/DTAS NOTE has been received from the SMAA.

(NC) (NMM) If the towing ship departs the MHN and the transducer cannot be recovered, the towing ship is to provide a warning signal on some other acoustic device, such as hull-mounted sonar or underwater telephone.

(3) VDS/DTAS Safety Precautions

(a) The VDS/DTAS NOTE described below is required for safety whenever a VDS/DTAS device is to be streamed to a depth greater than 30 meters (98 feet). A VDS/DTAS NOTE is also required for operations at 30 meters (98 feet) or less when:

i. The water depth is less than 375 meters (1,200 feet).

ii. Operation within 40 nautical miles of the Norwegian Coast.

iii. Operation in the Aegean Sea north of Crete.

iv. Operation in the French national exercise areas.

(b) The required VDS/DTAS NOTE is to be sent to the appropriate SMAA at least 48 hours before commencing the operation. Upon receipt of the VDS/DTAS NOTE, the SMAA is to send a message to the originator of the VDS/DTAS NOTE confirming that there is no safety hazard. If a risk of collision between the VDAS/DTAS and a submarine is apparent, the SMAA will advise those concerned and request that appropriate action be taken to eliminate the hazard. VDS and DTAS are not to be streamed until the ship is in receipt of the SMAA confirmation message, except as noted in paragraph (5).

(NR) (NMM) VDS/DTAS NOTE is sent using the message format in APP-11.

(c) Once the confirmation message is received, the ship may employ VDS/ DTAS in the active or passive mode and no active sonar transmission or other warning signals are required.

(NC) (NMM) If the towing ship departs MHN and the system cannot be recovered, the towing ship is to provide a warning signal on sonar or underwater telephone, as described in AXP 1, unless otherwise specified by the SMAA.

(4) A ship planning to stream a CATAS at depths greater than 30 meters (98 feet) is to send a CATAS ADVISORY, using the message format in APP-11, to the appropriate SMAA at least 48 hours before commencement of the operation. Upon the receipt of the CATAS ADVISORY, the SMAA is to send a reply to the originator of the CATAS ADVISORY acknowledging receipt. In the acknowledgement, the SMAA may include advice on other units conducting surveillance in the area or advice on best placement of the sensor for minimizing mutual interference and avoiding duplication of effort. Upon receipt of the acknowledgement, and after considering the SMAA's advice, the ship may stream its CATAS as stated in the CATAS ADVISORY. If the towing ship departs the CATAS ADVISORY area and the system cannot be recovered, the towing ship is to provide warning on sonar or underwater telephone, as described in the Sonar Signal Code Table of AXP 1, at least once every 5 minutes unless otherwise specified by the SMAA.

(5) (NC) (NMM) Urgent Contact Investigation. When a ship is required to conduct an urgent investigation and time does not permit completion of the procedures in paragraphs (3) and (4) above, VDS/DTAS or CATAS may be used but a VDS/DTAS NOTE or CATAS ADVISORY should be dispatched by IMMEDIATE precedence message. The initial submarine contact report to national or

NATO authorities must contain a statement that VDS/DTAS or CATAS is being employed. During investigation of unclassified contacts, ships streaming towed acoustic devices should not deliberately close the contact within 4,000 yards. When a contact has been classified as ”not a NATO or known friendly” submarine by the appropriate SUBOPAUTHs, investigation forces should employ all acoustic devices in a manner to exploit their maximum capability for contact investigation. When a contact has been classified as ”a NATO or known friendly” submarine, unless otherwise instructed, the ship is to break contact.

(6) (NC) (NMM) Wartime Procedures.

(a) VDS/DTAS NOTES and CATAS ADVISORIES are not required provided wartime procedures have been implemented and Waterspace Management (WSM) procedures are in force. (See Articles 6734 through 6736 and 6774).

(b) The use of VDS/DTAS or CATAS systems is unrestricted in ASWFAs.

(c) Surface ships passing through an SAA or JTAA (other than one established for their use) must retrieve their VDS/DTAS systems unless GRASSHOPPER is in force. In a CATAS system that is considered a hazard to certain classes of submarine, the SUBOPAUTH will advise of any requirement to retrieve CATAS. CATAS-fitted ships must recognize the possibility of damage or loss unless the system is retrieved.

(d) The restrictions in subparagraph (c) above also apply to surface ships in a JTAA established for their use, unless clearance has been received from the SUBOPAUTH. The use of VDS/DTAS or CATAS systems and any restrictions that may apply should be negotiated between the surface force commander and the SUBOPAUTH when a JTAA is established.

6781 PREVENTION OF MUTUAL INTERFERENCE (PMI) BETWEEN MINE WARFARE ACTIVITIES AND SUBMARINES

a. The procedures for PMI/WSM between mine warfare activities and submarines are for use whenever mine warfare equipment (for example: mines, Remotely Operated Vehicles, minesweeping gear, VDS, etc.) is physically deployed at depths below 30m as follows:

(1) In international waters and in areas outside of the nationally declared permanent exercise areas detailed in AHP 6 (Note 1).

(2) In areas where WSM has been implemented.

NOTE 1

Procedures for PMI within permanent exercise areas are the responsibility of the national Submarine Exercise Area Coordinator (SEAC). National SEACs are encouraged to promulgate procedures for PMI between mine warfare activities and submarines within their permanent exercise areas to nations exercising in these areas.

b. Peacetime procedures.

(1) The mine warfare tasking authority should promulgate a Mine Warfare Note (MW NOTE) as far in advance of the planned operation as possible. This MW NOTE is to be sent to the appropriate SMAA, using the message format from APP-11 and addressees as described in AHP 6.

(2) The SMAA will check MW Notes for potential interference with other assets, resolving interference through liaison with the affected parties. He will acknowledge MW Notes when interference is not present or has been resolved.

(3) The SMAA will then inform submarines under his OPCON, or inform other SUBOPAUTHs using the SMAA system, of mine warfare activities in areas adjacent to submarine operating areas or moving havens.

(4) Mine warfare assets are responsible for the following:

(a) Mine warfare assets are not to engage in mine warfare activities until an acknowledgement of the MW Note has been received.

(b) Mine warfare assets are not to engage in mine warfare activities that may interfere with submarines outside of the area or range of operations described in the MW Note.

c. (NC)(NMM) Wartime procedures or when WSM has been implemented. When WSM has been implemented, assigning requested areas for MW activities will be in the WSM Status and Allocation Message. Promulgation of this message constitutes the acknowledgement detailed at subpara 6781.b.(2).

d. Coordination. In general MW Notes should be promulgated by the mine warfare tasking authority as far in advance of the planned operation as possible. If potential interference is discovered, it will be resolved through liaison between the SMAA/SUBOPAUTH and the mine warfare tasking authority. Sufficient lead time is required to allow potential interference to be resolved in a manner acceptable to all parties. Interference that cannot be resolved through this liaison will be forwarded to a superior commander for resolution. Notwithstanding this, MW Notes must be promulgated no less than 48 hours prior to the planned operation to allow the SMAA and/or affected SUBOPAUTH time to inform and, if necessary, reroute the submarine to avoid interference. This period is due to delays inherent in the submarine communications broadcast system.

e. Messages. The format for the MW Note is detailed in APP-11.

(NC)(NMM) Originators of these messages should consult AHP 6 for appropriate addressees and AIGs. MHNs are described in para 6734.c.(4) and ATP 18.

PART II

Warfare Procedures

Chapter 7 — Antiair Warfare (AAW)

Chapter 8 — Antisurface Warfare

Chapter 9 — Antisubmarine Warfare

Chapter 10 — Naval Co-operation and Guidance for Shipping

Chapter 11 — Amphibious Operations

Chapter 12 — NBC Warfare

Chapter 13 — Mine Warfare

Chapter 14 — Defense Against Underwater Attack in Harbor

CHAPTER 7

Antiair Warfare (AAW)

7000 INTRODUCTION

Antiair warfare (AAW) consists of those measures taken to defend a maritime force against attack by airborne weapons, launched from aircraft, ships, submarines, and land-based sites. AAW procedures used by a naval force at sea when operating in isolation from shore air defense authorities are described in this chapter. However, when ships are operating beneath or adjacent to an established Air Defense Region (ADR), they are to coordinate their AAW operations with those of the appropriate Combined Air Operations Center (CAOC) or Sector Operations Center (SOC).

(NR) (NMM) Employment of the Coordinated Air/Sea Procedures for Air Defense (CASP) is described in ATP 34. Principles of AAW operations are contained in ATP 31; see also ATP 34. Voice reporting procedures are set forth in APP 1.

NOTE

In some coastal areas low-level transit routes (LLTR) and transit corridors (TC) that serve for coordinating air traffic and AD/AAW represent weapons-tight zones for surface units, when activated. TC and LLTR are temporary air corridors of defined dimensions through the area of organic, low-level air defenses of surface forces.
(NR) (NMM) Details are in ATP 40, ATP 31, and respective NATO commanders airspace control plans.

7001 COMMAND AND CONTROL IN ANTIAIR WARFARE

The OTC's functions in antiair warfare, including those that may be delegated to the Antiair Warfare Commander (AAWC), are summarized in Table 1-2. When operating with a small force, the OTC will normally retain most of his command functions; when operating with a larger force, the OTC will normally delegate most of his command functions to the AAWC. Irrespective of any specific AAW duties that may have been assigned to him, the commanding officer of each ship is responsible for the defense of his ship.

The threat, Rules of Engagement (ROE), and TF/TG communications and control capabilities will determine whether or not the OTC executes centralized control or decentralized control. In general, effective AAW is facilitated by decentralized control when faced with a modern threat equipped with both high-speed ASSMs and an ECM capability. The high-speed air threat and severe electronic warfare environment significantly compresses air defense reaction time. This, coupled with lack of assured communications, requires that AAW be executed in a decentralized manner once the battle is joined.

Prior to battle, preplanned responses are developed that must be consistent with any applicable ROE. These preplanned responses are contained in the OPTASK AAW and form the basis of decentralized execution.

7002 SECTOR AAW COORDINATOR

If the tactical situation dictates that the AAW area should be divided into sectors, a sector AAW coordinator (SAAWC) may be designated. Within his sector, an SAAWC will be subject to the overriding authority (VETO) of the AAWC, but is otherwise vested with most of the prerogatives and responsibilities of the AAWC.

a. Direction Functions.

(1) Designating local AAW coordinators (LAAWCs).

(2) Assigning AAW aircraft to appropriate units for control.

(3) Initiating action against an air threat, if no action has been initiated by other units in his sector.

(4) Exercising overriding authority (VETO) over all actions initiated by other units in his sector.

b. Coordination Functions.

(1) Resolving with other SAAWCs problems of coordination on or near the border lines between sectors, to ensure the efficient change of reporting responsibility and to avoid mutual interference.

(2) Coordinating the effective employment of aircraft and missiles within his sector.

c. Control Function. Controlling the AAW communication nets within his sector.

d. Additional Duties.

(1) Requesting the launch of land-based alert aircraft if no carrier is allocated to his sector.

(2) Keeping the AAWC informed of evaluated threats, and of the location of friendlies that could be mistaken as hostile.

(3) Issuing SITREPs for the benefit of the units in his sector.

7003 LOCAL AAW COORDINATOR

When two or more ships are in company and within UHF range, a local AAW coordinator (LAAWC) will be designated. The AAWC of a force will normally act as the LAAWC for his own local group. LAAWCs have the following functions:

a. Direction Functions.

(1) Delegating, as appropriate, specified functions to other ships in his local AAW group.

(2) Establishing watch zones for ships in his group.

(3) Broadcasting the local air picture to ships of the group on the local AAW coordination net.

b. Coordination Functions.

(1) Correlating and evaluating reports from ships in company and, where appropriate, relaying this information to the SAAWC or AAWC on the AAW coordination net.

(2) Issuing threat warnings: if the threat to the group warrants a higher warning than that in effect for the force, the LAAWC is to keep the SAAWC or AAWC informed.

(3) Passing pertinent information to ships of the group regarding missile engagement zones, weapons restriction orders, safety sectors, and targets that have been designated to force weapon systems.

c. Control Function. Controlling the local AAW coordination net.

7004 FORCE TRACK COORDINATOR — AIR

The AAWC or SAAWC is normally responsible for air reporting and track coordination within the force or sector respectively; he may assign this duty to another, more suitably equipped ship, if required, as force track coordinator — air (FTC-A). Responsibilities are found in Article 6313.

7005 INDIVIDUAL SHIP RESPONSIBILITIES

The following individual responsibilities always apply.

a. Self-Defense. Each commanding officer is responsible for the defense of his ship. When his ship is under direct attack, qualifying orders, directives, or plans from higher authority do not relieve him of this basic responsibility.

b. Degree of Readiness. Each commanding officer is responsible for establishing an appropriate degree of readiness within his ship. The degree of readiness he sets must not be lower, but may be higher, than that ordered by the OTC. The ship's organization must ensure the proper maintenance of the ordered readiness for as long as it is in force.

c. Reporting. Subject to any restrictions imposed by the EMCON plan, each unit is responsible for reporting promptly to the appropriate antiair warfare commander or coordinator all AAW information that may be of local, sector, or force interest, including any deficiencies of equipment.

d. Initiation of AAW Measures. Each unit is responsible for initiating AAW measures without delay, whenever available information indicates the necessity of such action.

7010 STATIONING ANTIAIR WARFARE UNITS

Although AAW requirements normally call for dispersion, other considerations, such as antisubmarine warfare, mutual support, and emission policy, are likely to indicate the need for using a closer formation, disposition, or screen. In any operations, the OTC will invariably have to reach an optimum compromise between all requirements to meet the prevailing threats. AAW units are stationed on true bearings irrespective of the direction of the AAW axis. AAW stations are promulgated by means of the OPTASK AAW message. Further details on stationing are in Chapter 3.

7011 (NR) (NMM) DISPERSION

Dispersion has the following advantages and disadvantages:

Advantages

(1) Provides defense in depth.

(2) Makes the enemy's recognition task difficult.

(3) Increases the coverage of sensors.

(4) Reduces the number of ships liable to damage by a single nuclear explosion.

(5) Provides good base lines for triangulation.

(6) When disposed upthreat, AAW forces are in a position to engage enemy bombers prior to missile release.

Disadvantages

(1) Requires the use of long-range communications, which are vulnerable to jamming, intrusion, and interception.

(2) Provides less effective defense against surface and subsurface threats.

(3) Increases the difficulty of maintaining gridlock.

(4) Increases the difficulty of weapons coordination.

7012 SURFACE PICKETS

(a) Picket ships are stationed primarily to extend the range of AAW measures. Surface pickets are normally stationed to extend as far as practicable the AAW surveillance area, recognition/identification, and control of aircraft.

(b) **(NC) (NMM)** An additional advantage is that the surface picket may be able to engage enemy bombers prior to ASSM release.

(c) When the number of pickets is not sufficient for all round coverage, stations on or near an arc across the threat axis may be used to give effective detection capability in the threatened sector. When attacks from only one general direction are likely, a second picket line closer in may be used, in lieu of greater all round protection.

(d) A picket whose main task is AAW is called a Watchdog. A picket that has been given the primary duty concerning the identification of friendly aircraft is called a Tomcat.

7013 AIRCRAFT CARRIERS

Carrier formations and dispositions are described in Chapter 3. Carrier and carrier air operations are detailed in Chapter 6.

7014 SURFACE-TO-AIR MISSILE SHIPS

a. General. Surface-to-air missiles (SAMs) are divided into three categories according to range:

(1) Long-range — range over 50 nm.

(2) Medium-range — range of 10 to 50 nm.

(3) Short-range — range under 10 nm.

b. (NC) (NMM) Stationing. Antiair Warfare Disposition 3V, which includes stations for missile ships, is described in Chapter 3.
(NC) (NMM) Otherwise, the following guidelines apply:

(1) Long-range SAM ships are normally stationed as far upthreat as will permit early detection and engagement of enemy bombers. Long-range SAM ships have better engagement envelopes and better probabilities of kill against bombers than against ASSMs.

(a) When stationed upthreat, ships may be teamed to increase AAW effectiveness and ASW/ASUW self-defense capabilities. Alternate stations near the center of the force, or even downthreat, may allow SAM ships to provide defense against high-level, steep-diving targets.

(2) Medium- and short-range SAM ships are normally stationed to protect a high value unit (HVU), such as a carrier or a logistics or amphibious ship. Distance from the supported unit may be up to 10 nm, and is dependent on the capability of the SAM system. A SAM ship should be given freedom of movement to protect the unit from the most immediate threat.

7015 UNITS WITH SELF-DEFENSE WEAPONS

Ships equipped with self-defense weapons only must be stationed close to each other to provide mutual support. This may be the only means of defending a force that lacks both fighter and missile defenses. Such formations should be limited to small groups when used in a nuclear environment or under conditions in which dispersed or deceptive formations provide a better defense. These ships also have the ability to contribute to the AAW defense of a force against certain missile flight profiles, if they are stationed as close as possible to the unit(s) being protected. Antiair Disposition 2V (Chapter 3) may be appropriate in this instance. When ships sailing in a 2W disposition or in a screen centered in a HVU, the OTC/CWC/AAWC should determine the suitability of positioning the best self defence weapon fitted ship in the closest sector to the HVU to act as main goalkeeper.

7020 ANTIAIR WARFARE AIRCRAFT

AAW aircraft may be either land based or carrier based and, depending on the tactical situation, may be ordered to be at ground or deck alert or on combat air patrol (CAP). Land-based aircraft in particular will often be supported by tanker aircraft for air-to-air refueling (AAR) and should be stationed on a towline promulgated in the OPTASK AAW.

(NR) (NMM) Details of types of AAW aircraft and their capabilities are in ATP 29. More information about them and their interrelated roles is in ATP 31. ATP 34 gives details concerning land-based aircraft.

7021 AIRBORNE EARLY WARNING AIRCRAFT

a. Capabilities. AEW aircraft are well suited for long-range detection and tracking of both high- and low-altitude aircraft, for CAP control, and for surface search. Suitably equipped aircraft can also relay communications (AUTOCAT), transmit information by data link, and intercept electromagnetic emissions.

b. Stationing.

(1) AEW aircraft are stationed as directed by the OTC or AAWC in a barrier patrol line.

(2) **(NR) (NMM)** Points to consider when stationing AEW aircraft are listed in ATP 31.

(3) **(NC) (NMM)** The AEW barrier for older AEW aircraft is about 50 nm from ZZ at an altitude up to 5,000 feet, so that a 90° sector will be covered. For modern AEW aircraft, distance from the force can be up to 200 nm and the aircraft can be operated at altitudes of 20,000 to 30,000 feet to provide optimum search, track, and height-finding capability. Normally, AEW aircraft should be given freedom to select altitude and track on the barrier to optimize sensor employment.

c. Procedures.

(1) Call signs for AEW aircraft consist of daily changing call signs or the code word, ANY FACE, followed by the barrier designator. Barrier designators are TANGO, UNIFORM, VICTOR, XRAY, YANKEE, and ZULU. When a relieving AEW aircraft is airborne before its predecessor has landed, the call sign must include a numeral suffix (i.e., ANY FACE TANGO is relieved by ANY FACE TANGO ONE, which in turn is relieved by ANY FACE TANGO).

(2) **(NR) (NMM)** AEW aircraft report contacts in accordance with ATP 34.

d. Capability of Other Aircraft.

(1) Modern CAP aircraft with extended radar ranges should be considered an AEW sensor, particularly during periods when AEW aircraft are not airborne.

(2) However, intense and sophisticated enemy ECM may severely degrade/negate modern CAP detection capabilities.

7022 COMBAT AIR PATROL MANAGEMENT

a. General. CAP aircraft can be either land based or carrier based. Instructions in this article on the use of CAP aircraft are applicable generally, but details given in this article concern carrier-based CAP aircraft only. CAP missions can be more precisely identified when one of the following modifiers is used before the CAP: force CAP (FORCECAP), barrier CAP (BARCAP), target CAP (TARCAP), rescue CAP (RESCAP), and surveillance CAP (SUCAP). CAP aircraft employed in the AAW role are normally referred to as force CAP (FORCECAP).

(NR) (NMM) For details concerning land-based CAP aircraft, see ATP 34.

b. Air Resource Element Coordinator (AREC)/CAP Instructions. The following points are to be considered with respect to CAP aircraft during AAW operations:

(1) The OTC or AAWC will direct the AREC to maintain an alert posture and fill assigned CAP stations. CAP aircraft will relieve on station or within a specified distance of station.

(2) The AREC must keep the OTC or AAWC informed of the ability to maintain alert posture. Weather, maintenance, or deck respotting operations may degrade alert posture.

(3) Alert CAP aircraft will be launched on assigned control frequencies to expedite stationing and/or intercept of assigned raids.

(4) CAP aircraft proceed to and return from assigned stations within safety sectors or on return to force (RTF) or minimum risk route (MRR) profiles. Positive control must be maintained to avoid engagements by friendly units, especially when the safety sector is near or traverses missile engagement zones or missile arcs. Provision should be made for deviation to expedite stationing and facilitate prompt intercept action.

(5) EMCON permitting, carriers will track CAP aircraft operating within their radar coverage but controlled by other ships, so that they can take over control if necessary.

(6) Parent carriers of CAP aircraft controlled by other units are to ensure that the controlling unit knows the time, location, and altitude at which the parent carrier wishes the aircraft to be returned to her control for recovery.

(7) Units controlling another carrier's aircraft are to pass aircraft status reports to the parent carrier as soon as they are received from CAP aircraft. CAP aircraft must pass this information immediately on gaining contact with the controlling unit.

c. CAP Aircraft Stations. CAP aircraft should be stationed to engage enemy bombers prior to their anticipated weapons release point.

(NR) (NMM) CAP aircraft are listed in ATP 31.

(1) CAP aircraft may be stationed by the OTC or AAWC at the following altitude bands:

(a) High (HICAP) — above 25,000 feet.

(b) Medium (MEDIUMCAP) — between 5,000 and 25,000 feet.

(c) Low (LOWCAP) — between 500 and 5,000 feet.

(2) Distance of CAP stations from the main body may vary from overhead to 200 nm. Any combination of altitudes and distance is possible. However:

(a) The radial size of sector covered by a fighter decreases as its distance from the main body increases.

(b) Stationing at long range reduces overall fighter availability due to loss of time in transit and short time on station.

(c) When employing modern fighters that have a high rate of climb, low and close CAP stations should generally be preferred, especially when the direction of the threat cannot be determined.

d. Procedures. The following procedures are used to control CAP aircraft:

(1) CAP voice call signs will be used as follows:

(a) On CAP control nets, use the squadron call plus a three-number suffix.

(b) On AAW nets, use the word STATION, followed by the station number.

(c) Airborne CAP aircraft steering, or whose relief has been launched, will be reported as STEERED plus station number. The launched relief will assume the station call.

(d) CAP aircraft in alert will be given stations by the OTC or AAWC, whether or not there is any immediate prospect of launching. Call signs are to be based on these stations using the procedure in subparagraph (b).

(2) The OTC or AAWC may delegate control of CAP stations to an AAW air control unit (AAWACU). This designation is passed on the AAW coordination net.

(3) CAP stations will be assigned using the following systems:

(a) ZZ Method.

i. Station number.

ii. Bearing of the station.

iii. Distance in nautical miles from ZZ.

iv. Minimum altitude in hundreds of feet (or using the words HIGH, MEDIUM, or LOW).

v. Control channel numbers (primary/alternate).

For example, CAP station 2 is to be in a position that is 060 degrees true, 50 nautical miles distant from ZZ, and at an altitude of over 25,000 feet. The primary control frequency is channel 12 and channel 8 is the alternate. This station would be passed as: STATION 2 — 060ZZ50 — 250 — 12/8.

(b) VL Method

i. VL Method — Station. In order to simplify AAW reporting, a standard grid origin has been adopted. The center point of the grid (VL) is a reference point specified by the CWC/AAWC. VL should always be defined as a geographic point (latitude and longitude). However, a surface tacan can also be positioned at VL as a navigation aid for non-INS equipped aircraft. If VL is defined only by a tacan, long-range CAP may have difficulties maintaining station due to intermittent tacan reception. The grid is oriented to magnetic north with distance from VL made by letter notation. Fifty (50) nm from VL is designated ALFA, 100 nm from VL is BRAVO, etc. The bearing is designated by a number from 01 through 36 representing a bearing in degrees magnetic. The bearing 010 is designated 01, 110 is 11, 260 is 26, etc. With this as a basis, any CAP station can be readily identified by a number and a letter. For example, CAP station 010 at 250 nm from VL is designated station "ONE ECHO." This grid reference system provides a simple means of position both for friendly aircraft and enemy targets.

ii. VL Method — Sector. In order to provide a CAP sector, the stationing matrix is to be used as described above. Define the left and right sector boundary with a four digit number (e.g., 0410 means sector from 040 to 100 degrees). To define sector depth, the distance letter will be given as outer boundary with the standard distance (50 nm) as sector depth (e.g., 3606 C - VL SIERRA means sector 360 to 060 degrees from VL with sector depth 100 to 150 nm). The standard distance (50 nm) can be amended to consider typical area environmental conditions. This must be promulgated in all relevant messages.

NOTE

Alternatively, distances may be promulgated by ACO, OPTASK AAW.

(4) Units controlling CAP aircraft are to report to the OTC or AAWC the following information on intercepts:

(a) Immediately, when initiating an interception.

(b) Progress of interception.

(c) If, for some reason, it appears doubtful that the interception can be successfully completed within the fighter engagement zone (FEZ).

(d) Immediately, if the interception fails.

7023 ELECTRONIC WARFARE AIRCRAFT

Electronic warfare aircraft can be either land based, carrier based, or ship based. The primary function of these aircraft is to provide electronic warfare support measures (ESM) and electronic countermeasures (ECM) support to the force, as defined in Article 5101. Coordination of the EW capabilities of these aircraft is normally exercised by the OTC through the Electronic Warfare Coordinator (EWC).

7024 AIRCRAFT AUTHENTICATION ON AAW NETS

Excessive use of authentication with single-seat aircraft is to be avoided. Authentication is recommended over challenge and reply methods as it can be accomplished easily and quickly. For further details, see Chapter 4.

7030 ANTIAIR WARFARE COMMUNICATIONS

Details are in Chapter 4.

7040 ANTIAIR WARFARE COORDINATION

The cardinal principles of AAW organization — to ensure the quickest possible response to any threat — are:

(1) Decentralized control to the lowest possible level, and the use of preplanned reactions and responses contained in the OPTASK AAW.

(2) Control by VETO, exercised by a commander/coordinator, who may apply a veto to an action initiated by a subordinate unit.

(3) The integration of fighters, SAM ships, AEW and EW aircraft, and measures to counter enemy targeting to provide defense in depth.

The degree of decentralized control depends on the situation. When operating in a confined area, in an area of joint operations, or in an area where neutral units may be encountered, the AAWC may have to retain centralized control.

Examples of how the AAWC may control the air battle are given below.

a. Control by VETO. An example of control by veto is:

"This is (call sign) TAKING HOSTILE 3456 with STATION 4."

"This is (call sign of AAWC) NEGAT HOSTILE 3456."

b. Engagement Order. If the AAWC wishes a unit to engage a particular target, he is to issue an engagement order; if the weapon to be used is a fighter, he is to state his intention to IDENTIFY or to DESTROY the target. For example:

"(Call sign) this is (call sign of AAWC) TAKE HOSTILE 1007 with STATION 3 and DESTROY."

c. MORE HELP. If the unit detailed to engage a raid cannot identify the target on radar or needs further information, the unit calls for MORE HELP.

"This is (call sign) MORE HELP HOSTILE 1007."

d. NOCAN. Any unit that cannot carry out the order of the AAWC is to say so, stating the reason:

"This is (call sign) STATION 3 NOCAN — STATE LAMB ZERO — OUT."

"This is (call sign) STATION 3 NOCAN — WEAPONS ZERO — OUT."

(NR) (NMM) The organization for AAW coordination with land-based aircraft is in ATP 34.

e. COVER. If the AAWC wishes a long- or medium-range SAM-equipped ship to initiate an engagement on a specified track up to the point of firing, he can order this by "COVER." This procedure allows a track to be designated to more than one firing unit without multiple engagement of the track. For example:

"(Call sign(s)) this is (call sign AAWC) COVER HOSTILE/FAKER 1234."

"(Call sign) this is (call sign AAWC) TAKE HOSTILE/FAKER 1234 WITH BIRDS. (Call sign(s)) COVER."

7041 METHODS OF ANTIAIR WARFARE COORDINATION

Rules for the integration of fighters and SAMs in antiair warfare must:

(1) Minimize mutual interference.

(2) Prevent engagement between friendly units.

(3) Maximize weapon effectiveness.

a. Area Coordination. Fighters, SAMs, and ECM are employed in the same airspace. The AAWC and SAAWC resolve any conflict by ordering one or the other to hold off — or he may order specific engagements. This method is recommended for use against an enemy with little or no ECM capability, when it is likely that a clear and coherent air picture can be maintained, communications are good, and AAW coordination is of a high standard.

b. Zone Coordination. Fighters and SAMs are employed in separated zones of airspace, delineated by sector, altitude, and range from an origin as appropriate. Normally, safety sectors and three types of zone — missile engagement zone (MEZ), crossover zone, and fighter engagement zone (FEZ) — are established (see Figure 7-1). They are promulgated by the AAWC and may be altered as necessary. The positions and shapes of the zones will depend on weapon characteristics, availability of aircraft, expenditure of missiles, and disposition of units. ECM may be employed in all zones.

c. Promulgation. The method of coordination is normally promulgated by the OPTASK AAW. An operation order may, in addition, specify jammer frequency restrictions and the circumstances under which the method of weapon coordination is automatically changed. It is the responsibility of the AAWC to ensure that forces involved are aware of the method of coordination in use. Procedural messages enable the AAWC to establish, change, or give warning of a change of method, as in the following examples:

(1) Establish — "(Method) coordination is in force."

(2) Change — "Cancel (method) coordination — assume (method) coordination."

(3) Warning — "At (time) — cancel (method) coordination — (method) coordination will be assumed."

d. Local Coordination. Local coordination only applies to the employment of self- defense SAMs, ECM, and guns; it is not an alternative to area or zone coordination. The LAAWC will compile and promulgate the local air picture to specifically enable ships to identify friendly aircraft and prevent their engagements by friendly units. No further attempt to coordinate weapons employment is normally made, and target engagement messages for self-defense weapons systems are not required.

7042 MISSILE ENGAGEMENT ZONE (MEZ)

a. Standard SAM MEZ. A MEZ is a zone around a ship or force in which targets are to be engaged by ship's missiles, in accordance with weapon control status/orders. Special features are:

(1) Friendly aircraft must not penetrate the MEZ unless positive clearance has been obtained from the AAWC or LAAWC.

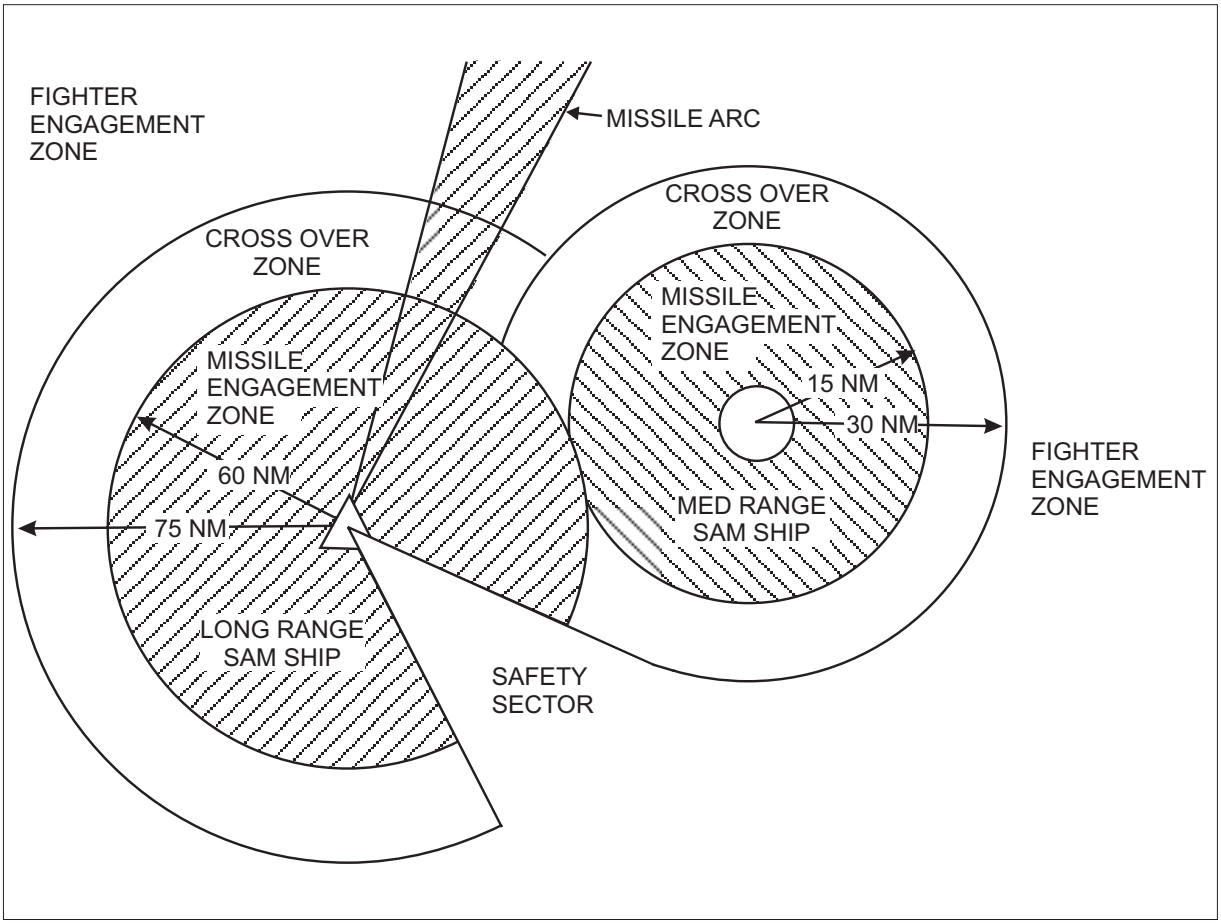


Figure 7-1. Example of Zone Coordination

(2) Any change in status of a MEZ is promulgated to aircraft and friendly units by the AAWC using the appropriate code words from APP 7/MPP 7.

b. Silent SAM MEZ. When covert, long- or medium-range, SAM-equipped ships are stationed upthreat, a Silent SAM MEZ may be established; this has significant differences from the MEZ described above. The key factors for ships operating a Silent SAM MEZ are:

(1) Ships remain covert, receiving the air picture via data links.

(2) Ships' weapon control status is automatically WEAPONS FREE.

(3) The OPTASK AAW will contain details of MEZ size, position, and timing.

(4) No safety sectors are established in a Silent SAM MEZ.

(5) No friendly aircraft are allowed in the Silent SAM MEZ, except for AEW, ASW, and ASUW aircraft that are required to operate in the Silent SAM MEZ, providing the following criteria are met:

(a) SAM ships must be alerted to the mission, the aircraft must be continuously tracked, and their position transmitted on data link.

(b) Gridlock between the data-link reporting unit and SAM ship is excellent.

7043 CROSSOVER ZONE

A crossover zone normally extends 15 nm beyond the MEZ, but the width may be varied by the AAWC and is usually based on the speed of the assumed threat. When a controller anticipates that an infringement of a crossover zone may occur, he is to request a countdown. The fighter is to give a commentary on the interception, indicating when it expects to complete. The controller will instruct the fighter to break off if necessary, so that the target can be engaged by another weapon.

7044 FIGHTER ENGAGEMENT ZONE

Fighters have freedom of action within a FEZ to identify and engage air targets in accordance with ROEs in force. If the AAWC wishes to engage a particular target in the FEZ with a long-range SAM, he is to issue an engagement order assigning the target to a SAM system, ensuring that the fighter controlling agency is so advised. When this order has been issued, a missile arc is automatically established.

7045 SAFETY SECTOR

A safety sector is defined by the AAWC and, when required, coordinated with the responsible ACA, in terms of origin, range, center bearing, width, height band, time, and controlling agency. If more than one safety sector is established, they should be numbered and designated. Safety sectors are normally dormant and are activated by the AAWC.

7046 WATCH ZONES

When required, watch zones will be assigned to ships by the AAWC. Assignment of a watch zone does not imply that the unit should not engage a target outside the sector, but that priority must be given to surveillance and engagement within it.

7047 POSITIVE ECM CONTROL

When the necessity for concealing the presence of the force to the enemy is overriding, the OTC will order positive control over ECM. Ships will wait for a specific order from the OTC, AAWC, or SAAWC to employ ECM. This method applies only to area defense ECM and not to self-defense. See also Chapter 5.

7048 MISSILE ARC

This is established automatically when an engagement order has been issued assigning a target in the FEZ to a SAM system. Unless otherwise ordered by the AAWC, the missile arc is 10° wide, centered on the bearing of the target, and extends to the maximum range of the SAM.

7050 SPECIAL ANTIAIR WARFARE REPORTS

7051 TYPES OF REPORT

There are four types of AAW reports:

(1) Air raid reports (see Article 6323).

(2) Target engagement messages (TEMs).

(3) Missile state reports.

(4) Ammunition state reports.

7052 TARGET ENGAGEMENT MESSAGES

TEMs are used between AAW units to report on the progress of the air battle, but are not required for self-defense weapons.

(NR) (NMM) The various types of TEMs are given in APP 1.

a. Weapons Assignment Report. This report should be made to the AAWC as soon as possible after the target has been detected, preferably as part of the initial report. A change in assignment must also be reported. The proword TAKING indicates that an assignment has been made. For example:

"This is (call sign) TAKING HOSTILE 1234 with STATION 2."

b. HOSTILE (Track Number) BIRD TARGET. Used by the AAWC to designate a target to be engaged by missiles.

c. HOSTILE (Track Number) CAP TARGET. Used by the AAWC to indicate that a target is a primary target for CAP (CAP voice call may be specified).

d. BIRDS AFFIRM HOSTILE (Track Number). Used by missile ships to indicate that missile radars are locked on to a particular target and that the target will pass within missile intercept range.

e. BIRDS AWAY HOSTILE (Track Number). Used by missile ships to indicate that missiles have been fired.

f. BIRDS NEGAT HOSTILE (Track Number). Used by missile ships to indicate that it is not possible to fire at a designated target (i.e., missile directors not locked on, or engaged on other targets, or targets did not come within missile range).

g. ROMAN CANDLE (Coordinates). A warning transmitted over all voice reporting nets and aircraft guard circuits that a nuclear missile is about to be exploded in the area indicated.

h. CANYON AFFIRM (Track Number). Used by a ship fitted with a jammer to indicate that designated target is being jammed.

i. HOSTILE (Track Number) SPLASHED. Used to indicate that the raid designated is believed to be destroyed.

j. HEADS UP HOSTILE (Track Number). Used to indicate that action by reporting unit against target in question has ceased for one of the following reasons:

(1) When a previously reported engagement has been broken off prematurely (e.g., after shifting to a more threatening target).

(2) If the interception is found to be impossible.

(3) At the end of an inconclusive engagement.

(4) When a SPLASHED message is shown to be untrue.

k. SALVO HOSTILE (Track Number). Means "about to engage with Birds," and is used by a SAM ship when it is threatened by a target that is already being taken by a fighter and the ship intends to engage the target with missiles. When this occurs, it is the responsibility of the ship about to open fire to warn the unit controlling the fighter:

"This is (call sign) SALVO HOSTILE (TRACK NUMBER) COUNTDOWN SIXTY NOW (engaging in 60 seconds)."

The fighter is to be hauled off in ample time to clear the missile shot and the controller is to pass the fighter's disengagement direction:

"This is (call sign) STATION 2 SCRAMMING NORTH."

I. COVER. An order from the AAWC to a SAM-equipped ship to initiate an engagement on a specified track up to the point of firing. This procedure permits a track to be designated to more than one firing unit without multiple engagement of the track.

7053 (NC) (NMM) MISSILE STATE REPORTS

To inform the OTC and AAWC of SAMs available, missile states are reported by means of SUGAR reports, which are passed, without request, to the OTC and AAWC whenever the missile availability status of any one type of missile is reduced by 25 percent of the total missiles carried. The OTC and AAWC may also ask for current SUGAR states, by category or specific type, depending upon the requirement. The letters provided in Table 7-1 are to be used.

7054 (NC) (NMM) AMMUNITION STATE REPORTS

Ammunition states are reported by means of CANDY reports, which are passed, without request, to the OTC and AAWC whenever the ammunition or chaff is reduced by 50 percent of the total ammunition carried. The OTC and AAWC may also ask for current CANDY states. The following letters are to be used:

A	15.2 cm
B	5 in/38
C	5 in/54
D	12 cm
E	4.5 in
F	100 mm
G	3 in/50
H	3 in/70
I	76 mm
J	57 mm
K	40 mm
L	30 mm
M	25 mm
N	Chaff for confusion
P	Chaff for distraction
Q	Chaff for seduction
R	Infrared Decoy

For example, a unit that has 48 percent of its 100 mm AA ammunition remaining would report: "(OTC) this is (call sign) CANDY report — F48 over."

For ASSM state reports, see Chapter 8.

7055 AIRCRAFT OPERATING REPORTS

The carrier or AAWACU is to make reports of the following to the OTC or AAWC on the appropriate tactical net:

Table 7-1. (NU) (NMM) SAM State Reports

RANGE	CATEGORY LETTER	TYPE LETTER	DESCRIPTION	EXAMPLES
LONG	X	A	Standard - 2 - Extended Range	1. The OTC, requiring the numbers of long- and medium-range missiles left in the force, signals: (Call Sign) THIS IS (Call Sign) INTERROGATIVE SUGAR XRAY YANKEE OVER. A particular ship, with 16 Standard - 2 - Extended-Range and 20 Standard - 2 - Medium-Range missiles, signals the OTC: (Call Sign) THIS IS (Call Sign) SUGAR REPORT ALFA ONE SIX TACK JULIET TWO ZERO OVER. 2. The AAWC, requiring a particular ship to report the number of Sea Dart missiles remaining, signals: (Call Sign) THIS IS (Call Sign) INTERROGATIVE SUGAR NOVEMBER OVER. The ship, with 14 Sea Dart missiles remaining, replies: (Call Sign) THIS IS (Call Sign) SUGAR REPORT NOVEMBER ONE FOUR OVER.
		B		
		C		
		D		
		E		
MEDIUM	Y	F	Terrier HTR	
		G	Terrier BT	
		H	Terrier BTN	
		I	Tartar	
		J	Standard - 2 - Medium Range	
		K	Standard - 1 - Extended Range	
		L	Standard - 1 - Medium Range	
		M	Standard ARM	
		N	Sea Dart	
		O	Masurca	
		P	Sea Slug 2	
		Q		
		R		
SHORT	Z	S	Point Defense Missiles	
		T		
NOTE: Blanks provided are for the OTC's use for additional missiles if desired.				

(NATO-CONFIDENTIAL) (NMM)

(1) Completion of the launch and call signs of the aircraft.

(2) Changes in alert states of CAP aircraft.

(3) When CAP aircraft are steered for recovery.

(4) When recovery is completed.

(5) When CAP aircraft are on station at altitude and under positive control.

(6) Progress of intercept.

7060 (NC) (NMM) ANTI-SHIP MISSILE DEFENSE (ASMD)

7061 (NC) (NMM) INTRODUCTION

a. Anti-Ship Missile Defense (ASMD) is an integral part of AAW. It covers all aspects of defending a ship or a group of ships against missile attack. The defensive measures involved range from counter targeting, defeating the missile search and homing techniques, to engaging the threat with missile and gun systems.

b. With the broad range of missile threats that must be considered, ASMD is highly complex. The problems are further compounded by a wide variety of chaff and other decoy systems and an array of sophisticated missile, gun and jammer systems.

c. An appreciation of the constraints of each defensive measure as well as consideration of variable factors such as threat type, threat direction and meteorological conditions are essential.

d. Taking account of these constraints, balanced against the requirements of other warfare disciplines, the OTC or CO must resolve conflicts at the planning stage and issue detailed and timely guidance for ASMD.

7062 (NC) (NMM) THREAT

In order to ensure that the most effective combination of ASMD countermeasures is employed, it is necessary to have an accurate appreciation of the threat. To simplify this process, the potential missile threat can be divided into generic groups based upon missile characteristics. The threat is currently divided into six groups.

For details on establishing criteria for each group see ATP-31.

7063 ASMD REACTIONS

a. To assist in the timely co-ordination and execution of ASMD, a system of planned reactions is necessary. These are to be made automatically, collectively, and/or individually by units and depend on rapidity and simplicity. ASMD reactions are initiated by using the codeword "ZIPPO" followed by a number, letter, and missile designator which indicates the type of attack and the reactions required.

(NC) (NMM) The following ZIPPOs can be used:

ZIPPO C — Counter Targeting Phase.

ZIPPO 1 — Active Radar Frequency Homing Missile.

ZIPPO 2 — Anti Radiation Missile Seeker.

ZIPPO 3 — Infra Red Missile Seeker.

ZIPPO 4 — Command Line of Sight or Active Laser Missile Seeker.

ZIPPO 5 — Electro Optical (incl. TV and IR) Missile Seeker.

ZIPPO N — Counter the unidentified/late detected/pop-up threat.

The area within which units react to the same ZIPPO is called the ZIPPO area. Unless otherwise ordered, it is a circle radius 20 nm from ZZ. However, under certain circumstances it may be necessary to select another center and/or radius, which should be promulgated in the OPGEN or OPTASK AAW.

b. **(NR) (NMM)** For Command and Control responsibilities and planning, promulgation and execution of ASMD reactions see ATP-31 and ATP 55.

7064 (NC) (NMM) CONSIDERATIONS FOR ASMD

The best defense against Anti-Surface Ship Missiles (ASSMs) is the neutralization of the launch or targeting platform(s) before missile release. The following criteria must be considered in defense against the missile threat:

a. Disposition and stationing considerations

b. Employment of AAW assets

c. Detection and determining type of attack

d. Use of sensors and EMCON

e. Selection of ASMD countermeasures

f. Coordination of ASMD reactions

g. Planned ASMD reactions

h. Promulgation of ASMD reactions

i. Execution of ASMD reactions.

7070 SPARE

7080 CARRIER BATTLE GROUP AIR DEFENSE TACTICS

The key elements of Carrier Battle Group air defense tactics are:

a. Destroy hostile missile platform prior to release of weapons.

b. Position forces in the outer defense zone (ODZ) based on indication and warning information for engagement of hostile missile platforms.

c. Position forces in the inner defense zone (IDZ) for engagement of leakers and ASSM defense.

7081 INNER AND OUTER DEFENSE ZONES

CVBG AAWCs are controlling two separate but interrelated forces: those forces assigned to the ODZ and those within the IDZ. The former are primarily fighters, AEW aircraft, and SAM ships with responsibilities for destroying missile platforms before missile launch; while the latter are surface units with primary responsibilities for engagement of leakers and providing ASSM defense for mission-essential forces. Due to the separation of forces by mission and distance, each defense zone is essentially controlled as a separate entity. With the exception of "heads up" situations on enemy penetrations, coordination problems mainly involve:

a. Identification of friendly aircraft operating within the IDZ or transiting between IDZ and ODZ.

b. Non-organic aircraft entering the AAW surveillance area.

7082 INNER DEFENSE ZONE

A circle around each CV whose radius is normally 100 nm but may be adjusted by the CWC based on expected air threats and geographic considerations.

The primary AAW responsibility of IDZ units is to provide ASMD to mission-essential forces. This is done through the coordinated employment of both hard-kill and soft-kill systems.

The IDZ will be defended primarily by SAM ships. IDZ AAW defenses may be augmented by CAP normally positioned overhead the CV under either IDZC or carrier control. Primary targets for SAM ships will be ASMs and enemy aircraft that have penetrated ODZ defenses.

7083 OUTER DEFENSE ZONE

The ODZ is an area encompassing the AAW surveillance area outside the IDZ to a range equivalent to the maximum sensor range of assets stationed outside the IDZ.

The objective of AAW of ODZ is the early detection, identification, and destruction of the platforms before missile launch. To accomplish this objective, fighters, ships, and AEW aircraft must be stationed in sufficient numbers up-threat and at a distance that will ensure adequate warning and destruction of enemy platforms before missile launch. Surface ships with long-range SAMs (80 to 115 nm) will be stationed in the ODZ as either traditional AAW pickets or in a Silent SAM role. Coordination between SAM ships and airborne assets is vital to avoid blue-on-blue engagements. ODZ forces must be prepared to execute pre-planned response to counter attacking forces in an active electronic environment.

7084 (NC) (NMM) INNER DEFENSE ZONE COORDINATOR

a. Direction Functions.

(1) Establish search zones and sectors.

(2) Provide vectors to IDZ threats for transiting CAP (en route to/from ODZ) if there is no other weapon available.

NOTE

It is imperative the AAWC be notified in the event ODZ CAP are redirected by the IDZC. Redirection of ODZ CAP is a last resort when all other options have been exhausted.

b. Coordination Functions.

(1) Coordinate AAW functions in the IDZ.

(2) Correlate and evaluate reports from units in company and relay to AAWC.

(3) Monitor local ROE decisions, keeping the AAWC informed.

(4) Keep units informed of friendly aircraft movements to avoid blue-on-blue engagements.

c. Control Functions. Control inner warfare net.

7085 (NC) (NMM) OUTER DEFENSE ZONE COORDINATOR

a. Direction Functions.

(1) Detect and broadcast location of enemy aircraft to CAP on the warfare net and to the AAWC on the C&R net.

(2) Provide Link 11 information to Silent SAM ship.

(3) CAP management:

(a) Reassign CAP stations based on fuel and weapons state.

(b) Assign CAP stations for deck-launched interceptors (DLI).

(c) Coordinate with CAP on return to force (RTF) procedures.

(4) Tanker control:

(a) Assign control of tanker assets.

(b) Take control of tankers only when another control asset is unavailable.

(5) Process and disseminate ESM information regarding threat sectors and threat composition.

(6) Clear non-organic aircraft into the AAW surveillance area.

b. Coordination Functions.

(1) Relay initial raid count from chainsaw CAP to AAWC via any/all nets. This information is crucial for the AAWC/CWC to launch appropriate number of DLI in response to enemy raid.

(2) Repeat all fighter warfare net calls.

(3) Supplement voice calls with Link 4 information to CAP and Link 11 information to the AAWC and other units of the AAW network.

(4) Update location of Silent SAM units.

(5) Monitor and negate, if necessary, ROE decisions by subordinate units, and request ROE necessary to conduct AAW in the ODZ.

c. Control Functions.

(1) Control the outer warfare net and the Admin (secondary outer warfare) net.

(2) Order frequency shifts on UHF nets or Link 4 when enemy deception is suspected or if communication jamming is effective.

7086 (NC) (NMM) CAP STATIONING TACTICS

CAP stationing tactics employed include:

a. Chainsaw. Chainsaw is a long-range tactic designed to cover an anticipated threat sector at ranges out to 500 nm from VL. This tactic is optimized to achieve early threat detection when airspace and geographic constraints allow use of extended range tactics. This tactic provides long-range detection, raid count, and initial engagement once the raid count has been successfully relayed back to the ODZC/AAWC. It is imperative that the raid count be relayed back to the AAWC, who can then order the

launch of the appropriate number of DLI to successfully engage an inbound threat. Sufficient chains are established, in accordance with carrier air wing tactical procedures, to provide surveillance coverage over the entire threat sector. After reaching 500 nm from VL, chainsaw CAP should take station and continue the search for threat aircraft. This orbit should be maintained as long as prudent, taking into account fuel state and deck cycle constraints. Two tactics are available to support chainsaw:

(1) Equidistant. All CAP are launched simultaneously for each chainsaw radial with a relief CAP for each radial launched approximately every 72 minutes.

(2) Stagger. Alternating chainsaw radials are launched with replacement CAP launched on alternating radials approximately every 36 minutes.

b. STRIKECAP. STRIKECAP are fighters launched to achieve an early detection of enemy raids, to confuse the enemy as to the actual location of the CVBG, and to disrupt enemy plans and tactics. The STRIKECAP tactic requires good indications and warning and a well defined threat axis placing the enemy raid approximately 1,000 to 1,200 nm from the CVBG.

c. Deck-Launched Interceptors. DLI are alert fighters on the carrier armed and ready for launch in response to a pending threat. The AAWC will maintain an alert fighter package necessary to engage the anticipated threat. The AREC will ensure alert packages are set to meet the AAWC's requirements.

d. CAP Stations. When the threat sector is well defined and the chainsaw tactic is not required, CAP stations are designated by the number-letter designation in relation to VL or overhead a designated unit (i.e., carrier). These stations are normally filled by a section of CAP during the day and a single fighter at night.

e. The center point of the grid (VL) should be near the CVBG center (or the point to be defended) and is a reference point specified by the CWC/AAWC. The CWC/AAWC may determine a distance from which units are to stop reporting from VL and to start reporting from ZZ.

7087 (NC) (NMM) RETURN TO FORCE PROCEDURES

Effective and easy to follow RTF procedures are essential in order to protect all friendly air assets defending or returning to the battle group. Identification (ID) procedures and ROE, together with RTF procedures, must be carefully coordinated by the CWC/AAWC.

a. The protection of friendly air assets requires that:

(1) CAP and SAM ships must evaluate contacts.

(2) Aircraft squawk all modes of IFF.

(3) Friendly aircraft comply with ID, IFF, and departure/return requirements.

b. Alternative Procedure. RTF aircraft will utilize IFF and fly a designated RTF profile for identification (altitude and airspeed) as promulgated in the OPTASK AAW. All returning aircraft will be required to fly to one or two transit points before returning to the CV. These transit points will be located on the 100-nm arc from VL and 15° outside the threat sector. Upon reaching a transit point, aircraft will proceed directly to their assigned marshal point for recovery. The advantages of this RTF procedure are that aircraft are not transiting through the center of the threat sector on their return and the transit points are located such that aircraft can return expeditiously.

CHAPTER 8

Antisurface Warfare

SECTION 1 — GENERAL

8100 GENERAL

a. This chapter contains tactical and procedural instructions for ships (including submarines) and aircraft when operating against enemy surface forces. Its purpose is to:

(1) Specify tactics and procedures in antisurface operations.

(2) Enable commanders to issue orders and instructions to fulfill their responsibilities.

(3) Enable subordinates to understand and comply with orders and instructions received.

b. **(NR) (NMM)** Background information on antisurface warfare is contained in ATP 31.

8101 COMMAND IN ANTISURFACE WARFARE

The OTCs functions in surface warfare, including those that may be delegated to the antisurface warfare commander (ASUWC), are summarized in Table 1-3.

8102 FORCE TRACK COORDINATOR (FTC) SURFACE AND SUBSURFACE

The OTC may delegate surface and subsurface surveillance to one of the warfare commanders. They in turn can assign a FTC. In principle the designated force track coordinator surface and subsurface performs the tasks as described in Chapter 6, Article 6314.

8103 CONCEPT OF ANTISURFACE WARFARE

a. Antisurface warfare must make full use of the offensive potential of own surface, submarine, and air forces in order to deny the enemy effective use of his surface forces.

b. Antisurface operations by surface ships and submarines include all actions to combat enemy surface forces. In the case of an offensive antisurface action, a SAG will be formed. A SAG may be comprised of surface ships and/or submarines. If the action is of a defensive nature, the OTC may either detach a SAG to counter the surface threat, maintain the integrity of the force, or avoid any action by altering course with the whole force, depending upon the significance of the surface threat as compared to the air and subsurface threats.

c. Forces Employed. Antisurface operations may be carried out by:

(1) Ships.

(2) Fast patrol boats.

(3) Fixed-wing aircraft.

(4) Helicopters.

(5) Submarines.

(6) Coastal batteries (tactics and procedures are a national responsibility).

(7) Mining (see ATP 6).

NOTE

Submarine operations are not dealt with in this chapter. Safety precautions to be observed when cooperating with submarines are prescribed in Chapters 6 and 9.
(NR) (NMM) Details of submarine operations are set forth in ATP 18.

d. Coordinated Operations. Antisurface operations may be carried out by a combination of any of the single types of forces listed in paragraph c, in order to exploit the different advantages of their sensor, weapon, and command capabilities. The most important combinations in coordinated operations are dealt with in this chapter. The cooperation of those combinations not described must be arranged for ad hoc using the procedural principles of this chapter.

8104 SURFACE POLICY

a. Surface Threat. Whenever a surface threat is deemed to exist, the OTC should promulgate a policy for surface action. An early and comprehensive statement of intentions in an Operation Order/ OPGEN/OPTASK will reduce the requirement for messages, unless the situation changes.

b. Surface Policy. The Surface Policy can be stated in broad terms only, or specified in detail as required. Table 8-1 contains a checkoff list, based on the phases of surface action outlined in Article 8105. They may be used to prepare orders and to update and execute them.

c. Success of Surface Action. The success of surface action depends on a thorough understanding of the Surface Policy, a good initial plan, and the initiative of commanding officers.

8105 SURFACE ACTION

a. Phases of Surface Action. Surface action can be broadly stated as taking place in the following phases.

(1) Phase 1 — Preparation.

(a) Events leading to the detection, localization, identification, and recognition of the enemy.

(b) A review of the situation against the established policy, planning, and tasking.

(2) Phase 2 — Detection, Localization, Identification, Recognition, and Target Assignment.

(a) Assuming the optimum force offensive and defensive posture.

(b) The decision to join the enemy in battle.

(c) Selection and localization of particular enemy units as prime targets.

(d) Decision to request area commanders assets or to use force assets.

Table 8-1. (NU) Surface Action Checkoff List

PHASE 1 — PREPARATIONS	PHASE 2 — DETECTION, IDENTIFICATION, AND TARGET ASSIGNMENT
a. Evaluate updated threat intelligence, SSM ships will be primary threat; SAM ships must also be considered. Decide enemy's most dangerous likely courses of action, having determined whether he has already been targeted by other friendly forces. b. Consider surface surveillance priority in relation to ASW and AAW. c. Consider stationing of pickets, bulging the screen, and/or detaching SAGs or submarines. d. Consider use of deception and evasion. e. Consider best use of assets, links, and communications for targeting. f. Ensure emission policy is appropriate to surface threat priority. g. Consider retention or delegation of authority to initiate and coordinate OTH attacks by LR ASSM. h. Consider target identification criteria, required recognition level, required recognition confidence level, and weapons expenditure. i. Consider target priorities and damage criteria. j. Determine likely units to coordinate and conduct OTH action, after considering disposition, capabilities, etc. k. Consider methods of damage assessment. l. Reevaluate jamming tasking. m. Consider effects of weather, e.g., on ship's maneuverability and flying operations. n. Determine the execution of gridlocks, ensuring a matched picture with all participating units.	a. Determine employment of available surveillance assets, including provision of extra helicopters and tasking of ESM equipment of all aircraft. b. Determine employment of air, surface, and subsurface units, and other support facilities to provide timely, continued, and accurate target localization, identification, and recognition data. c. If appropriate, request support from area commanders' forces. d. In light of available target localization, identification, and recognition data, review force weapon release criteria. e. Consider employment of air, subsurface, and surface units for attack. f. Review previously ordered, or order appropriate Surface Action Plans. g. Review Emission Policy. h. Consider SSM Missile Seeker Free Zone (MSFZ) and Missile Seeker Tight Zone (MSTZ). i. Determine SAG composition after considering disposition and capabilities. j. Assign targets and promulgate clear directions to participating units.

Table 8-1. (NU) Surface Action Checkoff List (Cont.)

PHASE 3 — LONG-RANGE ENGAGEMENT	PHASE 3 — LONG-RANGE ENGAGEMENT (CONT.)
a. INITIATION. (1) Engage with air or, if appropriate, subsurface assets. (2) Unless tasks have already been assigned, the OTC or ASUWC may: (a) Detach a SAG with LR SSM assets and consider redisposition of remaining forces. (b) Order LR SSM attacks without forming a SAG. (c) Order OTH Standard Action Plan, and if not already specified: 1. Target to be engaged. 2. When LR SSM are to be fired, or time on target (TOT) for missiles. 3. Communications/links to be used. (d) Order any other, or combination of, Standard Surface Action Plan(s). (3) If detaching a SAG, consider shifting remainder of force to alternate SAG net. b. SAG APPROACH. (1) SAG Commander (SAGC) orders formation, disposition, course, and speed in accordance with Action Plan(s). If no Plan is detailed, considerations are: (a) Formation/disposition. (b) Freedom to maneuver. (c) Mutual support. (d) Separation to avoid single jammer beam width. (e) Concealment of identities of missile-armed ships. (2) Communications (unless specified otherwise):	(a) SAG uses appropriate HF/UHF/Secure Voice circuits or visual signals, for maneuvering and picture compilation. (b) Establish communications with cooperating submarines, MPA, AEW, or helicopters on their previously assigned nets, ordering shift to SAG net as necessary. (c) The Air Strike Control Net is used to pass position and intentions to friendly attack aircraft deployed against assigned target. (d) Establish communications on the TF/TG OTH Command Net if necessary. (3) SAGC may assume duties of LAAWC, FTC-S, and ACU for the SAG. (4) Reassess threat, open-fire range, expected time of coming under fire, and missile advantages and disadvantages. (5) Reassess current electronic warfare policy. (6) Employment of allocated air, surface and subsurface assets to optimize OTH attacks. Considerations include: (a) Assessment of OTHT information. 1. Single passive bearing. 2. Triangulation. 3. Deploying a TRU. 4. Other sources. (b) Updating of plots, identification/recognition, and target selection. (c) Obtaining best possible picture of immediate area around target for selection of optimum missile seeker settings (e.g., weather, clutter, and proximity of other units). (d) Selection TRU for passing accurate data by link or voice. (e) Stationing and protection of TRU.

Table 8-1. (NU) Surface Action Checkoff List (Cont.)

PHASE 3 — LONG-RANGE ENGAGEMENT (CONT.)	PHASE 3 — LONG-RANGE ENGAGEMENT (CONT.)
(f) Selection of LR SSM firing units. 1. Available missiles and their seeker characteristics. 2. Accuracy of required target data. 3. Spacing of other enemy units in relation to intended line of SSM fire. 4. Direction of attack. (g) Safety of friendly forces, including MSFZ and MSTZ. (7) Order coordination and employment of: (a) LR/SSM, including weapon release criteria and fire distribution. (b) Jammers. (c) Chaff-firing sectors and patterns for confustion and/or distraction. (8) Intentions, to include plans of approach and post-combat rendezvous, must be passed early since at a later stage communications are likely to be saturated and/or jammed. (9) Action in case of damage. (a) Nominate standby SAGC. (b) Action for own damaged ships. (10) Enemy contact report — SITREP to OTC/ ASUWC. c. COMBAT. (1) OTH action is conducted according to the Standard Plan ordered, or as specified otherwise.	(2) If cooperating with surface attack aircraft, establish “time windows” for arrival of SSM. TOT for aircraft and missiles should not coincide; however, aircraft and missiles attacks should be coordinated. (3) After damage assessment, reattack if results do not meet OTC’s Damage Criteria. d. POST-COMBAT. OTC, ASUWC, or SAGC orders action to cease and issues post-combat instructions (See Phase 4, paragraph d. below). PHASE 4 — SHORT-RANGE ENGAGEMENT a. INITIATION. Unless tasks have already been assigned, the OTC will: (1) If appropriate, detach a SAG and consider redispositions of remaining units. (2) Consider main body evasion. (3) Order Standard Action Plans, and if not already specified: (a) Targets to be engaged. (b) Communications/links to be used. (4) Verify position of own forces to avoid engagement of friendly units. (5) Consider shifting remainder of force to alternate SAG net. b. APPROACH. (1) Actions covering formation, disposition, communications, assumption of duties, reassessment of threat and enemy’s intentions, and EW policy as in preceding Phase 3, paragraphs b.(1) to (5). (2) Employment of allocated air submarine, and surface assets.

Table 8-1. (NU) Surface Action Checkoff List (Cont.)

PHASE 4 — SHORT-RANGE ENGAGEMENT (CONT.)	PHASE 4 — SHORT-RANGE ENGAGEMENT (CONT.)
(a) Assessment of target information. 1. Single passive bearing. 2. Triangulation. 3. Deploying a TRU/forward observer. 4. Other sources (e.g., radar). (b) Updating plots, identification/recogniton, and selection of target. (c) Selection of TRU/forward observer. (d) Selection of firing units to include available SR SSM/SASS. (3) Order employment of: (a) SR SSM/SASS — including weapon release criteria and fire distribution. (b) Guns. 1. Methods of verification and control of fall of shot. 2. Control of opening of weapon area. 3. Control of opening fire. 4. Pre-action calibration (PAC) — range from enemy to conduct — ESM aspects. 5. Ammunition type. 6. Wind finding. 7. Illumination. 8. Fire distribution. (c) Jammers. (d) Chaff-firing sectors and patterns for confusion and/or distraction.	(4) Action in case of damage. (a) Standby SAGC take command. (b) Action for own damaged ships. (5) Missile/gunnery advantage/disadvantage. (a) Maintain missile/gunner advantage. (b) Carry out action to assume advantage if not presently held. **(NC) (NMM)** If a gunnery disadvantage: 1. Zigzag before reaching enemy. 2. Cross weapon gap to own MER as quickly as possible and maintain as fine an inclination as practicable. (6) **(NC) (NMM)** Fire control radar, consider: (a) Switching on as late as practicable. (b) Deception by using alternate radar. (7) Enemy contact report — SITREP to OTC. (8) Following the OTC's policy, order type and number of SR SSM/SASS to be fired. A "cocktail mix" will make the enemy's ASMD difficult. (9) Consider use of surface- or submarine-launched torpedoes and long-range ASW weapons. c. COMBAT. (1) Open fire order — coordination of SR SSM/SASS and guns. **SEE NOTE 1.** (2) **SEE NOTE 2.** (3) Reassess gunnery advantage/disadvantage; change tactics accordingly.

Table 8-1. (NU) Surface Action Checkoff List (Cont.)

PHASE 4 — SHORT-RANGE ENGAGEMENT (CONT.)	PHASE 4 — SHORT-RANGE ENGAGEMENT (CONT.)
(4) Weapon arcs — adjust SAG formation to a course to maximize SAG weapon effectiveness. (5) Fire distribution — consider redistribution. (6) Ammunition expenditure — use burst fire initially; continue burst fire until good hitting rate achieved, then use continuous fire. (7) Jamming/chaff employment — continue unless interference is caused to own gun/missile control radar. (8) **SEE NOTE 3.** (9) Damage reports — only if fighting capability is reduced. (10) Fall of shot reports — only if situation is confused. (11) Reassess target priorities. **(NC) (NMM)** **NOTE 1 — Normally at MER for guns, but may be ordered otherwise.** **NOTE 2 — Attempt to stay between enemy and his objective.** **NOTE 3 — Smoke screen — consider as defensive or deceptive measure.**	d. POST-COMBAT. (1) Individual ships report to SAGC. (a) Damage and assistance required. (b) Ammunition reports. **SEE NOTE 4.** (c) Fuel. **SEE NOTE 5.** (2) SAGC — SITREP to OTC. (3) Update position of post-combat rendezvous (if required). (4) Update OTC Rendezvous/PIM. (5) Order formation, course, and speed. Consider maximum sonar speed if significant subsurface threat exists. (6) Survivors — use helicopter assistance. (7) Further action — re-engage, shadow, or withdraw. **(NC) (NMM)** **NOTE 4 — Only if below 50 percent.** **NOTE 5 — Only if below 50 percent.**

(e) Decision on the use of submarines for detection, identification, and possible attack utilizing either torpedoes or ASSMs.

(f) Decision on the use of air attack units and/or employment of ASSMs to provide defense in depth.

(g) Obtaining accurate target data for possible engagement.

(3) Phase 3 — Long Range Engagement.

(a) Consideration of detaching air assets or submarines for long-range attacks.

(b) Detachment as necessary of long-range ASSM units in SAGs with supporting submarines as appropriate or single units for long-range engagements.

(c) Conducting long-range attacks.

(d) Post-combat.

(4) Phase 4 — Short-Range Engagement.

(a) Detachment of SAGs with short-range missiles, guns, and torpedoes.

(b) Conducting attacks.

(c) Post-combat.

8106 — 8109 SPARE

8110 (NC) (NMM) WEAPON STATE REPORTS

a. BITTER ASSM state report, to the OTC, ASUWC, or SAG commander whenever the SSM availability status is reduced. The following letters are to be used

E EXOCET

H HARPOON

M TOMAHAWK

O OTOMAT

P PENGUIN

T TESEO

Example

A unit that has eight TESEO missiles remaining would report: (OTC) this is (call sign) BITTER report T8 over.

b. States of other weapons are to be reported using CANDY and SUGAR reports as in Chapter 7 with the addition of the suffix S in CANDY reports to indicate surface ammunition.

8111 — 8119 SPARE

SECTION II — ANTISURFACE WARFARE BY SURFACE UNITS

8200 SURFACE ACTION CHECKOFF LIST

a. Checkoff List of Surface Action. Table 8-1 contains a checkoff list of points to be considered during the four phases of surface action. Not all of the points in the table will apply to every action, but they should be considered and disregarded if not appropriate.

b. Enemy SSMs. Enemy SSMs may be fired from over the horizon: that is, beyond the launching platform's active sensor ranges and at shorter or horizon range. With the horizon range threat, appropriate factors in Table 8-1 must be considered early and plans quickly promulgated. Indeed, under these circumstances, phases 2 and 4 may be compressed to run concurrently. Because of the high level of expected EW activity, success at horizon range depends on careful planning, thorough briefing, and minimal reliance on radio communications.

8201 SURFACE ACTION GROUP (SAG)

a. SAG Commander. On formation of a SAG, the SAG commander is responsible for:

(1) The organization of the SAG and its tactical employment.

(2) The tactical control of aircraft assigned.

(3) EW coordination.

(4) Local AAW coordination.

(5) Keeping the OTC informed of the progress of the action.

b. Composition. SAG units should be compatible in weapons, sensors, speeds, and maneuverability; however, if a capability such as a complete EW suite is available only in an incompatible unit, that unit may have to be in the SAG despite any other shortcomings.

(NR) (NMM) The composition of a SAG for a particular operation depends on the factors listed in ATP 31.

c. Communications. When the formation of the SAG is preplanned and adequate warning is given, there will be no difficulty in activating a prepared communication plan. However, this may not be the case when a SAG is formed in an emergency to counter a sudden threat. In this case, the SAG may employ any already established control net as ordered by the OTC. Where appropriate, the remainder of the force should switch to alternate circuits.

d. Electronic Warfare.

(1) On the formation of the SAG, control of EW in the SAG is automatically assumed by the SAG commander. The SAG commander will reassign ESM tasking based on threat intelligence and retask ECM assets in order to enhance warning and defense possibilities with minimum mutual interference.

(2) Retasking of the SAGs EW equipment to concentrate on the surface threat against which the SAG has been detached requires the EWC to reconsider overall force EW tasking. Threats no longer covered by SAG units may have to be reassigned to ensure complete threat coverage within the force.

e. Antiair Warfare. As soon as possible after the SAG separates from the main body, the SAG commander should become his own local AAW coordinator, controlling his own friendly aircraft if they

are available. This will add to the effectiveness of his forces, better ensure own aircraft safety, and minimize the confusion that would result in divided aircraft control.

f. Antisurface Ship Missiles (ASSMs).

(1) ASSM systems are divided into three categories.

(a) Short range: Up to 20 miles (to-the-horizon range).

(b) Medium range: From 20 to 75 miles.

(c) Long range: More than 75 miles.

The OTC should, if he has any choice, allocate units to the SAG with ASSM systems of sufficiently superior range and lethality to ensure success without needlessly wasting his most powerful assets.

(2) The conflicting use of SAM systems for AAW on the one hand and for SAM in the surface-to-surface (SASS) mode on the other must be carefully weighed by the OTC. Systems with more than one tracker can maintain both, although with reduced capabilities. However, most medium- and long-range SAM systems have sufficient surface-to-surface capability to favorably influence the outcome of the surface action.

8202 SURFACE ACTION GROUP POLICY

In defense of the main body, the primary concern must be to remain between the enemy and the main body. If the SAG has been detached to destroy, neutralize, or repel missile carrier(s), the SAG should do so as far as possible from the main body or convoy. In formulating his policy, the SAG commander must consider the following factors:

a. Relative capabilities of own and enemy forces.

b. Likely tactics of enemy forces.

c. The use of ECM. The SAG commander should make use of the ECM capability of ships of the SAG to disrupt enemy fire control, surface warning sensors, missile systems, and communications.

d. The use of deception. When approaching the enemy, the SAG commander should consider the use of physical and electronic measures designed to conceal the size and formation of the SAG. The electronic emission pattern of the SAG must conform with the deception plan in use.

e. The formation. It is important that deployment into the chosen surface-action formation should have been completed before action commences. The surface-action formation must allow ships to engage with all their weapons, and to take avoiding action without endangering adjacent ships. Unnecessarily large intervals between ships give an enemy with superior speed the opportunity to concentrate on one part of the group at a time.

f. Pre-action fire control settings. It is vital that these are obtained as early in the action as possible. Thus, initial settings on fire control equipment must be accurate. However, fire control is vulnerable to jamming and therefore calibration involving fire control radar transmissions may be inadvisable and should only be carried out on instruction from the SAG commander.

g. Fire distribution.

(1) Normal fire distribution. Normal fire distribution entails the engagement of opposite numbers of the enemy force and should as far as possible leave no enemy ship unengaged. If concentration of fire is possible, major enemy ships should receive priority. Normal fire distribution is automatically in force.

(2) Targets to individual units. The SAG commander may make a fire distribution signal allotting targets to individual units at any time before or during an action. Special signal groups are available for this purpose.

h. Number of missiles to be fired in ASSM salvos.

8203 STANDARD SURFACE ACTION PLANS

Three standard surface action plans exist.
(NR) (NMM) They are detailed in ATP 31, Chapter 8.

a. Plan GREYHOUND. Plan GREYHOUND is the plan for SSM attack by ships using a target reporting unit (TRU) and is best suited for over-the-horizon (OTH) attacks.

b. Plan GROUSE. Plan GROUSE is the plan for SAGs, which may include helicopters, in a coordinated attack against enemy surface units other than missile-armed fast patrol boats. This plan is best suited for engagements within horizon range.

c. Plan SNIPE. Plan SNIPE is the plan for SAGs against missile-armed fast patrol boats.

8204 USE OF PASSIVE ACOUSTIC MEANS IN ANTISURFACE WARFARE

Towed array sonar (TAS) is capable of passively detecting surface as well as subsurface contacts at extended ranges. In an area of high surface threat, the OTC may consider assigning a TAS ship to the ASUW role in addition to, or in lieu of the ASW role. In either case, the resultant effect on the forces ASW posture must be considered. Hull-mounted sonar, VDS and anti-torpedo detection systems can be employed to detect and identify hostile surface ship sonar transmission. These methods can be effective.

8205 PICKETS IN ANTISURFACE WARFARE

Pickets are stationed primarily to extend the surveillance area, and in littoral areas especially to cover entrances and choke points. A picket-chain consisting of several units might be ordered to cover large areas. The ASUW picket may be a surface unit, a submarine, or an aircraft.
(NR) (NMM) For further details on capabilities and tasking see ATP 31.

8206 — 8209 SPARE

SECTION III — ANTISURFACE WARFARE WITH AIR COOPERATION

8300 GENERAL

Air assets in support of antisurface warfare operations may be used for the detection of the enemy, for locating, identification/recognition, and reporting in order to contribute to the surface picture and for target data reporting and transmission. Independent and coordinated attacks on the enemy's surface units may be included. The type of support to be provided by air assets depends on operational requirements and on the capabilities of the air assets. Air assets may also be used to distract the enemy's attention from own forces, and to disrupt the enemy's command and control.

8301 ANTISURFACE OPERATIONS SUPPORT BY FIXED-WING AIRCRAFT

a. The aim of antisurface operations by fixed-wing aircraft is to ensure the detection and engagement of enemy surface forces in order to deny their effective employment. Fixed-wing aircraft may be employed in:

(1) Attacks on enemy surface forces.

(2) Scouting, using any sensor to acquire tactical information.

b. Armed reconnaissance, a combination of both types, is possible, depending on the tactical situation and available air assets.

(NR) (NMM) Detailed instructions are provided in ATP 31 and ATP 34.

8302 ANTISURFACE OPERATIONS BY HELICOPTERS

a. The aim of antisurface operations by helicopters is to:

(1) Assist forces in the detection, localization, identification, recognition, and targeting of hostile surface forces.

(2) Attack lightly defended enemy forces, especially fast patrol boats equipped with SSMs.

b. Helicopters will normally be integrated with a surface force that may or may not have other air support. They may be land based or shipborne. When two or more helicopters cooperate against a particular surface threat, they form a HAG. The best-fitted helicopter should become HAG commander (CONTROLLER).

c. Helicopters in antisurface operations may be employed in reconnaissance and attack and may carry out controlled operations or act independently, as ordered by the OTC, or the unit that the OTC has assigned duty as HCU.

(1) Controlled Operations. When the helicopter has two-way communications with and is within the radar range of the control unit, the helicopter is to operate under positive or advisory control.

(2) Independent Operations. When the helicopter is beyond radar range and/or communication range of the HCU, the helicopter is fully responsible for safety, navigation, and the accomplishment of its task.

8303 COOPERATION BETWEEN FIXED-WING AIRCRAFT AND HELICOPTERS

If helicopters and fixed-wing aircraft cooperate in engaging a surface target, the following rules will apply. As the supporting aircraft approaches the target area and communications are established, the

helicopter will provide all available target information to the supporting aircraft. If it is equipped to do so, the helicopter may be requested to illuminate the target. Special precautions should be observed by attack aircraft, particularly during periods of reduced visibility and at night, to ensure that the helicopter is safely clear of dropped illumination devices, the attack flightpath, and weapon effects.

8304 EMPLOYMENT OF A HELICOPTER ACTION GROUP (HAG)

a. Alert State. The limited endurance of missile-armed helicopters prevents, in most cases, the keeping of a HAG at airborne alert. Missile-armed helicopters should, therefore, normally be placed at the highest possible alert state (see Chapter 1).

b. Selection of a HAG Rendezvous. The HAG rendezvous should normally be in the direction of the threat, in order to make best use of the short on-task time of the helicopter.

c. Attack Procedure. The prime requirement for a successful missile attack is precise information about the position, course, and speed of the target. The need for the missile-firing helicopter to be in visual contact with and/or be pointed in the general direction of the target mainly depends on the capability of the sensors available and the missile used. In case of a visual attack, a flare-dropping helicopter may be used.

d. Provision of Helicopter Operating Facilities. When a SAG is to cooperate with a HAG, units with helicopter refueling facilities should be included in the SAG to increase the effective range and endurance of the HAG.

8305 HELICOPTER IDENTIFICATION/ RECOGNITION AND ATTACK TACTICS

The aim of this procedure is to extend the range at which a surface force can identify/recognize and attack lightly armed surface units such as fast patrol boats.

a. Employment. Helicopters can be employed to investigate contacts held by other units. By day, helicopters should be able to make visual identification/recognition if weather conditions permit. However, at night, a method of illumination is normally required. Identification/recognition and attack procedures are described in paragraph c.

b. Altitude Separation. If more than one missile-armed helicopter is launched, it may be necessary to allocate different height bands for HAG separation. The following altitudes are recommended:

	HAG 1 (Feet)	HAG 2 (Feet)
Illuminator (CANDLE)	1,500	2,000
HAG Commander (CONTROLLER)	800	1,000
Attack Aircraft (ATTACKER)	400	600

If each HAG is operating on a separate frequency, it will be necessary for HAG commanders to man an additional common frequency for coordination. If cooperating with fixed-wing aircraft, altitude separation should be imposed and departures from these altitudes made only while under positive control.

c. Identification/Recognition and Attack Procedures. By day, two aircraft comprise the HAG carrying out this procedure: the CONTROLLER (control aircraft) and the ATTACKER (probe or

attack aircraft). At night, an additional aircraft will be required for illumination (CANDLE). In some circumstances, an AEW aircraft or ship may replace the control aircraft.

d. Day Procedure. The primary requirements for a successful attack are for the ATTACKER to see the target and to be informed when within the maximum range of the missile from the target.

(NC) (NMM) This is achieved using the following steps:

(1) ATTACKER is turned onto the attack heading at a range of about 7,000 yards from the target.

(2) ATTACKER reduces speed to a firing speed of 50 to 70 knots.

(3) CONTROLLER passes target information, such as true bearing and range from the ATTACKER, every 500 yards until ATTACKER sees the target and reports TALLY-HO.

(4) After TALLY-HO, CONTROLLER continues to pass range information until ATTACKER reports BRUISER LOOSE.

(5) CONTROLLER immediately passes an accurate range to enable ATTACKER to work out the required missile time of flight.

(6) For the remainder of the attack until missile impact, CONTROLLER continues to pass range information every 500 yards.

(7) ATTACKER reports BRUISER HIT, for a hit, followed when possible by a target damage assessment, or NO JOY, for a miss.

e. (NC) (NMM) Night Procedure. By night, the movements of ATTACKER and CANDLE must be coordinated. The tactic is illustrated in Figure 8-1.

(1) Setting Up by CONTROLLER. The CONTROLLER:

(a) Initially vectors CANDLE directly towards the target (and makes adjustments later).

(b) Vectors ATTACKER to a fixed station 9,000 yards astern of CANDLE.

(c) When at station orders GANG UP and then maneuvers both helicopters simultaneously, preserving the line of bearing.

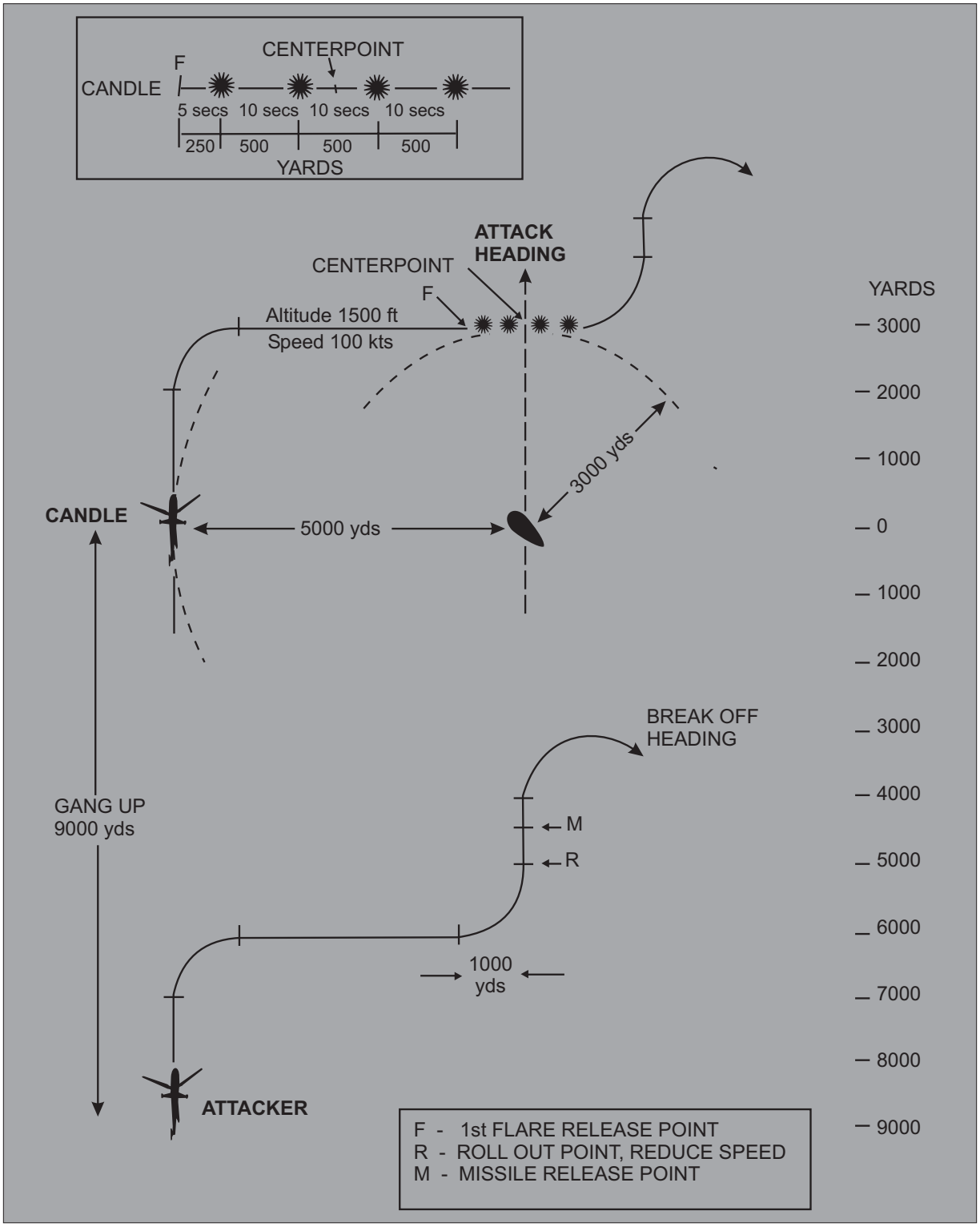
(d) Reports the attack heading, that is, the tandem bearing of CANDLE from ATTACKER.

(e) Adjusts the GANG-UP vector so that CANDLE passes 5,000 yards clear of the target.

(2) Flare Line. The CONTROLLER vectors CANDLE onto the flare line 3,000 yards from the target, at right angles to the attack heading, and with the centerpoint of the flare line opposite the targets position. No allowance is to be made for the targets course.

(a) CANDLEs speed is 100 knots and altitude 1,500 feet during flare drops.

(b) In wind speeds of 0 to 15 knots, CANDLE drops the first flare 1,000 yards (20 seconds) before the centerpoint. Only for wind speeds over 15 knots and within 45 of CANDLEs track, allow 500 yards (10 seconds) early or late as appropriate on the first flare release point. Winds outside of the envelope are to be disregarded.



(NATO-CONFIDENTIAL) (NMM)

Figure 8-1. (NU) (NMM) Ideal Disposition of CANDLE and ATTACKER Tactic

(c) Flare spacing is as follows: in flat calm conditions, eight flares at intervals of 250 yards (5 seconds); in all other conditions, four flares at intervals of 500 yards (10 seconds).

(3) Attack. The attack is achieved using the following steps:

(a) At first flare ignition, ATTACKER turns without further orders onto the attack heading and adjusts speed to 50 to 70 knots on completion of the rollout.

(b) CONTROLLER passes target range from the ATTACKER every 500 yards.

(c) After the last flare drop, CANDLE turns away onto the attack heading without further orders.

(d) ATTACKER fires when ready (ideally within 10 seconds of the fourth flare ignition) or breaks off the attack if the missile is not released by a range of 4,000 yards.

(e) After missile impact, ATTACKER performs an immediate maximum performance turn to port/starboard (more than 90°) and reports BREAKING LEFT/RIGHT and the new heading.

(f) CANDLE complies with the ATTACKER's turn onto the new heading without further orders, remaining more than 3,000 yards from the target.

NOTES

- If helicopter facilities permit, the duties of CONTROLLER can be combined with those of either CANDLE or ATTACKER. The CONTROLLER will always assume the duties of the HAG commander.
- Attacks are normally conducted with ATTACKER at 400 feet (minimum 250 feet), CANDLE at 1,500 feet (minimum 1,000 feet), and CONTROLLER at 800 to 1,000 feet.
- Minimum practical cloud base for these tactics is considered to be 1,500 feet.

8306 (NC) (NMM) OPERATION VELOCIPEDE

In this procedure, patrolling aircraft (MPA or radar-fitted helicopters) can home the HAG or SAG onto enemy fast patrol boats or suspicious radar contacts and illuminate them for identification/recognition, attack, or both.

a. Initiation. On receipt of the first locating report from patrolling aircraft, the OTC:

(1) Orders EXECUTIVE VELOCIPEDE.

(2) Informs the control aircraft of:

(a) The call sign of the senior officer of the HAG or SAG.

(b) The direction of approach of the HAG or SAG.

(c) The track designation of the enemy force to be intercepted.

(3) Designates whether ON TOP or OFFSET illumination is to be used.

b. Homing Procedures. After receipt of the order to execute VELOCIPEDE, the patrolling aircraft continues to shadow the target while the HAG or SAG commander establishes communications with it. The HAG or SAG commander then carries out the following actions:

(1) Identifies and gridlocks the aircraft.

(2) Orders the aircraft to report:

(a) Enemy contacts by grid location or by bearing and distance from the patrolling aircraft of the HAG/SAG.

(b) Target movement.

(3) Calculates a course to intercept the enemy.

(4) Receives updates of enemy position until the enemy is held on radar.

(5) Informs the aircraft of his intentions.

(6) Executes SWAP with the aircraft.

c. Illumination. Illumination can be achieved using the following procedure:

(1) Action by the Scene-of-Action Commander (SAC). The SAC is to:

(a) Call the illuminating aircraft, give expected direction of attack, and state time at which illumination is required. At least 6 minutes notice should be given to allow the aircraft to take up position for illumination.

(b) Position attacking forces and pass any changes in attack heading or illumination time to the illuminating aircraft.

(c) Inform the illuminating aircraft of the altitude of attacking helicopters so that adequate altitude separation can be maintained.

(d) Inform the illuminating aircraft if it is to cease illumination when the attack is completed or if it is required to clear the area.

(2) Action by Illuminating Aircraft Using On-Top Procedure. The illuminating aircraft is to:

(a) Call the SAC at 1 minute to flare release time and give own altitude and the direction in which flares will be laid.

(b) Inform the SAC when commencing the laying of flares.

(c) Continue laying flares, adjusting position when necessary for target movement, until informed by the SAC that illumination is no longer required.

(3) Action by Illuminating Aircraft Using Offset Procedure. The illuminating aircraft is to fly at a minimum range of 3,000 yards from the enemy, on a track at right angles to the direction of attack, and drop an adequate number of flares to illuminate the target. The flare release altitude is between 1,500 to 5,000 feet. A minimum of four flares is recommended. The aircraft is to:

(a) Inform the SAC of the direction in which flares will be laid.

(b) Inform the SAC when commencing the laying of flares.

(c) Continue laying flares (unless ordered to clear the area on completion of the first illuminating run), adjusting position when necessary for target movement, until informed by the SAC that illumination is no longer required.

8307 ATTACK SUPPORT

Attack support is the generic term for all forms of tactical assistance given by a shadower to enable strike, attack, or reconnaissance aircraft to locate their targets.

a. Surface Picture (SURPIC). The SURPIC message format is used for contact reporting during shadowing and attack support operations.

b. Vector-Assisted Attack (VASTAC). VASTAC procedures enable attack aircraft to be vectored to the target by the target reporting unit (TRU). The TRU must be capable of holding both the attack aircraft and the designated target on radar.

(NR) (NMM) Details are described in ATP 31.

8308 — 8309 SPARE

SECTION IV — (NC) (NMM) ANTISURFACE WARFARE WITH SUBSURFACE COOPERATION

8400 GENERAL

Often the submarine may be best placed to deal with a surface threat. By virtue of its covert nature, the attack submarine and especially the SSN is capable of long-term shadowing and subsequently attacking a surface contact. The submarine can also operate in waters where, perhaps due to an unfavorable air situation, other units may not safely venture.

8401 WEAPONS

The submarine may use either torpedoes or ASSMs. Torpedo attacks usually mean that the submarine has to close its target to within 10 nm or less and the fire control solution is obtained from its own sensors(ESM), sonar, periscope, and/or even radar. ASSMs give the attack submarine the option of a longer range attack, if targeting data can be obtained.

8402 ASSM TARGETING

a. Very rarely will it be possible for a submarine to exploit the full range of its ASSMs using its own sensors. Often the passive nature of the sensors will require a cooperative target, and even then, without extensive target motion analysis, the submarine may lack accurate range information. Furthermore, it may be impossible to select one particular target within a group of ships.

b. Link 11, if fitted, and national targeting systems do provide the submarine with a far greater capability to select targets, generate long-range firing solutions, and avoid striking background shipping. Another solution is to provide long-range targeting from a third party. Tradeoffs between submarine covertness, possible counter-detection, and the data refinement necessary to generate a sufficiently accurate firing solution must be considered.

8403 TACTICAL PLANNING CONSIDERATIONS

a. Preplanned Responses.

Given the time delays sometimes inherent with submarine communications, well formulated preplanned responses are essential to ensure actions taken by submarines are in accord with task group objectives. As applicable, this information should be included in OPTASK Supplements or Submarine Assignment Request messages and updated by Submarine Force Summary messages as changes occur. Information must be sufficiently detailed to ensure mission continuance should tactical communications with the submarine be disrupted or when, for whatever reason, it is not feasible for the submarine to communicate.

(1) General Planning Considerations. Preplanned responses should reinforce the capability of the submarine on its own accord to undertake offensive or defensive action in consonance with the mission of the task group to which it is assigned. In essence, this means the submarine must always know whether it is to 1) LOOK, TALK, TRACK; 2) LOOK, SHOOT, TALK; 3) LOOK, TALK, SHOOT; or any other combination desired by the OTC. While requirements will vary with the scenario and threat, at a minimum preplanned responses should address desired actions the submarine is to take if:

(a) Enemy surface or subsurface units are detected prior to commencement of hostilities. Include specific Rules of Engagement (ROE), as applicable.

(b) A target transits beyond the submarines engagement envelope or out of its immediate waterspace area both prior to and during hostilities, as applicable.

(c) Long-range cruise missile engagements are to be *undertaken independently or only after coordination* with the SOCA.

(d) Over-the-horizon (OTH) track data is inadequate to permit cruise missile employment.

(e) Acoustic, electronic, or visual battle damage assessment (BDA) is desired and how the submarine will be keyed to event timing and the location or direction of engagement.

(f) *Contact reporting* (i.e., task group alertment) or *contact engagement* is to take precedence; and when, how, and to whom should the submarine report under either circumstance.

(2) Submarine Target Priority List (TPL). Providing the submarine with a TPL specified by the OTC (as may be developed jointly by the ASWC/ASUWC) is an essential part of preparing for and executing submarine/task group operations. Because of the submarine's unique capabilities and/or the area in which it is operating, the TPL for a submarine may be quite different from that of other elements of the force.

(a) During the time the submarine is operating with a task group, the TPL supersedes any previous target priority list, including that of the SUBOPAUTH, and becomes especially important if submarine/task group tactical communications are disrupted. When combined with available threat intelligence, the TPL provides guidance to the submarine commanding officer upon which to base his specific tactical surveillance, search, and attack plans. Additionally, it serves as a useful decision aid should the submarine be confronted with multiple high-interest targets simultaneously.

(b) The TPL may be conveyed to the submarine by governing OPTASK listing of contacts of interest (if the OPTASK or extracts there of are held by the submarine) and simply referenced in subsequent messages, or be specifically addressed in the Submarine Assignment Request message. In turn, it may be updated at any time during the course of operations in the Submarine Force Summary, Submarine SITREP, or OPTASK Supplemental message.

b. Specific Target Planning and Engagement Execution. Refinement from a general ASUW (or ASW) search role to engaging a specific target will necessarily depend upon the manner in which the submarine is to undertake the engagement. If the intent is for it to position and attack independently using organic sensors, initial tasking along with target location cueing (see aided intercept in ATP 18) may be all that is necessary from the SOCA. On the other hand, submarine attacks coordinated with other force assets normally will require detailed instructions, particularly if third-party OTH targeting assistance or post-engagement BDA information is required.

c. Contact Turnover. During coordinated submarine/task group operations, shifting prosecution of a specific target between other force assets and a submarine, or between submarines, may become necessary. This will generally occur when the target moves into or out of the submarines area, and the area dimensions and/or designation cannot be changed rapidly. If requested by the submarine(s) involved, the OTC should provide for aircraft communications relay. ATP 18 and APP-11 contain, respectively, the procedures and the structured message formats to be used for contact handover.

8404 COMMUNICATIONS

Communications with submarines differ significantly from those with other force assets and present the most significant challenge in effecting submarine tasking and coordination. Especially in the coordination of antisurface operations during rising tensions, some compromises between covertness and coordination will be necessary to coordinate antisurface operations.

8405 — 8409 SPARE

SECTION V — THIRD-PARTY TARGETING

8500 GENERAL

Weapon range of ASSM exceeding the sensor range of the missile-firing unit requires the evaluation and transmission of target data by a third party acting as an external sensor. When there is a requirement to disguise the presence or identity of a missile-carrying unit from a target within the firing-units sensor horizon, third-party targeting may be used. Surveillance, identification, classification, recognition, and reporting as a contribution for the surface picture compilation by this external sensor is a prerequisite for the firing unit to decide target selection, weapon, and firing policy. Damage assessment after missile engagement is another important function for an external sensor.

8501 DEFINITIONS

a. Third-Party Targeting (TPT). TPT is the evaluation and reporting/transmission of data for the surface picture compilation and/or missile engagement by a target reporting unit (TRU).

b. Over-the-Horizon Targeting (OTHT). OTHT is the location evaluation and reporting/transmission of data for a target ***outside*** the active sensor horizon of a missile-firing unit by means of a TRU.

c. Disguised Targeting. This is the evaluation and reporting/transmission of data for an enemy within sensor range of a missile-firing unit aimed to disguise its presence.

d. Remote Targeting. This is the evaluation of target data for a missile engagement by means of a system-integrated remote sensor platform capable of midcourse and terminal command override.

e. Target Reporting Unit (TRU). TRU is a sensor platform (manned or remotely piloted). This unit is able to evaluate and report/transmit data for surface picture compilation and missile engagement to a missile-firing unit.

f. Voice/RATT Reporting. This is the reporting of data for surface picture compilation and missile engagement for a TRU to a missile-firing unit by voice/RATT.

g. Link Reporting. This is the transmission of data surface picture compilation and missile engagement from a TRU to a missile-firing unit by automatic data transmission in real time (Link).

8502 OVER-THE-HORIZON TARGETING CONSIDERATIONS

a. Appropriate OPGEN or OPTASK ASUW. The OTC normally promulgates his antisurface warfare policy using the appropriate OPGEN or OPTASK ASUW.

b. Employment of OTHT Weapons. Normally OTHT-capable weapons are force weapons and therefore are employed as directed by the OTC or delegated authority.

c. Policy Considerations. The following is a list of items to be considered for inclusion in the policy:

(1) Retain or delegate authority to initiate OTHT and coordination.

(2) Target priorities and desired results.

(3) Firing units in order of preference.

(4) TRUs in order of preference.

(5) Force defensive action.

(6) SAG employment.

(7) Geographical and environmental aspects.

(8) EMCON.

(9) Sensor employment (including parameters of target vehicle emitters).

(10) Weapon release criteria.

(11) Mutual interference.

(12) Weapon economy.

(13) Damage assessment.

8503 ACCURACY OF TARGET DATA

Because of the finite size of the search pattern of an ASSM, the greatest possible accuracy of targeting information is required to ensure a high probability of missile acquisition which depends upon:

a. The accuracy of the sensor(s) used.

b. The positional accuracy of, and time delay in, plotting and calculating target data (course, speed, position, and forecast movement).

c. The ability of the missile and/or reporting unit to discriminate between targets in formation to ensure engagement of the optimum target.

d. The positional accuracy of the data link/voice reporting reference point.

e. The accuracy of transfer of target data to the ASSM system in the firing system.

f. The accuracy of ASSM navigation and/or guidance systems in the flight profiles.

g. The ability to update target data to the missile in flight.

h. The countermeasures employed by the target and EPM capabilities of ASSM and launch or reporting unit.

8504 SELECTION AND STATIONING OF A TARGET REPORTING UNIT

a. Providing Target Data. Where target data cannot be provided by the ASSM launch vehicles own sensors, selection of the TRU is very important to ensure provision of the most accurate and up-to-date information. Target reporting units may include:

(1) Radar and/or ESM-fitted helicopters.

(2) Shipborne ASW aircraft.

(3) Maritime patrol aircraft (MPA).

(4) Land- or carrier-based fighter/attack/reconnaissance aircraft.

(5) EW/AEW aircraft.

(6) Land-based ESM and radar stations, including installations, such as oil and gas platforms.

(7) Surface units, preferably capable of data link transmissions to the firing unit.

(8) Submarines.

(9) Remotely piloted vehicles (RPVs).

b. Radar-Fitted Aircraft. These aircraft usually provide the most effective platforms by virtue of their mobility, extended sensor horizon, and endurance. Reporting accuracy may be increased if the aircraft is fitted with data link transmission facilities.

c. TRU Stationing. Stationing the TRU will depend upon:

(1) Type of vehicle used, including self-defense capability of the TRU.

(2) Sensor fit. Active sensors will provide a more accurate solution than that obtained by correlation and triangulation of passive data. The employment of active sensors will depend upon the emission policy to which the TRU is subject. The range of the TRU from the target will be a function of the discrimination possible with active sensors and the degree of risk to the TRU acceptable to the OTC.

(3) Range of ASSM engagement.

(4) Communication range between the TRU and the ASSM platform.

(5) Sensors available in the firing unit.

(6) ASSM flight profile, missile-homing search capability, and missile facility to receive midcourse guidance corrections.

(7) Geographic and environmental constraints.

(8) Geometric considerations, including the need for passive sensor baseline.

(9) Enemy's defensive systems.

(10) Rules of Engagement (ROE).

(11) Required recognition level and required recognition confidence level.

8505 TARGET REPORTING

Target data from the TRU can be transferred to the firing unit by voice/RATT report or by data link.

a. Voice/RATT Reporting. This has the disadvantage of being slow in data rate, prone to inaccuracy, and unless encrypted, it is not secure. Where voice transmissions are unencrypted, the use of a low-grade code is essential to avoid compromise of friendly positions. Voice/RATT reports need to be frequent and, if reports are passed in grid, a gridlock is required at the earliest opportunity.

b. Link Reporting. The data link can be directional to a dedicated ASSM platform, or omnidirectional to permit a number of suitable units to achieve a firing solution. The link need not be dedicated to TPT, because of the high capacity of modern data link systems, but may be usefully employed simultaneously in other fields of warfare to best exploit the capabilities of the TRU. Caution should be exercised when using data link to ensure sufficient gridlock accuracy and track quality for discriminative targeting of a multiship formation.

c. (NR) (NMM) Methods Used for Passing Target Bearing and Range. Table 8-2 (NMM) shows the methods that may be used for passing target bearing and, when available, range. The selection of the most suitable method depends upon the tactical situation and the equipment of the participants. It must be established by the firing unit. The TRU should inform the firing unit if it is unable to comply and propose an alternative method. Details are in ATP 31.

Table 8-2. (NU) (NMM) Methods for Passing Target Position

Method		Transmission By	Target Position Passed As	Remarks
ALFA		VOICE	Bearing and range from TRU	Firing unit maintains radar contact with TRU
BRAVO	ONE	LINK		
	TWO	VOICE	1. Bearing and range from reference position, designated as follows: A. Indicated units B. Computer reference point C. Pre-ordered reference point D. Grid or geographic reference point E. Helicopter reference point (HRP) 2. Grid or geographic coordinates.	1. Designated reference point is passed with method being used. 2. Reference position designated at 1A is moving and could be a firing unit. 3. Computer reference point designated at 1B is geographically fixed at an indicated time and should be updated every 15 minutes.
CHARLIE		VOICE	Bearing and range from firing unit.	1. May be employed when firing unit does not hold TRU on radar, e.g., when firing unit is operating under silent EMCON. 2. This method is not suitable for multi-firing ship situations. 3. If the launching platform is fitted with tacan, EMCON permitting, the TRU may “Request tacan” to initiate frequent target reports.
DELTA	ONE	LINK	Bearing only from TRU.	Employed when TRU holds target on passive sensors only.
	TWO	VOICE		

NOTES:

1. If EMCON permits, Method ALFA is preferred for any number of firing units.
2. If Method ALFA cannot be used and there are only one or two firing units, Method CHARLIE is preferred with TRU reporting data to each firing unit. If there are more than two firing units, Method BRAVO ONE/TWO 1A or BRAVO ONE/TWO 1B, depending on EMCON in force, is preferred.
3. Whenever voice is employed, secure speech equipment should be used. If not fitted, low-grade codes are acceptable, bearing in mind time delays are involved.

(NATO-CONFIDENTIAL) (NMM)

SECTION VI — DEFENSE AGAINST SURFACE THREAT

8600 DEFENSE AGAINST MISSILE-ARMED SHIPS

a. For a successful defense against missile-armed ships, the following criteria must be considered in addition to other procedures for antisurface warfare:

(1) Detection of the missile carrier(s).

(2) Actions upon interception of threat radars.

(3) Destruction or neutralization of the missile carrier(s) before reaching its engagement range against friendly forces.

(4) Detection of missile(s) in flight.

(5) Deception and jamming of missile before lock-on.

(6) Measures to break lock-on of missile.

(7) Destruction of missile.

b. Details of defense against missile attacks are set forth in Chapter 7.

8601 DETECTION OF MISSILE CARRIER(S)

Early warning of missile-launching surface craft is of vital importance for the defense of own forces to ensure the timely initiation of suitable defense measures. Especially, in this context ESM and airborne surface surveillance efforts must be carefully considered and coordinated.

a. Target/Threat Radars. The interception of electronic emissions will normally be the first indication of the enemy. Therefore, those radar frequencies should be watched continuously that are known to be surveillance or fire-control radars of missile carriers and would therefore pose an immediate threat (e.g., SQUARE TIE). Careful ESM tasking is required, including the determination of threat radars.

b. Use of Active Sensors. The policy for using own airborne and surface platform radars must be matched carefully with ESM tasking in order to provide maximum warning and minimum interference to ESM equipment and minimum ESM data to a launching platform.

8602 ACTIONS UPON INTERCEPTION OF TARGET/THREAT RADARS

a. Target/Threat Radar Detection. Once a target/threat radar is detected, the OTC may decide to attack the missile carrier or avoid action:

(1) If an attack is intended, maneuver at maximum speed to bring own weapons to bear and to minimize enemy weapon effectiveness.

(2) If action is to be avoided, turn away from missile carrier at maximum speed, try to show the smallest possible radar cross-section, and keep firing arcs open.

b. OTCs Considerations. In addition to the alteration of course, speed, and formation, and depending on whether the decision is to attack or to avoid action, the OTC should consider the following actions:

(1) Actions which cannot be detected by the enemy. Readiness to:

(a) Employ chaff confusion/distraction.

(b) Launch decoys.

(c) Use jammers.

(d) Employ fire-control radars and weapons immediately.

(2) Actions which are likely to be detected by the enemy. Employment of:

(a) Chaff confusion and jammers to cause confusion to the enemy's picture of the situation.

(b) Own active sensors.

8603 ANTI-FPB OPERATIONS

Table 8-3 contains a checkoff list of points to be considered by the OTC during anti-FPB operations. Not all of these points will apply to every situation. Additional points to be considered may be found in Table 8-1.

(NR) (NMM) Details on defensive operations against fast patrol boats (FPBs) are set forth in ATP 31.

8604 AIR ANTI-FPB OPERATIONS

The following paragraphs describe airplans that may be employed by MPA and helicopters during anti-FPB operations.

8605 AIR PLAN BLUEBELL

a. Purpose and Use.

(1) Air Plan BLUEBELL is designed for use by MPA employed on anti-FPB operations in support of a surface force. The aircraft's primary search sensor will be radar. The airplan is designed to provide warning of approaching FPBs in the following situations:

(a) Across a given sector, when an assessment can be made of the FPBs' probable direction of approach.

(b) All round the surface force, when the FPBs' direction of approach cannot be assessed.

(2) The OTC attempts to assess the direction from which the FPB threat can be expected and assigns MPA to execute the appropriate form of the airplan. Aircraft should report all contacts to the OTC immediately, but should not deviate from the patrol to investigate or classify contacts unless specifically ordered to do so by the OTC.

(3) Air Plan BLUEBELL is designed for use in open-ocean waters. When operating in confined waters or in areas of dense shipping, a geographic or relative airplan, such as Air Plan 5, may be considered to be more appropriate.

b. Description.

(1) Air Plan BLUEBELL is designed to provide sufficient warning across a given sector for helicopters or probe aircraft to intercept, identify, and engage FPBs before they can reach missile-firing position. When aircraft are on all-round patrol, the warning is only sufficient for interception. In both

Table 8-3. (NU) Anti-FPB Checkoff List

PRIOR TO ATTACK

1. Avoid FPB probability areas. Transit in daylight if possible.

2. Very bad weather conditions inhibit FPB operations. Sea states 5 or less may be advantageous to the FPB. Take this into account when planning transits.

3. Prepare/review preplanned responses.

4. Mount maximum air surveillance/reconnaissance all around the force and/or in the threat direction.

5. If threat direction is known, use pickets, barriers, or SAGs (in advanced position).

6. Identify all contacts as early as possible. Use surface and air units.

7. Select an inner or outer screen, depending on circumstances.

8. Review EMCON plan and EW tasking.

9. Review COMPLAN to ensure that it supports anti-FPB operations.

10. Assume the appropriate degree of readiness. Keep air assets at a high degree of availability.

11. Keep a clear and up-to-date surface picture in which own helicopters, direct support aircraft, and chaff are incorporated to prevent confusion and surprise.

(NC) (NMM)

12. Consider random or dispersed formation.

13. Carry out a very long-leg zigzag with best speed.

WHEN FPB ATTACK DEVELOPS

1. Promulgate the appropriate threat warning.

2. Assume a higher degree of ASUW/AAW readiness.

3. Take appropriate torpedo countermeasures.

4. Ship's weapon systems are to be used in accordance with standard doctrine.

5. Firm weapon coordination is required.

6. Employ all other possible decoys.

7. Assume the highest aircraft alert state.

(NC) (NMM)

8. Request/order air attack by fixed wing aircraft or HAG.

9. Carry out a short-leg zigzag with high speed.

10. Detach the SAG. Station escorts between the threat and the main body.

11. Turn away the main body.

12. Jam appropriate radars and communications.

13. Fire chaff for confusion.

14. Fire chaff for distraction.

15. Use smoke screen, combined with evasion and chaff.

16. Use illuminants to provoke or prevent enemy maneuvers and possible to achieve blindness.

cases, an alteration of course by the force away from the FPBs will increase the time available to intercept, identify, and engage.

(2) **(NC) (NMM)** Six different sectors are detailed in Air Plan BLUEBELL. They are the ahead, astern, abeam (starboard and port), all-round, and specific sectors.

c. (NC) (NMM) Geometry. The geometry of Air Plan BLUEBELL is based on:

(1) A surface force speed-of-advance of 15 knots.

(2) A maximum sustained FPB speed of 35 knots, giving a closing speed of:

(a) 50 knots from ahead of the force.

(b) 30 knots from abeam.

(c) 20 knots from astern.

(3) A maximum missile firing range of 20 nm. Factors concerning probability of detection, aircraft scouting speed, and detection ranges, upon which Air Plan BLUEBELL is based, are provided in Table 8-4.

d. (NC) (NMM) Coverage and Security of Search.

(1) Maximum coverage by an aircraft employed on sector patrol will vary with aircraft speed and sector patrolled. Figure 8-2 gives maximum coverage in degrees for each sector patrolled and for three ranges of aircraft speed. Coverage in the ahead, astern, and abeam sectors is equally distributed either side of the centerline.

(2) Patrol in the all-round sector may be in a counterclockwise or clockwise direction. The direction of patrol should be chosen by the aircraft based on:

(a) Wind direction.

(b) Radar sea returns.

(c) Proximity of land to the force.

(3) Security of search is 95 percent, based on the assumptions in paragraph c. and Table 8-4.

e. (NC) (NMM) Altitude. The optimum altitude to fly on the airplan is best determined by the aircraft and will normally be optimum radar search altitude for prevailing conditions. Before commencing the airplan in support of a surface force, the aircraft is to inform the OTC of the preferred search altitude and the aircrafts true airspeed (TAS) at that altitude.

f. (NC) (NMM) Format of Tasking Message.

A. Air plan sector in NUCO. Sectors are designated as follows (see Figure 8-2):

SECTOR ONE	Ahead sector
SECTOR TWO	Astern sector
SECTOR THREE	Starboard beam sector

SECTOR FOUR Port beam sector

SECTOR FIVE All-round sector

SECTOR SIX Specific sector, such as 140 to 180 degrees true.

B. Length of time OTC wishes the aircraft to remain on the air plan.

C. PIM. Course in degrees and speed of advance in knots.

D. Start time of the air plan.

E. Additional instructions. The following should be covered:

1. Frequency with which reports are to be updated.

2. Information on cooperating units.

3. Whether the aircraft is to close contacts to identify them.

Table 8-4. (NU) (NMM) Criteria for Air Plan BLUEBELL

	SECTOR PATROL	ALL-ROUND PATROL
PROBABILITY OF DETECTION	95 percent assumed, by radar, for an FPB at 25 nm in sea states 0 to 4.	67 percent assumed, by radar, for an FPB at 35 nm in sea states 0 to 4.
AIRCRAFT SCOUTING SPEED	90 percent of true airspeed (TAS) (see Note 1).	200 knots minimum (see Note 2).
DETECTION RANGE	FPBs should be detected before they reach a position: (a) 45 nm ahead of force, (b) 35 nm abeam, or (c) 30 nm astern To allow sufficient time for interception, identification, and engagement by helicopters or probe aircraft.	FPBs should be detected between 30 to 40 nm from the force to allow sufficient time for interception by helicopters or attack aircraft.

NOTES:

1. In Figure 8-2, three ranges of TAS are shown. The lowest speed in each range has been used.
2. An increase in TAS will increase the security of the search. However, it should be kept in mind that a speed increase may adversely affect the aircraft's time on task.

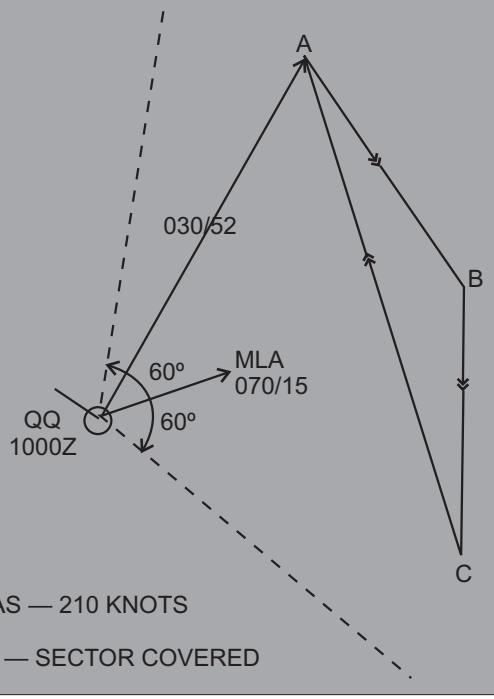
(NATO-CONFIDENTIAL) (NMM)

SECTOR ONE—AHEAD SECTOR

AHEAD	TAS (knots) AT PATROL ALTITUDE		
	160-179	180-199	200-220
ORIGIN RELATIVE TO QQ OR ZZ	326/48	322/51	320/52
LEG A-B	073/28	076/32	075/35
LEG B-C	107/28	104/32	105/35
LEG C-A	270/54	270/62	270/68
TOTAL COVERAGE*	100º	110º	120º

*Equally divided about the fore and aft line.

EXAMPLE
EXECUTE AIRPLAN BLUEBELL
ALFA SECTOR NUCO ONE UNNUCO
BRAVO UNTIL FURTHER ORDERS
CHARLIE NUCO 070T/15 UNNUCO
DELTA 1000Z
ECHO Report all contacts and update every 45 minutes.
No identification required.



(NATO-CONFIDENTIAL) (NMM)

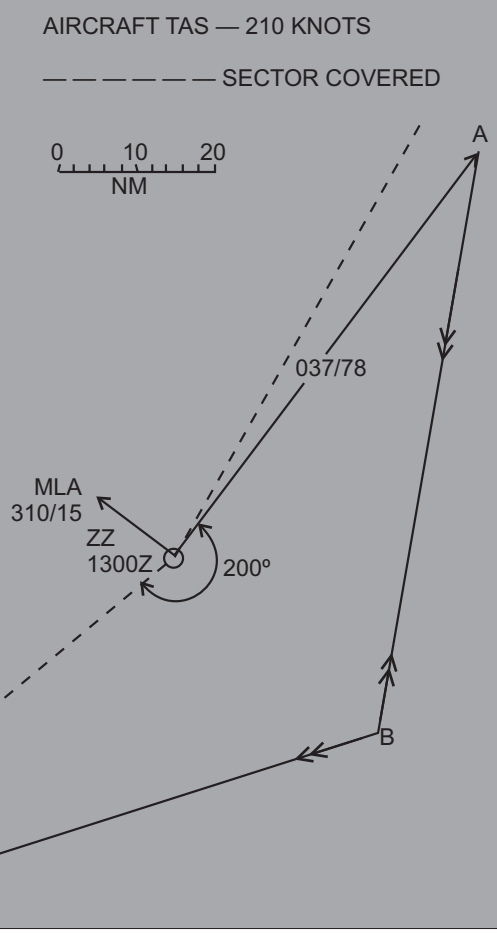
Figure 8-2. (NU) (NMM) Aircraft Flightpaths for Air Plan BLUEBELL

SECTOR TWO—ASTERN SECTOR

ASTERN	TAS (knots) AT PATROL ALTITUDE		
	160-179	180-199	200-220
ORIGIN RELATIVE TO ZZ OR QQ	099/69	095/77	087/78
LEG A-B	250/72	250/81	240/90
LEG B-C	290/72	290/81	300/90
TOTAL COVERAGE*	180º	190º	200º

*Equally divided about the fore and aft line.

EXAMPLE
EXECUTE AIRPLAN BLUEBELL
ALFA SECTOR NUCO TWO UNNUCO
BRAVO UNTIL FURTHER ORDERS
CHARLIE NUCO 310T/15 UNNUCO
DELTA 1300Z
ECHO Report all contacts. Investigate all those within. ___nm of force.



(NATO-CONFIDENTIAL) (NMM)

Figure 8-2. (NU) (NMM) Aircraft Flightpaths for Air Plan BLUEBELL (Cont.)

SECTORS THREE AND FOUR—ABEAM SECTORS

STARBOARD (THREE)	TAS (knots) AT PATROL ALTITUDE		
	160-189	190-209	210-220
ORIGIN RELATIVE TO ZZ OR QQ	043/49	037/55	035/59
LEG A-B	178/36	178/44	178/49
LEG B-C	190/18	190/22	190/25
TOTAL COVERAGE*	120º	130º	140º

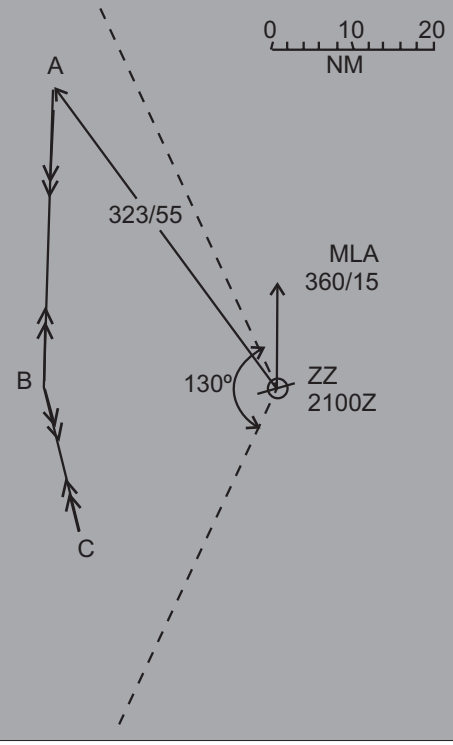
*Equally divided fore and aft of the beam.

PORT (FOUR)	TAS (knots) AT PATROL ALTITUDE		
	160-189	190-209	210-220
ORIGIN RELATIVE TO QQ OR ZZ	317/49	323/55	325/59
LEG A-B	182/36	182/44	182/49
LEG B-C	170/18	170/22	170/25
TOTAL COVERAGE*	120º	130º	140º

*Equally divided fore and aft of the beam.

AIRCRAFT TAS — 205 KNOTS

— — — — — — SECTOR COVERED



EXAMPLE	(SECTOR FOUR)
EXECUTE	AIRPLAN BLUEBELL
ALFA	SECTOR NUCO FOUR UNNUCO
BRAVO	UNTIL FURTHER ORDERS
CHARLIE	NUCO 360T/15 UNNUCO
DELTA	2100Z
ECHO	Report all contacts. No identification required. SEA KING c/s 44 carrying flares airborne. Frequency designator (ASW helicopter control unit). IFF (modes and codes in NUCO).

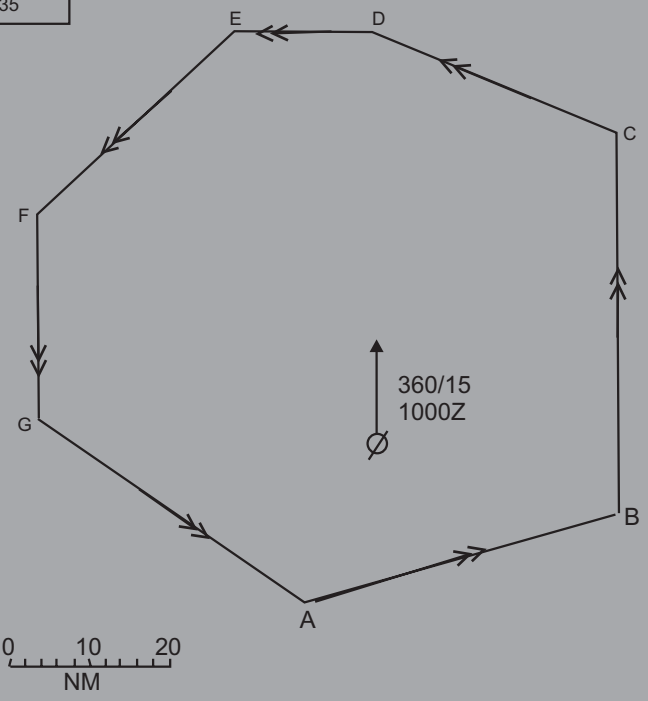
(NATO-CONFIDENTIAL) (NMM)

Figure 8-2. (NU) (NMM) Aircraft Flightpaths for Air Plan BLUEBELL (Cont.)

SECTOR FIVE—ALL-AROUND SECTOR

FLIGHT PATH DIRECTION RELATIVE TO PIM*		COUNTER-CLOCKWISE	CLOCKWISE
ORIGIN RELATIVE TO ZZ OR QQ		204/25	156/25
LEG	DISTANCE	RELATIVE TRACK	
A-B	49	074	286
B-C	56	359	001
C-D	39	290	070
D-E	20	270	090
E-F	40	228	132
F-G	29	180	180
G-A	48	125	235

*Before deciding flightpath direction, the aircraft captain should consider, among other things, wind direction, resulting sea returns on radar, and proximity of land to the force.



EXAMPLE (COUNTER CLOCKWISE)
EXECUTE AIRPLAN BLUEBELL
ALFA SECTOR NUCO FIVE UNNUCO
BRAVO UNTIL FURTHER ORDERS
CHARLIE NUCO 360T/15 UNNUCO
DELTA 1000Z
ECHO Report all contacts.

SCOUTING SPEED — 200 kts

NOTE: Although the aircraft's flightpath is not symmetrical around the force, the airplan's design provides equal coverage whatever the direction of approach of enemy FPBs. The asymmetry of the pattern is caused by the relationship between aircraft flightpath and velocities of the surface force and FPBs.

(NATO-CONFIDENTIAL) (NMM)

Figure 8-2. (NU) (NMM) Aircraft Flightpaths for Air Plan BLUEBELL (Cont.)

SECTOR SIX—SPECIFIC SECTOR

DATUM POINTS RELATIVE TO QQ OR ZZ					
A	360/55	C	090/45	E	270/45
B	040/53	D	180/30	F	320/53

SPECIFIC SECTOR	TAS (kts) AT PATROL ALTITUDE		
	160-179	180-199	200-220
	BARRIER LENGTH (nm)		
	57	64	71
TOTAL COVERAGE WHEN USED*			
AHEAD	80º	100º	120º
ON THE BOW	85º	105º	120º
ON THE BEAM	95º	115º	130º
ON THE QUARTER	130º	145º	155º
ASTERN	140º	150º	160º

*Figures are approximate and depend on the exact location of the barrier. Some interpolation may be necessary. It is suggested that the lowest figure be used to ensure security of search.

KEY

AIRCRAFT TAS — 198 KNOTS

DATUM POINTS

DATUM LINE

SECTOR COVERED

Aircraft flight path S to F to E to T and reverse.

EXAMPLE (SECTOR 240 to 345 TRUE)

EXECUTE AIRPLAN BLUEBELL

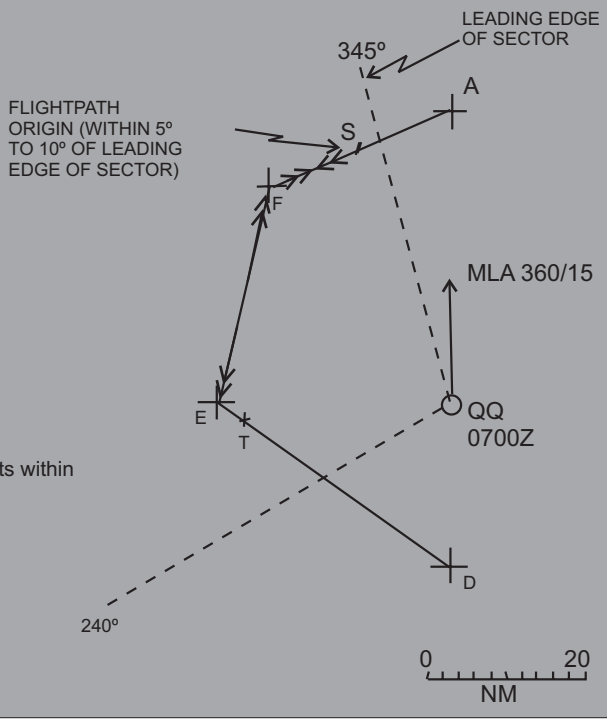
ALFA NUCO 240T/345T UNNUCO

BRAVO UNTIL FURTHER ORDERS

CHARLIE NUCO 360T/15 UNNUCO

DELTA 0700Z

ECHO Report all contacts. Investigate all contacts within ___nm of the force.



(NATO-CONFIDENTIAL) (NMM)

Figure 8-2. (NU) (NMM) Aircraft Flightpaths for Air Plan BLUEBELL (Cont.)

SECTION VII — GUIDELINES FOR MULTINATIONAL EMBARGO OPERATIONS

8700 GENERAL

Embargo/Peacekeeping operations are invariably prompted by political/diplomatic considerations and as such are characterized by the following:

a. Offensive Action. Offensive or aggressive action is unlikely to be permitted as a first resort. Indeed a de-escalatory posture may be ordered initially. Nonetheless, diplomatic developments may eventually require retaliatory/punitive action.

b. Enemy. There is unlikely to be a force or group who can be treated as an enemy in the traditional manner.

c. Forces and Groups. The forces and groups in the area of operations may be aligned on national, ethnic or religious lines. In the latter cases this may cut across established national boundaries. This may in turn lead to ambivalent attitudes from neighboring states and action may be necessary with respect to apparently third party nations.

d. Rules of Engagement (ROE). Freedom of action by own forces will be determined by ROE, probably dictated by diplomatic rather than military imperatives.

e. Central Control. In addition to the prohibitions imposed by ROE, there are likely to be other considerations in which real time consultation is necessary both with a shore-based chain of command and non-military directing bodies (e.g., UN) before action is permitted

f. Multinational Forces. The forces involved in enforcing any internationally directed sanctions are themselves likely to be international in composition. They will therefore contain disparate and dissimilar units with varying degrees and areas of expertise. This will in turn impact on ROE interpretation, force disposition, force cohesiveness, tactics and procedures and prevention of mutual interference.

g. Joint Operations. Embargo operations are most likely to be "joint" by nature. Command relationships (AJP 1) will reflect this. Maritime forces will require the support of other services, including civil authorities, to achieve their mission, much as they will require maritime support to achieve their own.

h. Geographical Constraints. Action in pursuit of the diplomatic aims of any operation is likely to be only permissible within a defined geographic area. There is a high probability that this area will include littoral waters.

i. Political Constraints. The level of involvement by individual allied nations may differ due to national commitments and policy. The degree of willingness to accept damage and casualties will be a key factor.

j. The Media. Any operation is likely to take place under the spotlight of international media and indeed use of the media must be part of the Commander's concept of operations. Consequently media perception of the results of military decisions at all levels must always be a consideration.

8701 SCOPE OF OPERATIONS

While the nature of each individual operation is likely to have unique aspects, in all likelihood unforeseen until the inception of the task, there are equally likely to be common threads running through each operation. In broad terms the task will fall under the general headings described in NATO CONMAROPS.

a. Demonstrate Forward Presence. The Task Force will need to establish an overt presence in the area and to make all parties aware of its capabilities and intentions. This may also involve information operations and the use of Psy Ops and in particular media coverage in order to reach both the political leaders and the community at large. In some cases this alone may achieve the aims of the Task Force.

b. Carry Out Surveillance. In order to establish its presence the Task Force will be required to carry out surveillance of its designated Area of Operations in order to establish the optimum positions from which to maintain that presence. In so doing, the TF will have to establish the following.

(1) Commercial and civilian traffic patterns both in the air and at sea.

(2) Traffic density.

(3) Military operational patterns in all three environments, and

(4) Refine the impact of environmental factors on TF capabilities — in particular sensor performance.

All these elements will impact directly on the integrity of the surveillance product and its sustainability, as well as providing important baseline information for indications and warnings.

c. Carry Out Peacekeeping/Embargo Operations. In view of the nature and range of maritime sensors (both active and passive) and weapons, the Task Force's area of interest and involvement is over land. Some or all of the following activities may be involved.

(1) Monitoring military activity and movements in all three environments and reporting such activity up the chain of command. Certain activity and movements may have been proscribed by international (UN) edict and may attract intervention or retribution.

— Assets may be required to be on notice to carry out this task.

(2) Monitoring commercial traffic in order to enforce embargo orders on specified commodities.

— Assets will be required to be deployed to ensure that the integrity of the embargo is maintained and to carry out enforcement action when needed.

(3) Providing protection of specified commercial shipping from interference by third parties. In a scenario short of all out conflict, politico-diplomatic imperatives and indeed risk levels may dictate that measures up to and including the introduction of full Naval Control of Shipping. In this situation alternative but less rigorous measures such as "accompaniment" may be appropriate.

— Assets will in all likelihood be required to be dedicated to this task alone.

(4) Taking enforcement action. In addition to maintaining a comprehensive search and monitoring operation, when violations are detected, effective policing action will be required.

— Assets are required to be available from amongst those engaged in monitoring traffic. Their diversion to enforcement must not endanger the integrity of the search.

d. Carry Out Evacuation. This may involve the removal of civilian or military personnel in a wide variety of possible scenarios. EXTAC 1010 provides guidance on non-combatant evacuation operations. Common threads are likely to be:

(1) The need for a landing force to organize and liaise with shore authorities or, in the worst case to provide protection. The nature of its task will determine its size and composition.

(2) Identification of an egress route. This brings the requirement for a port or beach-head from which to carry out the evacuation or alternatively the uninterrupted use of an airhead, which could involve a major land force operation to secure. An overland exit is also a possibility but will involve maritime forces to a lesser degree.

(3) In the absence of air evacuation, the use of specialist shipping may be necessary either to beach and/or to embark military equipment or transport large numbers of personnel, together with appropriate medical facilities.

(4) Resources required to carry out an evacuation on a large scale are likely to exceed what is available in the area of operations. While assets should not be required at short notice for this task, contingency planning must be carried out (in any case this may have already been done at the national level) and units earmarked — in particular any specialist assets that have yet to be deployed into theater. These must include logistic units to handle large scale movements of personnel and equipment, as well as medical units to receive evacuees and deal with welfare problems amongst them.

(5) It is possible that the provision of assistance to shore may stop short of evacuation but may necessitate the provision of humanitarian aid. In this instance many of the elements mentioned above will still be required, however the emphasis will be on bringing them to the people affected. In addition numbers involved are likely to be far higher with the consequent logistic load in providing large amounts of food and other essentials. EXTAC 1011 provides specific guidance.

8702 OPERATIONAL REQUIREMENTS

The Force Commander will require at his disposal:

a. Surveillance assets in all three environments. These should include long range, long endurance shore-based aircraft to ensure wide area coverage.

b. Access to shore-based maritime and land intelligence analysis and reports. The ability to use near-real-time wide area product utilizing overhead resources is highly advantageous, as is the ability to send/receive classified imagery on line.

c. Access to information concerning civil air and sea movements, including commercial information relating to cargo. This may require a shore support organization to filter and collate.

d. A clear command chain. This link to the political diplomatic decision-makers will be required for real-time management of incidents to ensure that events are not allowed to damage diplomacy and equally that military forces can negotiate relaxations to political directives to ensure their own safety. A robust communications architecture will be required to support this.

e. Units ready or on notice to carry out follow-on tasks (e.g., sanction enforcement).

f. Logistic support afloat and/or ashore.

8703 FIRST STAGE PREPARATIONS

Even prior to departure for the Operational Area there are certain matters the Task Force Commander must address; some in conjunction with his operational authority. The TF Commander must ensure the following:

a. That the task, pertinent ROE and political policy are accurately and unambiguously defined. In particular both politicians and the military must be agreed on the concept of what is both achievable and allowed. This is of importance when dealing diplomatically with the nation or group against whom the operation is directed and when planning information operations/media coverage. The task, ROE and political policy must subsequently be promulgated widely in the OPGEN.

b. That the legal basis of the task is established and that the legal limits of what action is or is not permitted are known. This must be thoroughly understood by all subordinate commanders.

c. The level of risk of damage and casualties that are politically acceptable has been established.

d. That an "in-depth" threat analysis is carried out on any likely aggressor nation.

e. That, in light of the above, the force mix and capabilities match the demands of the task. If this is not the case, representations must be made to either alter or add to the Task Force or reduce the scope of the task.

f. That a thorough environmental brief is obtained on the geographical area of operations. This should include predictive analysis of weapon and sensor performance, particularly as affected by the littoral environment.

g. That Rules of Engagement (ROE) are critically examined. The TF Commander must be satisfied that:

(1) Self-defense of the force within the level of acceptable risk is possible in light of the known capabilities of any potentially hostile nation.

(2) Units will be able to carry out their task. With a detailed knowledge of the characteristics of his own units' weapons and sensors coupled with examination of the restrictions placed on their use, he must establish that the task remains achievable. In particular he must be sure that any graduated response called for is possible and permissible with the weapons and sensors carried. For example, weapons relying on a laser-based fire control system would not be available when the use of lasers is prohibited.

(3) Intelligence gathering is permitted by the ROE profile.

(4) ROE changes required to meet foreseeable contingencies are highlighted and prepared.

(5) ROE are common to all TF units and similarly understood. In particular any national reservations must be known. If ROE differences exist between units it should be clearly stated and known to all.

h. If the examination process above reveals deficiencies, ROE requests are raised to remedy them, including full justification for each additional rule or change.

i. A formal ROE brief is carried out for all units. In some cases it may be necessary for formal certification of this briefing to be made to an external authority.

j. That a pre-sail meeting is carried out between all participating forces including shore-based assets and HQs. This should cover briefing on the task and on individual units' capabilities and limitations in order that a full understanding of the commitment and individual potential contributions is achieved. If units join the TF without attending this meeting, briefings should be carried out by CTF/CTG staff on arrival.

k. That special predeployment training is carried out. Table 8-5 gives a suggested list of topics to be covered. An operation of this nature will call on skills outside core warfighting disciplines. Among the areas which may need extra attention are:

(1) ROE play.

(2) Boarding and searching.

(3) Merchant vessel protection (Goal-keeping and anti-FAC).

(4) Theater-specific scenarios.

8704 SECOND STAGE PREPARATIONS

a. Once definition of the operational task and its associated restrictions and limitations have been established, the TF Commander may address the mechanics of setting up his force organization.

b. Command Arrangements. As previously stated above, it is most likely that an operation of this nature will take place under the umbrella of a Joint Force Multinational Command structure and a full CJTF organization may be created. Relationships within this structure must be quickly and unambiguously established in order to achieve a coherent force with specific aims. AJP 1 will assist in achieving a workable and lines of communication to political/diplomatic authorities (as described above). Within the maritime force, organization is naturally required. This may include the requirement for a number of sub-commanders, should the size of the geographical area dictate. A typical chain of command might be:

(1) Joint Force Commander — not necessarily in a sea going appointment.

(2) Maritime Component Commander — in Tactical Command of all naval forces assigned.

(3) Local Coordinator — of a geographical area conducting command and control of units within an Area of Responsibility (AOR), assigning and tasking air and surface units.

(4) Warfare Commanders — responsible in the traditional way for organizing their particular area of warfare.

(5) On-Scene Commander — in charge of an incident.

(6) Force Track Coordinators — responsible for maintaining a recognized picture in their environment.

(7) Liaison Officers — responsible for ensuring that commands and units to which they are posted to are fully aware of the capabilities of their parent unit/command.

A high priority should be given to the establishment of a Secure Command Net for CTG/CO discussion; this can be particularly useful in preventing misunderstanding and ensuring commonality of approach. A secure SATCOM High Command Net can serve the same function between OTCs and shore command.

c. Force Disposition. The force disposition will take into consideration the capabilities of units, the prevention of mutual interference and considerations regarding the cooperation of units used to different tactics and procedures. The patrol areas defined inside the AOR should consider average sensor ranges and some backup between units. The Flagship should have a central position to ensure good communications between units. The units assigned to patrol areas near "choke" points should be Link 11 fitted and, if

Table 8-5. Multinational Embargo Operations — Guidance Checkoff List

1. TASK CHARACTERISTICS

Options for action if any.
- Is there an enemy?
- Who is involved?

Rules of Engagement.
- Who is controlling/directing?

Multinational forces — disparate units.

Joint operations in conjunction with other services and civil authorities.

Are there geographical constraints?

Are there political constraints?

2. SCOPE OF OPERATIONS

Demonstrate Forward Presence?

Carry our Surveillance?
- civil traffic patterns
- traffic density
- military operating patterns environmental factors

Carry out Peacekeeping?
- monitoring activity
- enforce embargo
- protection of shipping

Carry out Evacuation?
- landing forces
- specialist shipping
- beachhead/airhead
- assets earmarked
- humanitarian aid required

3. OPERATIONAL REQUIREMENTS

Surveillance Assets?

Access to intelligence sources?

Access to commercial intelligence?

Force mix appropriate?
- weapons
- sensors

Command Chain?

Units at notice to carry out follow-on tasks.

Logistic support ashore and afloat.

4. PREPARATIONS PRIOR TO DEPARTURE

1st Stage

Define task, ROE, political policy unambiguously in conjunction with higher authorities.

Define legal limits.

Level of risk of damage established.

Ensure ROE
- robust enough to permit self defense
- permit task to be achieved
- permit intelligence gathering

ROE Request?

Threat analysis.

Environmental brief — include predictive analysis

Pre-sail meeting
- unit capabilities (weapons and surveillance)
- unit compatibilities (comms and data links)

Capabilities match task?

ROE certification.

2nd Stage

Command Arrangements
- including Joint Force set up relationships with civil authorities communications to support arrangements

Maritime force organization

Force Disposition
- take into account unit capabilities, Link architecture

Sustainability, Patrol cycle

Equipment maintenance

Crew fatigue

Maintenance of OC

Rotation of units — balance of on/oft station time

Logistics

RAS

Establish overland resupply

Nominate Airhead Arrangements

Nominate resupply ports for afloat support ships

Establish national logistic cells

Establish Stand-off ports

Nominate ports and airfields to receive detained vessels and aircraft.

Table 8-5. Multinational Embargo Operations — Guidance Checkoff List (Cont.)

5. EXECUTION
Commonality — communications and links Gateway procedures
Contingency Planning — incident preparation
IDCRIT
Recognition Confidence Levels
Weapon Release Criteria
Weapon of Choice — having considered ROE
Warnings — formulate agreed text
Surveillance
RSP
Size of AOR v assets
Picture Compilation assets available?
I & W patrol
forward deployed
vulnerability assessment
protection if required
Information flow
Plan according equipment limitations and geographical and propagation constraints
Duplication of effort
avoid — use units capabilities to the full
avoid multiple reporting
Air Integration
command relationships
coordinated tasking with shore assets
Red Crown
Naval Control of Shipping
shipping risk areas
shipping control points
communication reporting gates
closure areas
Continuity of approach
instructions
handovers
face to face briefings
liaison officers
6. MISCELLANEOUS
Boarding Operations
Special Forces required?
Submarines in Support
advantages
May require SAT for Waterspace Management
FPB operations
support requirements
Tactical considerations – good for scouting
May require own AOR
Allocate Liaison/Gateway unit
Air Embargo
identification difficulties
enforcement options
Prevention of Mutual Interference
Records
PR/media matters

possible, have an organic helicopter. These units are likely candidates to carry out the duties of MPACU for aircraft on Surface Picture compilation missions.

d. Sustainability/Patrol Cycle. Major considerations in determining time on task and patrol cycles will be the areas to be covered, the number of units allocated and the expected duration of the operation. In addition to the logistic aspects of sustainability, these and a number of other considerations must influence the planning process.

(1) Equipment Maintenance — periodic upkeep in order to minimize operational defects. Maintenance periods should be scheduled to last 10 working days at 2 monthly intervals. Their location must be carefully considered to ensure that adequate engineering support facilities are available. Repair/depot ships, if available, can provide this support.

(2) Crew Fatigue — stand-off port visits for rest and recreation combined with material maintenance and logistic resupply. Rest and recreation visits should last at least 4 days to ensure all members of a ship's company can take leave.

(3) Maintenance of Operational Capability — patrol routines will not permit normal military capability training. Thus, while surveillance and picture compilation skills will be honed, other war fighting skills will atrophy unless opportunities are provided to exercise them. This may necessitate withdrawing units from the immediate theater to allow training activities to take place. Where possible, passages should be in company to allow training to be progressed.

(4) Patrol Cycle — in order to plan rotation of units, the CTF/CTG must establish the balance between "on station" and "off station" (in transit, training, port visit) time. Figures of 60% "on" and 40% "off" allow adequate time for maintenance and recreation. While at sea, a cycle of 6 days operations, one day maintenance and one day rest gives a satisfactory balance and allows the extended periods between port visits to be sustained. At pre-sail briefing, units must make the CTF/CTG aware of any constraints (e.g., aircraft operating cycles) that will affect their availability. Every effort should be made to establish a patrol operating cycle to allow units to conduct proper planning and management in order to maintain unit efficiency and effectiveness.

e. Logistics. Initial planning should anticipate a lengthy operation in which sustainability will play a key role. The following areas may require attention:

(1) Replenishment at Sea (RAS) Arrangements for food, stores, fuel and oils. Deficiencies in this area would severely curtail patrol endurance and complicate patrol cycles.

(2) Overland Resupply. Feasibility and routes should be established. Use of this means of resupply requires advance planning and good forecasting of future requirements. This method is especially useful for unique national requirements and arrangements can normally be left to national authorities. Host nation support may be required to ease problems of clearances and documentation.

(3) Airhead Arrangements. Similar to overland routes arrangements are normally made by national authorities for routing of urgent stores items and personnel movements. Coordination to determine the location of the airhead will be required to avoid duplication and to ensure that its position is optimized for on-movement of stores and personnel which may well fall to Task Force assets to carry out.

(4) Resupply Ports. A port or ports should be designated as replenishment points for store ships and oilers. Wherever possible these should be collocated with the airhead and be on an overland route.

(5) Logistic Cells. The establishment of national cells ashore at airheads and or resupply ports is most advisable to ensure a prompt and efficient service to sea going units. ALP 11 should also be consulted when setting up multinational logistic arrangements.

(6) Stand-off Ports. A list of ports capable and willing to host ships during stand-off from patrol should be drawn up. They must be categorized by size (i.e., capacity for size and number of ships) and by distance from patrol areas in terms of steaming time, which can then be related to operational notice for the area. The Task Force Commander will likely wish to retain the responsibility of designating ships to port visits, in conjunction with the relevant host nation authorities.

(7) Diversion Ports/Airports. Preparations for the reception, detailed search and possible detention of embargo breakers must be made. This will, in most instances, involve close liaison with the competent local authorities. Anchorages should also be identified for use as holding areas for vessels detained and awaiting search.

8705 EXECUTION

a. Commonality. The Task Force Commander must strive for commonality in communications and data links, which will be the threads that hold the organization together. Factors that will be critical in communications and will impinge on data link operations are as follows:

(1) Number of Transmitters/Receivers.

(2) Availability of satellite communications facilities.

(3) Availability and compatibility of secure speech equipment.

(4) Data handling capacity of the circuits available.

(5) Location and environmental factors.

(6) Cryptologic equipment and keying material.

(7) Operator's ability in the designated common language.

(8) Portable equipment (for use by liaison officers, etc.).

In data link terms, the capacity of the host AIO system is often the critical factor. Where different links exist every effort should be made to ensure that data forwarding facilities are available. However, all units should be aware that certain elements of data may be stripped during this process. This area should be examined during pre-sail conferences. These factors apply equally to air units.

b. Contingency Planning. At an early stage contingency planning should be carried out to cater for all likely incidents and tested against the fullest range of "what if" scenarios in tactical discussions involving all participants. Such plans will be heavily influenced by ROE considerations and special attention should be paid to:

(1) Identification Criteria — elements required for identification of a contact. Standard schemes exist (see Chapter 6, Table 6-1) but should be reexamined to ensure that ROE requirements are met. Unit capabilities in this respect may differ (e.g., availability of IFF Mode IV, height-finding). Care must therefore be taken to ensure that ROE are not breached as a result of a unit attempting to achieve the necessary criteria. In situations short of all-out hostility it may be expedient to use the terms Contact of Interest and Critical Contact of Interest or Possible Violator. For unambiguous link information exchange an identification matrix will then be required (these additional identities cannot be exchanged via ink). Use of specific codewords (changing or fixed) for individual units or types of unit may also assist in clarity of picture compilation. The use of a predetermined set of PIF/DI codes (either via link or voice reporting) may also assist in information exchange. All of these will require definition in the Task Force Commander's instructions.

(2) Recognition Confidence Levels — the level and criteria required for achieving recognition should also be examined in the light of ROE.

(3) Weapon Release Criteria — this will require most careful definition in order to reflect ROE intentions. This subject may require clarification discussions at the task definition stage with those issuing the original directive.

(4) Weapon of Choice — having considered the ROE it may be desirable/necessary to specify which weapons and types of ammunition may be used in each circumstance. In general, in these situations weapons with man-in-the-loop target acquisition or engagement at short (visual) ranges will allow

more flexibility and minimize the risks of collateral damage and misidentification. This will have important implications for overall force mix in general and which assets may be employed for these contingencies in particular.

(5) Warnings — In the graduated response situations permitted by ROE, warning will play an integral part. The Commander should ensure that standardized warnings are used to reflect ROE and mission objectives. Instructions in this respect should be extended to include such matters as the training and use of fire control systems and radars and the movement and manning of weapons.

Once these plans have been completed they must be given wide promulgation among the force and good familiarity ensured, particularly once roulement of units commences and the original Task Force members are replaced. Additionally, plans should be exercised to ensure that all elements, including those ashore, are practiced and aware of their role. It will be of particular importance to ensure that command and control communications links operate correctly to allow real-time management by the higher command.

c. Surveillance. The success of the operation is likely to stand or fall on the ability of the force to maintain adequate surveillance over its Area of Responsibility (AOR) as defined by the geographical limits of the directive.

(NR) (NMM) ATP 31 (Chaps 6 & 8) provides much useful basic guidance on the conduct of surveillance. The following is additional guidance and amplification:

(1) Recognized Surface Picture. A Recognized Surface Picture (RSP) must be built with the aim of positively identifying and continuously tracking all contacts in the AOR. Equally important is wide and timely dissemination of the RSP. Data links will almost always be the best method of achieving this. The RSP is designed to achieve one or more of the following:

(a) Detecting all surface contacts in the AOR.

(b) Identify all tracks in the AOR to a level required by the type of operation.

(c) Hand over of reporting responsibility between adjacent units.

(d) Identify a specific and defined Contact of Interest (COI) or Critical Contact of Interest (CCOI) in the AOR.

(e) Identify a specific type of COI in the AOR.

(f) Track an identified COI in the AOR, and

(g) Taking action against a unit to identify/intercept a COI.

It should be borne in mind that establishment and maintenance of the RSP (and RAP (see below)) is highly asset-intensive and may require 24 hour airborne cover. However, once traffic patterns and confidence in intelligence cuing have been established, the level of activity may possibly be reduced.

(2) Size of the AOR. This is governed by:

(a) The TF mission.

(b) Number of assets.

(c) The type of sensors available.

(d) The objective in building the RSP.

(e) The environmental conditions in the AOR.

(f) The targets' characteristics.

Resolution of the possible conflict between the actual area over which satisfactory cover can be achieved, and the area laid down in the task directive should have been done in consultation with shore authorities prior to sailing.

(3) Picture Compilation Assets may consist of some or all of the following:

(a) National intelligence sensors.

(b) MPA.

(c) Ship/Carrier based surveillance aircraft (fixed or rotary wing).

(d) Shore-based liaison officers in key ports.

(e) AEW aircraft.

(f) Tactical Data Links (JOTS/OTCIXS/LINK 11/16/LOCE).

(g) Submarines.

(h) Sonar.

(i) Comms HF/DF.

Each surveillance unit will possess one or more of the following capabilities:

— radar
— EO/visual devices
— ESM
— towed array

and information exchange capabilities:

— voice
— RATT
— Tactical Data Links (e.g., JMICS, Link 11/16).

(4) Indicators and Warning Patrol. It should be apparent from intelligence analysis prior to arrival in theater where the focal points of the activity by the nation or group under surveillance are located. Of particular interest is that activity, usually military in nature, which poses threats to either the Task Force itself, the shipping it may be tasked to protect, the embargo it is tasked to enforce, or the land forces it may be supporting. In these instances priority consideration should be given to the establishment of Indicators and Warnings patrols. These will have the following characteristics:

(a) Be forward deployed, thus the value of the intelligence and warning to be gained must be weighed against the potential increased threat to the gatherer.

(b) Can be carried out by surface units or submarines.

(c) Units selected should possess sophisticated ESM equipment including a Comms intercept and analysis capability and direct comms link to CTF/CTG as well as a good self defense capability.

(d) Contingency planning should include protective cover for the patrol.

(e) Covert option is available if a submarine is used.

(f) Give 24 hour surveillance. While air assets, in particular AEW and ESM aircraft can contribute, the prolonged cover required is likely to be too draining on probably limited assets.

(5) Information Flow. The task organization must ensure that a 2-way flow of information exists in all environments. While commonality of equipment will go some way to ensuring this, attention must be paid to geographical and propagation constraints and plans made accordingly.

(6) Duplication of Effort. With assets likely to be limited, every effort must be made to ensure that units are used to their full capability, particularly in the area of surveillance, and that their information is reported in a timely and efficient manner. Clearly, duplication of effort is not only wasteful but may also lead to confusion if multiple reports are received on a single incident.

d. Air Integration. The Task Force Commander will wish to employ air assets to assist in achieving his tasks. Initially among these will be the surveillance function, but in the latter stages of the operation could extend to cover the full range of air capability both over sea and land. It is likely that in all stages of the operation the demand for air assets will exceed the organic capability of the Task Force to provide it. The Commander will be required to address:

(1) Command relationships with respect to tasking of shore based assets. This may be done within the context of a Joint Command structure.

(2) Establishment of coordinated tasking of both shore and sea-borne air assets to ensure optimum and efficient utilization of resources. The landing of a suitably qualified liaison officer from the maritime force to assist in this process is strongly recommended.

(3) Governmental agreement for hosting of other nations forward deployed aircraft and their logistic support.

(4) The designation of a unit to maintain overall coordination of all aircraft airborne within the area of responsibility with particular regard to Blue aircraft in order to prevent Blue-on-Blue conflicts. The unit performing this task (so-called **Red Crown**) will require a comprehensive radar, IFF and ESM suite coupled with a very capable automated Command System with access to Data Links 11/16.

(5) Participation in the message traffic regarding aircraft tasking and control (especially relevant for Red Crown unit).

(6) The establishment of the Recognized Air Picture (RAP) using the same principles as those applied to the building of the RSP.

e. Naval Control of Shipping. If the requirement exists to protect friendly or neutral shipping, then naval control of shipping or at least some of its elements should be considered. In particular the establishment of the following (as defined by ATP 2) may be of use in controlling what could be an asset-consuming task.

(1) Shipping Risk Areas — as well as identifying which areas protective measures could be concentrated to the best effect. This may also have the effect of alerting shipping owners to an increased

threat. Consequent rises in insurance rates for ships in this area may cause diversion resulting in a reduction in the required protective effort.

(2) Shipping Control Points — an essential prerequisite for the establishment of accompaniment. This is the designated point at which ships gather prior to routing through a risk area. Briefing on organization and protective measures may be carried out at this point.

(3) Communications Reporting Gates — Should a less rigorous regime of control be required, these reporting gates may be established. Ships are required to report at certain points (similar to Port Vessel Control Systems) as they pass through an area. This allows passing of risk updates and assists in picture compilation.

(4) Closure Areas — in order to keep unauthorized shipping away from embargoed ports/countries/areas, closure areas could be established (with legal basis) and promulgated through appropriate channels.

f. Continuity of Approach. By their very nature peacekeeping/embargo operations tend to be of unspecified duration and can become drawn out affairs lasting, in some cases, many years. It is therefore certain that units and individuals extending to the very top of the command chain will change. In order to maintain the overall thrust of the operation and to ensure consistency of application of its intended measures, it is vital that the means are put in place by the initial Task Force members and its Commander to pass on this vital information to their successors. This can best be achieved by:

(1) Issue of a simplified Operation Order covering items addressed in this section.

(2) Issue of Standing OPGENs and OPTASKs — these should be reviewed by newly arrived Commanders and revised as the operation develops.

(3) Face-to-face handover briefings between units.

(4) CTG/CTF brief to newly arrived units.

(5) Newly arrived CTF/CTG face-to-face brief with Area Commander.

(6) Effective liaison between land forces and air forces deployed ashore and other allied commanders in the AOR.

8706 MISCELLANEOUS

a. Boarding Operations. EXTAC 1012 provides much comprehensive detailed guidance for the conduct of boarding operations. This should be adopted or adapted to suit existing circumstances. In any case, instructions to the Task Force will be required. Included in such instructions should be a standardized set of warnings to be used should the target vessel/aircraft prove uncooperative. In the event that it is assessed that opposed boardings are seen as a likely scenario, special training for select teams will be required or Special Forces teams requested to be deployed.

b. Submarines in Support. The allocation of submarines to support these operations greatly enhances the force's capability in a number of areas:

(1) Indicators and Warning patrol — the covert nature of the submarine greatly increases the Commander's options in the placement of the patrol. As a result it is likely to be in forefront of intelligence gathering. In allocating submarines to this type of operation the relative capabilities and endurance of the different types (SSN v SSK v SSC) of submarine will have to be considered. In general terms the smaller the submarine the more units will be required to support the patrol cycle.

(2) Psychological Operations — again the unseen covert nature of submarine operations is a potent factor in creating uncertainty in the assessments of the opposing force and can be further manipulated by public statements that are difficult to prove or disprove. Its largely independent modus operandi, allow the submarine to be the first or among the first units to reach an area of responsibility.

(3) Exclusion Zone Enforcement — should ROE be robust enough to permit this mode of operation, the submarine, again by virtue of its covertness can exert a disproportionate influence on the opposing forces' activities.

The submarine's most significant contribution is made by virtue of its covertness. It follows from this that its use in overt operations (boarding/warning) will detract from its primary value. In any case submarines are poorly equipped to conduct such evolutions. When submarines are allocated for support, Prevention of Mutual Interference and Waterspace Management problems will have to be addressed.

c. Fast Patrol Boat Operations. Fast Patrol Boats (FPBs) and similar craft may be able to make significant contributions to both surveillance and interception of Contacts of Interest (COI). They have particular advantages in the inshore environment and in operating against small fast craft often used for smuggling high value cargo and personnel. The following should be kept in mind when considering their employment:

(1) FPBs will require forward based support either ashore or afloat, in or close to their area of operations for maintenance, fuel and crew rest.

(2) Weather may limit their operations but will also significantly effect their opponents.

(3) The effectiveness of FPBs in both surveillance and, if required, attack is greatly enhanced by ensuring helicopter assets are assigned to cooperate and integrate into their operations.

(4) FPBs should be assigned their own area of responsibility in which to operate, together with appropriate reporting chains. In times of actual conflict consideration should be given to exclude all other units (other FPBs and assigned air assets) from this area to avoid Blue-on-Blue incidents.

(5) FPB Integration into a larger TF organization is made more effective by the allocation of a Liaison/Gateway unit. This unit should carry out the functions of C^2 of FPB operations, participating on the FPB RATT circuit, providing air defense over the FPB operating areas, control of air assets working with FPBs and relaying instructions and information from the ASUWC or other Commanders.

d. Air Embargo. While the enforcement of an Air Embargo should be addressed along the lines suggested above, it does however present some unique problems. While control of regular international civil air traffic may be quickly seized by means of withdrawal of facilities, the control of internal light aviation, short duration military flights, and clandestine resupply by air will prove to be:

(1) Asset-intensive to detect — in all probability requiring 24 hour coverage by sophisticated AEW aircraft.

(2) Characterized by difficulty in positive identification to the required degree to enable enforcement action to be taken.

(3) Characterized by a lack of enforcement options compared to the maritime surface situation. Diversion/warning off may not be feasible with ROE insufficiently robust to allow engagement.

In addition, the duration of the contact may be too short to permit full consultation up the chain of command which is a prerequisite for action to be taken.

The assets carrying out this role are likely to be heavily augmented by, or completely derived from, shore based aircraft. This will, therefore, be an area in which close cooperation in command relationships will be necessary.

e. Records. In order to be able to reconstruct incidents accurately for subsequent analysis, public relations purposes and for use in a court of law, it is vital that **all** units are ordered to take records whenever an incident seems likely to occur until its completion. Some or all of the following may be ordered:

(1) Unit navigational records.

(2) Narrative records either on tape or manuscript taken on the Bridge or in the Operations Room/Combat Information Center.

(3) Audio tapes of selected comms nets, normally those used in challenging merchant vessels and in dealing with opposing units.

(4) Records from video cameras/EO devices slaved to fire control radars.

(5) Video records of surveillance radars.

(6) Records from combat system computers.

(7) Manuscript records as ordered from Maritime Analysis Handbook.

f. Prevention of Mutual Interference. In a multinational force the CTG needs to know the main characteristics of all sensors and weapons and to issue technical instructions to avoid electronic interference. Force disposition may also be influenced by the requirement to keep mutually interfering units apart.

g. PR Media/Matters. Relations with the media should, wherever possible, be proactive rather than reactive. Indeed the media should be used at both government and task force level to demonstrate presence, determination and capability. The fact that PR contact may be made at various levels and at various locations underlines the vital necessity that a common line is taken by all concerned. The Commander should ensure that:

(1) A clear media policy is established in the TF.

(2) Unit commanders are given a media briefing before arriving on station.

(3) Requests for media facilities are channeled to and approved by one authority.

(4) Written line-to-take press briefings are issued on a regular basis and updated as a matter of urgency in the event of any development/incident even if only to confirm no change has occurred. Where possible these briefs should consist of likely questions and agreed answers.

(5) Units should have experienced in their pre-deployment training, exercises where unannounced contact with media representatives in the wake of an incident is rehearsed.

CHAPTER 9

Antisubmarine Warfare

9000 INTRODUCTION AND SCOPE

This chapter lists the types of operation available to counter the submarine threat and details tactical and procedural instructions for ships, submarines, and aircraft when operating individually or in cooperation with other maritime forces. Table 9-1 lists the air plans, attack and support methods, and search plans available for use by an ASW unit and in coordinated ASW action.

(NR) (NMM) Amplification of and background information on the subjects presented in this chapter are found in ATP 28. Details on submarine operations are found in ATP 18.

9001 COMMAND IN ANTISUBMARINE WARFARE

The OTC's functions in antisubmarine warfare, including those that may be delegated to the ASWC, are summarized in Table 1-4.

9002 FORCE TRACK COORDINATOR (SURFACE) (FTC-S) AND FORCE TRACK COORDINATOR (SUBSURFACE) (FTC-SS)

The OTC may delegate surface and subsurface surveillance to one of the warfare commanders. They in turn can assign an FTC. In principle the designated force track coordinator surface and subsurface performs the tasks as described in Chapter 6, Article 6314.

9003 — 9009 SPARE

9010 DEFINITIONS OF ASW OPERATIONS

There are four types of ASW operation:

a. Area operations.

b. Associated Support operations.

c. Direct Support operations.

d. Integrated operations.

9011 ASW AREA OPERATIONS

ASW area operations are generally conducted by units operating independently. Such operations are conducted in geographic areas through which enemy submarines are likely to pass or which are likely to contain patrolling submarines. Areas may be related to the protection of maritime forces scheduled to enter the area or to provide defense in depth to distant forces. Operational control of units conducting area operations remains with the Area Commander. Tactical control of units conducting area operations is exercised by commanders subordinate to the Area Commander.

9012 ASW ASSOCIATED SUPPORT OPERATIONS

In Associated Support operations, the designated ASW unit operates independently of a specified task force/group, but may be tasked to provide contact information to, and receive intelligence from, an

Table 9-1. ASW Air Plans, Attack and Support Methods, and Search Plans

For plans RED and BLACK, see Table 9-5.

AIR PLANS Page

FIXED-WING AIRCRAFT/HELICOPTERS:
Airplans 1 to 5 **(NMM)** . . . . . 9-63 to 9-69

DIPPING HELICOPTERS:
Airplans 41 to 48 **(NMM)** . . . . . 9-70 to 9-80

ATTACK AND SUPPORT METHODS:
3A Geographic Sector **(NMM)** 9-83
3A MOD Modified Geographic Sector **(NMM)** 9-84
11AH Bear **(NMM)** 9-85
14AH Cordon. 9-86

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SEARCH PLANS (Convoy Escort):
52S Beetroot **(NMM)** 10-20
53S Carrot **(NMM)** 10-23

SEARCH PLANS (Surface):
1S Oaktree (Area, Intercept, Lost Contact, Bottom) 9-87
2S Acorn (Lost Contact) **(NMM)** . . 9-88 to 9-90
2SH MOD Acorn Modified (Lost Contact) **(NMM)**. 9-91
14SH Cordon. 9-86

NOTE

Extracts of plans may be made for aircraft assigned to duty requiring their use. These extracts are to be properly safeguarded and are to be burned when no longer required.

OTC. The designated unit operates under the operational control of the Area Commander, who coordinates tasking and movement in response to the OTC's requirements. Such operations can be conducted by surface ships with towed arrays, aircraft, and submarines.

(NR) (NMM) Details on submarine Associated Support operations are contained in ATP 18.

9013 ASW DIRECT SUPPORT OPERATIONS

Direct Support operations are those in which the designated unit provides ASW support to a specified task force/group. Tactical control of the direct support unit is by the OTC of the force being supported or a designated subordinate.

(NR) (NMM) Submarine direct support procedures are described in ATP 18.

9014 ASW INTEGRATED OPERATIONS

Integrated operations are those operations in which a designated unit provides ASW support to a specific Task Force/Group operating directly under its Tactical Command (TACOM) and Tactical Control (TACON). During integrated operations, the assigning authority retains Operational Control (OPCON).

(NC) (NMM) Integrated operations are contained in ATP 18.

9015 RANGES OF ASW SENSORS AND WEAPONS

a. ASW Sensor and Weapon Equipment. These are classified by maximum range capability as follows:

(1) Short range — under 5,000 yards.

(2) Medium range — 5,000 to 15,000 yards.

(3) Long range — over 15,000 yards.

b. Predicted Sonar Range (PSR). PSRs are determined by each unit for its sensors under the existing environmental conditions. When mixed-layer and thermocline conditions exist, PSRs are calculated for various sensor and target depth combinations in-layer and below layer. PSRs can be determined for active or passive sensors, and depend on the sensor's characteristics, operator's ability, environmental conditions, target source levels for passive operations, and depth locations of sensor and target. PSRs should normally be determined on a 50 percent probability of detection, if not otherwise stated. When convenient, units fitted with variable depth sonars may specify the minimum and maximum figures of PSR for targets below layer depth and report the shallowest target depths at which these figures are predicted.

(NR) (NMM) The method of calculation is in accordance with national doctrine, but uses the general principles laid down in ATP 28.

c. Tactical Sonar Range (TSR). The TSR for ships and helicopters is decided and promulgated by the OTC or commander/coordinator to whom the duty is delegated. When sonars of significantly different capabilities are present in the same force, the OTC may elect to promulgate more than one TSR. TSR enables the ASW or screen commander to station units to optimize ASW defense. TSR is also used for calculating the distance apart at which units are stationed during ASW action. TSR is based on reported PSRs and may make allowance for probable submarine depth and other tactical consideration. For tactical convenience, TSRs are expressed in multiples of 500 yards, and normally should not be greater than the appropriate PSR.

9016 — 9019 SPARE

9020 (NC) (NMM) ASW WEAPON STATE REPORTS

ASW weapon states are reported by means of CAKE reports that are passed, without request, to the OTC, ASWC, or SAU commander whenever the availability status of ASW weapons is reduced by 50 percent of the total of specific weapons carried. The OTC/ASWC/SAU commander may also ask for current CAKE states.

The following letters are to be used:

SHIP-LAUNCHED SHORT RANGE:

A Ahead thrown (Hedgehog/rocket type)

B Ahead/all round thrown (mortar type)

C Depth charge (dropped)

D Depth charge (self-propelled)

SHIP-LAUNCHED TORPEDOES:

H Heavyweight

J Lightweight

SHIP-LAUNCHED MEDIUM RANGE:

M ASW missile

AIR-LAUNCHED:

R Lightweight torpedo

S Depth charge (free fall)

T Depthcharge (self-propelled)

-Example-

A unit which has 9 torpedoes Mk 46 Mod 5, 3 torpedoes Mk 37 (Mod 0), and 24 depth charges remaining, would report: "(C/S OTC/SAUC) this is (C/S) — CAKE Charlie two four tack Hotel three tack Juliett nine-over."

SECTION I — EMPLOYMENT OF ASW UNITS

9100 ASW SHIPS

9101 SURFACE SCREENS

The design and selection of ASW surface screens will depend on:

a. Number of screening units available and their individual and collective weapons and sensor fits.

b. Size and disposition of the force being Screened.

c. Availability of ASW aircraft.

d. Anticipated threat.

e. Environmental conditions.

f. Tactical sonar ranges.

g. PIM, including any navigational constraints.

h. Requirement for command, control, and communication, including Emission Policy.

i. Requirement for supporting operations; for example, replenishment.

j. Requirement for other forms of defense; for example, AAW.

k. Requirement for nuclear spacing.

l. Deception policy.

(NR) (NMM) These and other factors are considered in ATP 28 and in Chapters 3 and 12.

9102 — 9104 SPARE

9105 SURFACE SHIP TOWED ARRAYS

9106 GENERAL CONSIDERATIONS

(NR) (NMM) (See also ATP 28)

a. Generally, the method of employing a towed array ship will depend on the type of array fitted. Surveillance Towed Array Systems (SURTAS) tend to have an extremely long length and are optimized for very slow towing speeds. For this reason, they are best suited to stationary operations which allow them to patrol their stations at slow speed and to avoid frequent maneuvers which cause array destabilization and degrade its performance. Tactical Towed Array Systems (TACTAS) are specifically designed for higher speeds and are the best option for moving-PIM operations such as convoy escort. The actual performance of an array depends as well on its design. Critical Angle Towed Array Systems (CATAS) tend to be less affected by tow ship noise due to the greater length of tow cable than do arrays towed from a depressor (DTAS). Hence a CATAS will tend to provide better all round ranges of initial detection and tracking than can be expected of a DTAS.

b. To enhance effectiveness as an ASW sensor system, it is necessary for a towed array ship to reduce the range at which it may be counterdetected by the submarine. For this reason, the towed array ship

will tend to operate in as silent an Emission Policy as possible. It is therefore necessary for the OTC to provide as much guidance as possible to the ship prior to its taking up station to avoid unnecessary electromagnetic (EM) emissions which may reveal its presence. The following areas should be addressed in appropriate messages/orders.

(1) The policy on contact reporting frequency.

(2) The relative importance of stationkeeping versus contact holding.

(3) The degree of freedom allowed the towed array ship with respect to EMCON in order to prosecute his contacts.

(4) Additional assets available to help prosecute contacts and the means of obtaining them.

(5) The OTC's assessment of the tactical situation, together with a summary of the positions of friendly, neutral, and hostile shipping, should be transmitted to the TAS ship as frequently as possible.

(6) Anticipated changes to PIM and the time the TAS ship is to reposition with respect to it.

(7) **(NC) (NMM) Acoustic intelligence.** Area Commanders and the ASWC should promulgate all current target acoustic intelligence in the form of a brief summary including the significant sources, frequencies, source levels, modes of operation, and aspect dependencies of all targets of interest in their subordinate's area.

9107 STATIONING OF TOWED ARRAY UNITS

The selection of a station for a TAS ship is based on the following considerations:

a. Own Force Noise. The reduction of force noise levels reaching a towed array is an important element in increasing its detection envelope. For this reason, all units operating near a towed array ship should institute measures to reduce their radiated noise levels.

(NC) (NMM) For the same reason, the towed array ship's station must be selected so as to be clear of the force's residual radiated noise. In particular, the direct path and convergence zone annulus must be avoided. In this regard, degradation caused by tow ship noise and/or endfire gaps should also be considered.

b. Reaction Time. Towed array ships may be stationed ahead, astern, or on the flanks of a force. Regardless of the relative position chosen, such ships should be stationed sufficiently far from the force to allow the OTC time to react to detections made by the TAS ships. The actual distance will depend on:

(1) Whether the expected threat is equipped with missiles, torpedoes, or a mixture of both.

(2) Whether the threat is from nuclear or diesel-electric submarines.

(3) The type of localization to be employed.

(4) The time to complete localization.

(NC) (NMM) This time will vary from several minutes when ships are stationed to allow cross-fixing to several hours for single-ship TMA localization.

(5) Detection envelopes. These will vary for different types of TAS.

(NC) (NMM) In addition, the detection range will vary depending on the direction from which a submarine closes the force. For example, a ship stationed astern of the force can expect to encounter submarines, moving, closing slowly relative to the force but at a higher and, thus, noisier true speed than a TAS ship stationed ahead. Thus, the range of detection for a given system can be increased, thereby providing more reaction time than by choice of station alone.

(6) Whether the OTC is primarily concerned with alertment to allow evasion or whether he intends further prosecution.

(7) Other sensors and weapons such as ESM or Area Air Defense fitted in the towed array unit.

c. Communications. The communication fit of a towed array ship will affect the OTC's stationing decision as well. Ships should not be stationed at a distance from the OTC/ASWC such that they are not capable of passing, on a real-time basis, contact information and of receiving orders from the OTC/ASWC (see Chapter 4). Long-range communications are required between towed array ships and the OTC/ASWC to:

(1) Station units.

(2) Report figure of merit (FOM) and contact data to the OTC/ASWC.

(3) Request and coordinate nonorganic air support (from ashore).

(4) Assign aircraft to a TAS contact prosecution.

(5) Coordinate the task force/task group response to an ASW contact.

(6) Join MPA coming on task. This may be delegated to the ASWACU (see Chapter 6 for MPA joining procedures).

d. Mutual Support. Because of the distance at which TAS ships can operate from the force, mutual support for TAS ships should be considered in the following areas:

(1) (NC) (NMM) Defense Against Air Attack. TAS ships tend to operate in the covert mode; therefore, they may be vulnerable to air attack. If unable to defend itself, some provision should be made to include the TAS station in the force's AAW defended area.

(2) Independent Localization and Attack. The TAS ship may be provided with an independent localizing and attacking vehicle such as a helicopter or MPA. Surface ship ASW pouncers may provide another option.
(NC) (NMM) This may be necessary because TAS ships are capable of detecting contacts at distances far greater than the effective range of their weapon systems and are often unable to localize to attack criteria.

(3) Communications and Stationing Considerations. Depending on the limiting lines of approach (LLA) and the frontal coverage desired, it may be advantageous to station towed array ships specifically to allow for cross-fixing. In this event, it will be necessary to provide reliable communications between the TAS ships. If equipment fitment or EMCON restrictions prevent such communications, an acoustically quiet surface ship or an aircraft may be stationed between the TAS ships to act as a relay unit. If it is decided to position towed array ships to enable cross-fixing, the following points are relevant:

(a) The LLA for the anticipated threat should be covered by the TAS ships.

(b) The TAS ships should be stationed to provide a significant overlap in their passive coverage to maximize the probability of concurrent contact. A separation between TAS ships equal to UHF communication range optimizes both probability of simultaneous contact and UHF communications.

(c) The ships should be stationed at a distance along PIM from the main body sufficient to maximize coverage within the LLA while minimizing interference caused by force-generated noise and providing sufficient reaction time for the OTC.

(d) Depending on the TAS ship fitment, it may be necessary for the TAS escort to employ sprint and search tactics to optimize detection opportunities in high speed of advance (SOA) situations. The OTC must be kept informed of the TAS escort's requirement to conduct sprint and search as the possible resultant degradation to screen integrity must be considered when formulating his overall ASW plan. If sufficient TAS escorts are available, the OTC should consider coordinating their sprint and search cycles so that as one searches the other sprints. In addition, it may be possible to employ sprint and search tactics as a means of generating submarine movement. Generally, a short sprint/search cycle is preferable to a cycle which employs a long period of sprint coupled with long search times. SOA in excess of 12 knots may degrade towed array operations.

(e) Delivery boy replenishment is recommended for towed array ships in the outer screen. If, however, the towed array ship departs station for replenishment, the OTC must determine the time to return to station and the method of screening in the interim.

9108 (NC) (NMM) TOWED ARRAY SCREEN STATION OPTIONS

Towed array surface ships may be stationed ahead in the outer or inner screen within the LLA, or astern of the escorted force. The advantages and disadvantages are:

a. Outer Screen.

(1) Advantages. A station in the outer screen will optimize the TAS detection envelope, the frontal coverage, and reduce interference caused by force-radiated noise. In addition, it will provide the OTC with the most reaction time.

(2) Disadvantages. In the distant outer screen, the problems associated with command, control, and communication are made more difficult. It is more difficult to provide individual TAS ships with mutual support. Localization and attack will probably require support from air assets and take a significant amount of time to accomplish.

b. Inner Screen.

(1) Advantages. The OTC will have better control over the TAS ship due to improved communications. At the same time, mutual support is more easily provided.

(2) Disadvantages. The proximity of the TAS ship to the escorted force will considerably reduce the reaction time available to the OTC as well as preclude totally effective use of the frontal coverage available. In addition, the proximity of force-generated noise may reduce the size of the TAS detection envelope.

c. Astern.

(1) Advantages. The principle advantage of the astern station lies in covering the rear of the force against the approach of the fast nuclear submarine. Escorts with a low passive FOM or badly degraded forward endfire maybe best employed in this role particularly if fitted with a broadband intercept capability.

(2) Disadvantages. The use of a TAS ship astern of the force may reduce the overall ASW coverage provided ahead within the LLA.

9109 TOWED ARRAY ZERO-PIM OPERATIONS

Towed array ships may also be employed in zero-PIM operations such as barrier patrols, defended lanes, and area surveillance. The OTC should consider these factors:

a. Selection of Station Size. In direct support operations, the OTC will have to decide on the size of the area to be allocated to a towed array ship. The size of the area allocated will depend on the expected initial PSR for the sensor involved against the anticipated threat. The actual size should be such that the revisit time throughout the area should be small enough to ensure the target cannot complete a transit through the area between TAS ship visits.

b. Selection of Search Type. When applied to towed array searchers, the sweep width should be replaced by the expected PSR. The specific type of search will depend on the actual operation. For example, to search an area of probability (AOP) or datum, the expanding square search may provide the best results whereas for defended lane operations, a linear or crossover patrol may be appropriate.

(NR) (NMM) This is based on the criteria laid out in ATP 31, Chapter 6, and ATP 28, Chapter 4.

9110 ASW HELICOPTERS

9111 GENERAL CONSIDERATIONS

Stationing of helicopter carrying escorts in the screen should be made, if possible, to provide optimum relative wind to facilitate launch and recovery without having the escorts leave their assigned sectors.

ASW helicopters may be fitted with sonobuoys, processors, dipping active/passive sonar, airborne radars, FLIR, MAD, ESM and/or ASW torpedoes and depth bombs. When tasked within a force, they may be considered as force assets or as extensions to ship's sensors and weapon systems. Helicopters fitted with sonobuoys and processors may be tasked in the same way as direct support fixed-wing aircraft. Screening stations for helicopters fitted with ASW sensors should be selected using similar considerations to those for surface units (see Article 9101).

(NC) (NMM) However, the limited endurance and buoy capacity may make them more suited for flank screening rather than the ahead sector.

9112 ASW HELICOPTER EMPLOYMENT

ASW helicopters may be allocated for screening duties as indicated in Chapter 3 and may also be ordered to carry out other ASW tasks.

(NR) (NMM) These tasks may be ordered by means of the airplans summarized in Table 9-2. Full details of airplans for dipping helicopters are in Figures 9-5 to 9-15.

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Table 9-2. (NU) (NMM) Airplans

Task	Fixed-Wing Aircraft/ Helicopters	Dipping Helicopters
Bearing Investigation	1	41, 42, 43
Datum or Contact Investigation	2	44, 47, 48
Barrier	3	45
Screening	4, 5	41, 42, 43
Area Investigation	5	41, 42, 43, 46

(NATO-CONFIDENTIAL) (NMM)

9120 ASW FIXED-WING AIRCRAFT

9121 GENERAL CONSIDERATIONS

a. Air Operations Procedures. Air operations procedures described in Chapter 6, Section IV, apply to the tasking of ASW aircraft. The OTC's functions for both ASW and air coordination are summarized in Tables 1-4 and 1-6.

b. Planning. The following factors should be considered in planning and controlling ASW air operations:

(1) Overall tactical situation.

(2) Assumed or known capabilities and tactics of the enemy.

(3) Number, type, and capabilities of available aircraft, including sensors and weapons.

(4) Size and location of area of operations.

(5) Environmental conditions.

(6) Availability and characteristics of cooperating and/or supporting units, including ships, submarines, and other aircraft.

(7) Frequency of coverage required (revisit time).

c. Tasking. Fixed-wing ASW aircraft may be ordered to carry out ASW tasks by means of dedicated airplans.
(NR) (NMM) These are summarized in Table 9-2. Details of airplans are contained in Figures 9-5 to 9-9.

d. RAINFORMS. Since aircrews and air controllers must be thoroughly briefed, it is mandatory that Form GREEN be sufficiently detailed. When land-based aircraft have been ordered to provide support to a force at sea, the OTC of the force will be informed by means of a Form GREEN. When organic air support is provided, the flying schedule will be promulgated by appropriate message.

9122 CONDUCT OF AIRPLANS FOR FIXED-WING ASW AIRCRAFT AND HELICOPTERS

a. Aircraft Flightpath. The flightpath of an aircraft within an assigned area depends on the type of aircraft; on the search, localization, and navigation equipment available; and on environmental conditions. An ASW aircraft joining a force should be prepared to inform the OTC of the maximum size of the area that it can search effectively under the prevailing conditions.

b. Contact Investigation. When an airplan is ordered which requires an aircraft to investigate a contact or bearing, it is essential that sufficient details of the contact or bearing be passed to the aircraft to allow the aircraft commander to determine the most appropriate search and localization procedures to be used.

c. Variations to Airplans. When an airplan is ordered, the order may include variations to the airplan and any amplifying instructions not included in the order table.

d. Relative Airplans. The term "relative" applied to an airplan implies that the area so ordered shall assume the intended movement of the force. It does not affect the bearings associated with airplans. These bearings are always given in degrees from true North.

e. Change of PIM in Relative Airplans. The direction in which ships are to proceed may be changed in many ways which may or may not require a change of airplan. To avoid misunderstandings, whenever it is necessary to alter the PIM on which a relative airplan is based, the airplan is to be reordered.

f. Accuracy of Airplan Origin, Datum, or Contact Position. When ordering an airplan, it may be desirable to use radar to ensure that the origin of the airplan, datum, or contact position is accurately established.

(NR) (NMM) (See Table 9-2.) For specific details of these airplans, see Figures 9-5 to 9-15.

9123 AIRCRAFT IN SUPPORT OF TOWED ARRAY SHIPS

The aircraft assigned is required to:

a. Join the AAWC/ASWC/ASWACU in direct support. In associated support and area operations, the aircraft will cooperate with the towed array ship, depending on the disposition of forces, to prosecute contacts.

b. Report contacts to the OTC/ASWC/ASWACU in direct support and to the area commander and cooperating individual towed array ships in area operations. In associated support, report contacts to the OTC/AWC/ASWACU and to the area commander.

c. Receive and acknowledge the SAC's AOP, airplans, search plans, and attack plans when contact is held.

d. Exchange precise target acoustic data (type of contact, frequencies, sources, Doppler, complete bearing information, and target movement) with the SAC and other cooperating units when contact is gained.

(NR) (NMM) See APP-1 for passive contact handover procedures.

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9125 PASSIVE SONOBUOY PROCEDURES

9126 SONOBUOY PATTERN (JEZPAT) PROCEDURE

JEZPAT procedures facilitate the ordering or reporting of a sonobuoy barrier or pattern. This pattern can be of any size up to a maximum of 81 sonobuoys and can be of any shape depending on the posts specified. Post spacing is equal in all directions. Care must be taken when choosing the master post to ensure that the field can be expanded later.

(NR) (NMM) APP-1 contains the JEZEBEL handover and contact reporting procedure.

9127 SONOBUOY INTERFERENCE AVOIDANCE PLAN (SIAP)

When sonobuoy-equipped units are operating in adjacent areas and mutual interference is likely, the controlling authority (the OTC/delegated commander during direct support operations and the shore headquarters during area operations) should formulate a SIAP.

(NC) (NMM) The SIAP is achieved by ordering that odd-numbered channels or even-numbered channels, as appropriate, should not be used close to (normally within 40 nautical miles) the adjacent area. The appropriate area boundary is specified geographically; for example, N, SE, or WNW. The RF capture phenomenon should also be exploited to avoid mutual interference. SIAP is also achieved by assigning different channel bands to separate units operating in proximity (e.g., Helos 1-10, MPA 11-20, Ships 21-31).

a. Promulgation of SIAP. The SIAP should be promulgated in the tasking or joining instructions. An example is given in Figure 9-1.

b. Direct Support. Channels should be allocated to direct support units by the OTC/ delegated commander such that ***even*** channels are dropped to port of MLA and ***odd*** channels to starboard of MLA. Units on area operations adjacent to direct support areas are to observe the corollary of this rule; that is, an aircraft on area operations adjacent to a direct support unit to port of MLA should use only odd-numbered buoys within 40 nautical miles of the direct support area.

c. Associated Support/Area Operations. For fixed-wing aircraft assigned to either Associated Support or area ASW operations, the SIAP should be based upon the expected geographic separation of sonobuoy search patterns. Arbitrary odd/even plans should be avoided unless multiple search assets are assigned to the same geographic area.

d. Units Prosecuting a Submarine Contact. SIAP restrictions do not apply and these units are permitted to use any sonobuoys, using the shortest practical life.

e. Specific Channels. Some channels may be reserved by the OTC/delegated commander for communication with submarines in direct support.

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9130 ASW SUBMARINES

9131 GENERAL CONSIDERATIONS

ASW submarines may be employed in the following roles:

a. Area operations.

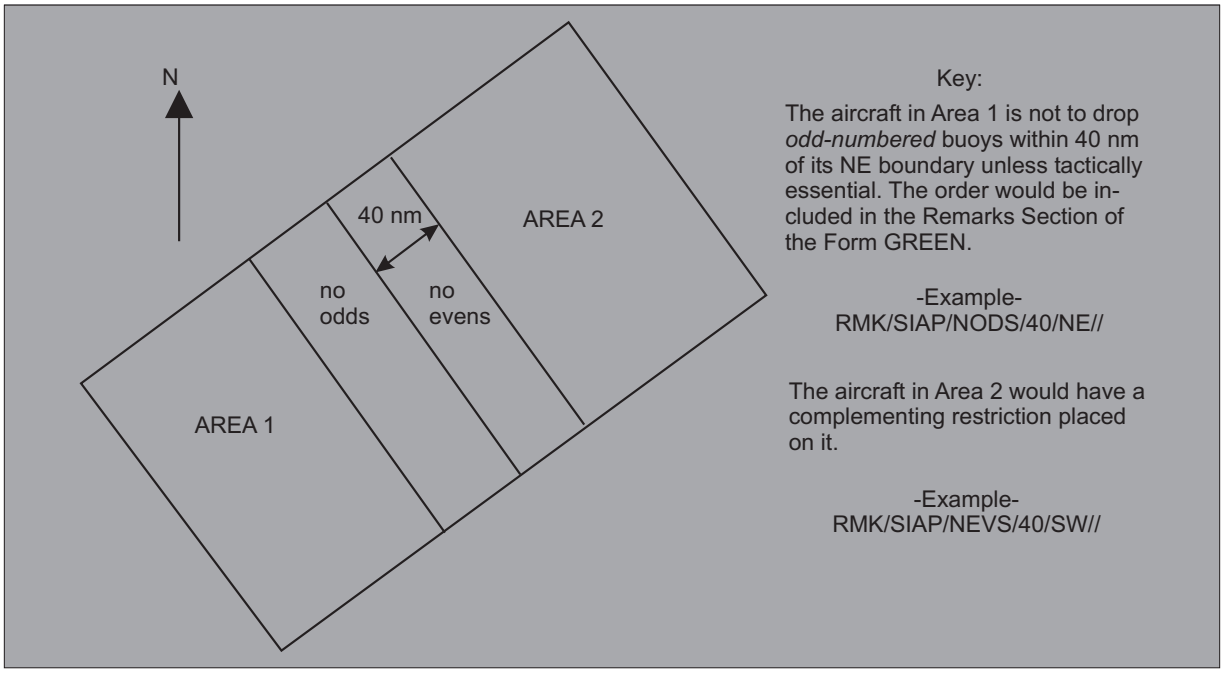
b. Associated Support operations.

c. Direct Support operations.

d. Integrated operations.

9132 (NC) (NMM) PROCEDURES FOR COORDINATED SUBMARINE/TASK GROUP ASW

a. Requesting Submarine Assignment. The OTC or SOCA submits requests for submarines to the SUBOPAUTH per the format in ATP 18. This request should include the following information and be of sufficient detail for the SUBOPAUTH to make a decision regarding submarine assignment.



(NATO-CONFIDENTIAL) (NMM)

Figure 9-1. (NU) (NMM) Example of SIAP Between Two Aircraft

(1) OTC of supported force and commander designated to function as SOCA.

(2) Mission, intentions, and PIM of supported command.

(3) Number of submarines requested and duration of support.

(4) Proposed employment of submarines.

(5) Level of command and control requested: Associated Support, Direct Support, or Integrated Operations.

(6) Desired area of operations (location, size) and type of areas (SAA or JTAA for support operations and TGSA for integrated operations).

(7) Tactical coordination information.

(8) Threat intelligence/situation assessment.

(9) Other amplifying information.

(l0) Nomination or request for a Submarine Element Coordinator (SEC) and/or augmentation required for a Submarine Advisory Team (SAT).

b. Availability of Submarines. If SSNs (or diesel-electric submarines suitably fitted with the necessary communication and sensor equipment) are available for coordinated operations, the SUBOPAUTH will assign appropriate units, provide SUBNOTE coverage and submarine operating areas (SAA or JTAA for support operations and TGSA for integrated operations), provide personnel augmentation as needed, and keep the OTC advised. The SUBOPAUTH will advise the OTC of submarine assignments and their significant equipment configurations.

9133 (NC) (NMM) EMPLOYMENT OF SUBMARINES IN AREA OPERATIONS

Submarines may be employed in area operations to conduct an individual area patrol. Such submarines operate independently under the control of the SUBOPAUTH, who may assign them specific tasks that are supportive of a surface force. These tasks are normally executed autonomously with no requirement for the submarine to communicate or cooperate with the supported force. The SUBOPAUTH retains tactical control and informs the supported force commander concerning task status and completion.

9134 (NC) (NMM) EMPLOYMENT OF SUBMARINES IN DIRECT SUPPORT

Submarines in direct support operate under the tactical control of the OTC or designated subordinate commander who controls the movement and tactical actions of assigned submarines within specific waterspace areas designated by the SUBOPAUTH (see Chapter 6). A submarine conducting direct support is designated SSC(DS), SSK(DS), or SSN(DS) as appropriate.

a. A direct support submarine will normally operate within a JTAA. The OTC may maneuver the submarine freely within the JTAA (but will not direct the submarine to leave the JTAA) and is responsible for submarine safety within the JTAA. The SUBOPAUTH is responsible for promulgating the submarine's waterspace management area and for preventing mutual interference between direct support submarines and all other friendly units not under the OTC's tactical command. ASW weapon restrictions that protect friendly submarines from attack by friendly ASW forces are also described in Chapter 6.

b. Employment Options. Submarines operating in direct support, as well as integrated operations, may be used in, but not restricted to, one or more of the following roles (see ATP-18, Chapter 13 for more details :

(1) Transit operations.

(2) Precursor operations.

(3) Barrier operations.

(4) Coordinated ASW/ASUW operations.

(5) Aided intercept.

(6) Tracking operations.

(7) Delousing operations.

(8) Land attack missile operations.

(9) Naval minelaying operations.

(10) Special operations.

(11) Submarines in support of amphibious warfare (SSAW).

(12) Intelligence surveillance and reconnaissance operations.

(13) Search and rescue.

c. Speed of the Force. The speed of the force is a major determinant of how the submarine can be employed and how effective it will be.

NOTE

Support submarines should not be required to advance through stepped operating areas at SOAs greater than l0 knots for SSNs or 4 knots for diesel-electric submarines.

9135 (NC) (NMM) COMMAND, CONTROL AND COMMUNICATIONS IN SUBMARINE DIRECT SUPPORT AND INTEGRATED OPERATIONS

a. Shifting TACOM or TACON of Submarines. Procedures and requirements for shifting TACOM or TACON are contained in Chapter 13 of ATP 18. Placing a submarine in direct support/integrated operations, thereby shifting TACOM/TACON to the force commander (who may then delegate TACON to a subordinate commander), is normally the best command and control option for coordinated submarine/task group operations. If the assigned submarine's primary warfare area tasking will be ASW, the ASWC should be designated as the SOCA (see Chapter l).

(l) The SUBOPAUTH will use the Submarine Initial Assignment and Tasking Message per ATP 18, to inform designated submarines of the shift in TACOM or TACON and relay initial tasking and coordination information provided by the force commander.

(2) Before the SUBOPAUTH will assign submarines in direct support or integrated operations, a Submarine Element Coordinator (SEC) must be designated and confirmed by name. Depending upon the number of submarines assigned, the anticipated duration of the assignment and available assets, additional Submarine Advisory Team (SAT) personnel may be required as watchstanders and planners for the SEC. The SUBOPAUTH may waive the requirement for an SEC.

b. Relinquishment of TACOM or TACON. TACOM or TACON of submarines will be returned to the SUBOPAUTH, as mutually agreed between the force commander and the SUBOPAUTH, either upon the loss of all communications between the officer exercising tactical control and the submarine, or whenever ordered by the SUBOPAUTH. When, for whatever reason, TACOM or TACON is returned to the SUBOPAUTH, the OTC is responsible for sending a Relinquishment of TACOM/TACON message per ATP 18. This message is intended to inform the SUBOPAUTH of the submarine's tactical situation when it has operated in direct support or integrated operations for an extended period of time and the SUBOPAUTH has incomplete knowledge of submarine tasking.

c. Communications. Communications requirements for submarine direct support or integrated operations are extensive. Details are found in ATP l8.

9136 (NC) (NMM) STATIONING CONSIDERATIONS FOR COORDINATED OPERATIONS WITH SUBMARINES

a. Determining the Position(s). The SOCA, when proposing the position(s) of JTAAs and/or SAAs of submarines, should consider:

(1) Number of submarines assigned and capabilities (particularly sonar equipment and weapons).

(2) Desired size of each submarine's JTAA and the separation between areas.

(3) Separation required between the submarine and surface forces to avoid acoustic interference.

(4) Additional command, control and communication requirements.

b. Acoustic Interference From Own Force. The position of the submarine relative to own forces to minimize the effect of acoustic interference will depend on the sonar conditions and the characteristics of own forces. As a rough guide, active sonar interferes with submarine passive sonars within l0 nm

of a surface force when an active search is directed away from the submarine, and within 35 nm when the search is directed toward the submarine. Furthermore, masking of enemy submarines by propulsion noise may occur if friendly ships are stationed in the search area of the support submarine. Consideration must also be given to interference via convergence zone propagation.

c. JTAA Size and Use of SGSA. A JTAA must be sufficiently large to allow the submarine the freedom of maneuver to carry out its patrol. SGSA procedures should be used extensively to allow surface/air units the possibility for use of ASW weapons so that enemy submarines are not given immunity from attack. Regarding paragraph b above , and in order to prevent or minimize the adverse effects of ASW active sensors or surface forces or aircraft upon the operation of friendly submarine, employment of these sensors should be carefully considered throughout the SGSA. Appropriate coordination with the submarine is recommended.

JTAAS that have a common boundary have the net effect of creating a safe haven along the ajoining boundary. Contacts in the vicinity of that common boundary can not be attacked by either submarine, nor can they be attacked by air/surface units without first establishing a NOTACK with both friendly submarines. Separating JTAAS by a distance equal to or greater than the submarine torpedo weapon standoff distance allows each submarine to engage subsurface targets outside the JTAA and inside known ASW/FAS.

9137 (NC) (NMM) EMPLOYMENT OF SUBMARINES IN INTEGRATED OPERATIONS

Submarines in integrated operations operate under the tactical command of the OTC who assumes responsibility for their WSM and PMI within the TGSA assigned by the SUBOPAUTH (see Chapter 6). This includes the promulgation of WSM Areas within the TGSA. Employment options and speed of force considerations are identical to those for direct support submarines (see Article 9134).

9138 (NC) (NMM) EMPLOYMENT OF SUBMARINES IN ASSOCIATED SUPPORT

A submarine conducting Associated Support operations is designated SSC(AS), SSK(AS), or SSN(AS) as appropriate. This mode of support submarine operations is employed when on-scene

coordination with (but not direct control of) support submarines is required, or when the criteria for Direct Support operations cannot be met. Tactical control is retained by the SUBOPAUTH, who coordinates tasking of the submarine with the OTC's support requests. The SUBOPAUTH will assign and station the submarine(s) using SUBNOTE and WSM message procedures in coordination with the OTC's requirements. The OTC/SOCA will normally amplify submarine tasking using the Submarine Force Summary message. Effective employment of associated support submarine(s) depends on the OTC/SOCA informing the SUBOPAUTH of desires for submarine employment in a timely manner to allow adequate time for repositioning. Dedicated communications are required. In Associated Support operations, the submarine may communicate directly with the OTC, but must receive operational tasking and weapons release authority from the SUBOPAUTH.

a. Employment Options. Submarines in associated support may be employed by:

(l) Using procedures described for direct support submarines.

(2) Using tactics normally employed in area operations, but in coordination with the OTC/SOCA of the supported force.

b. Reports From Submarines. Supporting submarines should use report formats contained in APP-1, APP-11, and ATP-18 to pass tactical, operational, and status information to the OTC/SOCA and the SUBOPAUTH .

c. Communication Windows. Three types of communication window may be ordered when using relay aircraft. Details are set forth in Chapter l2 of ATP l8.

9139 (NC) (NMM) STOVEPIPE PROCEDURES

A STOVEPIPE is a static haven that has a radius of 5 nm from the surface to a specified depth, centered upon a specified geographic point. A set of STOVEPIPEs may be put into effect within a designated area. All STOVEPIPEs are established by the SUBOPAUTH.

a. Whenever a single STOVEPIPE is established, it is promulgated as a geographic position, specified depth, unit assigned, and effective period.

-Example-

STOVEPIPE, 3700N/0 01600W/7, SURFACE TO 150M6, FOR BLUEFISH 131600Z1-141900Z5.

-Or-

When there is a requirement to express depth in feet, this would read: STOVEPIPE, 3700N/0 01600W/7, SURFACE TO 400FT4, FOR BLUEFISH 131600Z1-141900Z5.

b. Whenever a set of STOVEPIPEs is established, two STOVEPIPE plans are available.

(l) PLAN ALFA STOVEPIPEs are located at the intersection of each whole degree of latitude with each whole degree of longitude and each half degree of latitude with each half degree of longitude within the designated area.

(2) PLAN BRAVO STOVEPIPEs are located at the intersection of each half degree of longitude with each whole degree of latitude and at each half degree of latitude with each whole degree of longitude within the designated area.

(3) Whenever a STOVEPIPE lies on a boundary of the designated area, it shall extend beyond the area to include the full 5-nm radius.

(4) The establishment of a set of STOVEPIPEs is indicated as a STOVEPIPE PLAN, a designated area, specified depth, unit assigned, and effective period.

-Example-

STOVEPIPE PLAN BRAVO, 33N6 35N8 006E6 008E8, SURFACE TO 150M6, FOR BLUEFISH 131600Z1 - 141900Z5.

-Or-

When there is a requirement to express depth in feet, this would read: STOVEPIPE PLAN BRAVO, 33N6 35N8 006E6 008E8, SURFACE TO 400FT4, FOR BLUEFISH 131600Z1 - 141900Z5.

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9141 (NC) (NMM) AIDED INTERCEPT BY SUBMARINES

Aided intercept is the process of providing information, directions, and advice to assist a submarine to intercept any seaborne force. The degree of control depends on the circumstances of the operation, the predictability of an opposition force's movement, etc., but should always allow freedom of maneuver to the friendly submarine. Because of the unpredictability of the target's movement, the submarine's area may require frequent and timely modification. Coordination between the submarine, SOCA, and SUBOPAUTH is essential. Details for conducting aided intercept are contained in Chapters 2, 3, and 13 of ATP l8.

a. Tactical Control. Controllers must ensure that aircraft and other units under their control are fully aware of the existence and position of the SAA or JTAA in which the submarine(s) is (are) operating. If the contact of interest leaves the submarine's area, the SOCA must decide whether to cancel the intercept tasking or to obtain a new waterspace area assignment from the SUBOPAUTH.

b. Targeting. Targeting for an aided intercept involves the use of information inputs from diverse sensors and platforms. Collection and analysis of this information prior to its being passed on to the submarine is highly desirable. The submarine may otherwise receive conflicting contact information without the means to determine which information is valid. Further, valuable search time can be lost if raw information is transmitted to the submarine. It is the SOCA's responsibility to ensure that only necessary information is provided. The submarine Broadcast Control Authority (BCA) and the OTC/SOCA have message screening responsibilities to ensure that only necessary traffic is passed to the submarine.

c. Coordination Required. The degree of coordination between the SOCA and the submarine determines the success of aided intercept procedures. The SOCA must provide timely information about the contact's movements, while allowing for communication delays, so that the submarine can achieve an intercept position well in advance of the contact of interest's arrival at the projected intercept point. Information provided to the submarine must indicate the quality and timeliness of the information. The SOCA must be prepared to act with dispatch in response to revised estimates of target motion.

d. Tasking Message. The SOCA should issue a message initiating the aided intercept. The SUBOPAUTH will promulgate this information to the submarine by use of BARNSTORM procedures (see ATP l8). All ASW capable units need to be apprised of JTAAs or SAAs established in support of the aided intercept operation. The mission tasking and Rules of Engagement (ROE) under which the aided intercept is to be carried out are to be specified. The WHAT, WHERE, WHITHER, and WHEN components

in the message refer to the latest contact report on the target assigned by the Aided Intercept/BARNSTORM message.

9142 (NC) (NMM) OPERATION DISROBE

a. Description. This procedure is designed to confuse and break the missile-firing solution of an SSGN that may be trailing a high value unit (HVU), with or without the support of a marking unit. Supporting (DISROBING) ASW forces set up local ASW surveillance areas through which the HVU (DISROBED) group steams. On passing through the ASW surveillance area, the DISROBING and DISROBED forces employ vigorous deceptive maneuvers, combined with electronic and acoustic deception, to try to break the contact of the trailing SSGN and units marking the HVU. On completion of DISROBE in the ASW surveillance area, the HVU may then proceed to DISROBE with a second ASW group in a different area.

b. Deception Tactics. DISROBE stands little chance of throwing off a trailing SSGN unless comprehensive deception measures are carried out, including rigorous enforcement of EMCON policies. Measures to be considered include ship maneuvering, acoustic deception, and electronic deception.

(1) Ship Maneuvering.

(a) Exchanging the HVU's escort with DISROBING force unit.

(b) Splitting the HVU group into smaller groups on passing through the DISROBING force's formation.

(c) Use of high speed by certain units.

(d) Conducting DISROBE at night or in poor visibility.

(e) Harassing surface marking units by close countermarking to reduce their concentration on recording DISROBE maneuvers.

(2) Acoustic Deception.

(a) Use of high-powered sonars as decoys.

(b) Use of noisemakers to increase underwater sounds.

(c) Reduction of the HVU from four propellers to two propellers combined with the use of any other available ship with four propellers to simulate the HVU.

(d) Coordinating the sonar radiation policy between DISROBING and DISROBED forces in conjunction with deceptive ship maneuvers.

(e) Jamming underwater communications.

(3) Electronic Deception.

(a) Suppression of high-powered and distinctive emissions, such as tacan and air warning radar.

(b) Intelligently conceived and rigidly enforced emission policies on all radars and communication circuits in both forces, allowing for ship safety at close quarters during high-speed maneuvers by day and night.

(c) Use of deceptive tactical messages.

(d) Jamming.

c. Action by DISROBED Group. The OTC of the HVU group is to inform the OTC of the DISROBING force of:

(1) Rendezvous.

(2) HVU screened and screening unit formation.

(3) HVU PIM.

(4) Safety course and minimum distance ships of the DISROBING force may pass HVU screened and screening units.

(5) Intended air operations.

(6) Deception measures to commence on passing through rendezvous, to include:

(a) Intended alteration of course and speed by the HVU.

(b) Splitting of the HVU group into smaller groups, including their composition.

(c) Acoustic emission policy.

(d) EMCON plan.

(e) Number of propeller shafts to be used by heavy units.

(f) Measures to be used to confuse surface marking units.

(7) Communications.

(8) Data-link instructions.

d. Action by DISROBING Force. The disposition and tactics of the DISROBING force are at the discretion of that force's OTC, except that he must ensure that when the DISROBED group passes through the rendezvous, none of the DISROBING units are to close within the ordered distance from the HVU and its escorts.

e. Air Operations.

(1) The OTC of the HVU group is to coordinate air operations to prevent mutual interference between the groups.

(2) ASW operations will take precedence during DISROBE. A CV will normally suspend fixed-wing aircraft launch and recovery operations while DISROBE is in progress.

SECTION II — CONTACT PROSECUTION

9200 GENERAL CONSIDERATIONS

The reaction of units gaining contact on a hostile submarine will be influenced by:

a. The range at which contact was gained.

b. The capabilities and ranges of own ASW sensors and weapons.

c. The degree of threat to the force screened.

d. The classification of the target.

9201 CONTACT CLASSIFICATION

Classification is the method by which subordinate commanders inform their superiors and other units of their opinions as to whether contacts which they have just detected or are investigating are of submarine origin. Since classification is subject to the individual reactions of personnel who have varying degrees of experience, classification terms are inevitably subjective in character. The maximum possible degree of standardization is essential if senior officers and accompanying forces are to react quickly and with confidence to contact reports. Classification terms are therefore intended as a guide; reporting commanders may use their own judgement in interpreting the terms, always bearing in mind the aim of such reports.

9202 CONTACT CLASSIFICATION TERMS

a. CERTSUB (Certain Submarine Contact). A contact that has been sighted and positively identified as a submarine is classified CERTSUB. Parameters for this assessment are: a surfaced submarine; a submerged submarine; submarine masts, antennae, periscope or snorkel; a missile emerging from the sea-sighted and positively identified by competent personnel. If any doubt exists about the certainty of the observation the contact should not be classified CERTSUB.

b. PROBSUB (Probable Submarine Contact). A contact that displays strong cumulative evidence of being a submarine is classified PROBSUB. Evaluation of a contact obtained by one or more of the following sensors. Possible sensors include sonar, radar, electronic intercept, magnetic anomaly detector (MAD), passive or active sonobuoys, towed arrays, optronics, and other devices may be followed by a PROBSUB classification. The possible means of sensor contact are numerous. The following guidelines illustrate the extent and quality of the evidence that is required before a PROBSUB classification may be made.

(1) Contact by Active Sonar or Active Sonobuoy.

(a) Competent personnel report a firm sonar contact showing submarine characteristics. **(NC) (NMM)** These include a plot of the submarine's track consistently compatible with any Doppler effect detected, and exhibiting at least one of the following effects:

i. Pronounced wake.

ii. Propeller or distinctive submarine noises.

iii. Characteristic silhouette from a bottomed-target sonar set or similar high-resolution sonar sensor.

iv. Sonar signals, sonar jamming, obvious decoys, or torpedo noises.

(b) When none of these effects appears, the contact must be confirmed by another type of sensor. A contact held only by two different active sonars at the same time is insufficient criteria for PROBSUB classification.

(2) Broadband Contact by Passive Sonar or Passive Sonobuoy. Consistent tracking of a firm contact with courses, speeds, or other indications, which are compatible with submarine characteristics, and are confirmed by at least one other type of sensor.

(3) Radar Contact. Confirmation of a radar contact by at least one of the following, obtained simultaneously or in close sequence:

(a) Search receiver contact on the same bearing and displaying characteristics of a distinctive submarine radar.

(b) Active or passive sonobuoy or MAD tracking.

(c) Sonobuoy and MAD contact near datum.

(d) Sonar contact having submarine characteristics.

(e) Lofar contact evaluated as submarine.

(4) (NC) (NMM) ESM Contact. All of the following conditions must be met:

(a) The intercepted signal shows all of the characteristics of a distinctive known submarine radar, and either:

i. A fix is established by crossed ESM bearings, or

ii. An ESM bearing is confirmed by a radar contact obtained simultaneously or in close sequence.

(b) There are no ASW units in the immediate area of the contact position, and the ESM and radar contact appear or disappear at the same time.

(5) MAD Contact. MAD is normally a confirmatory sensor used in conjunction with other sensors. **(NC) (NMM)** In cases in which MAD is the initial detection or main classification sensor, there must be:

(a) Sufficient tracking information to give strong evidence of a submarine target, and

(b) Confirmation by at least one other type of sensor.

(6) Narrowband Passive Sonar Contact. A lofar signature is evaluated as a submarine; if known, the type of submarine is to be included in the classification.

c. POSSUB (Possible Submarine Contact). A contact on which available information indicates the likely presence of a submarine, but there is insufficient evidence to justify a higher classification. A classification of POSSUB may be given under any one or more of the following conditions:

(1) An object thought to be a surfaced submarine, submerged submarine, submarine periscope, or snorkel is sighted; but, because of poor visibility or the lack of competence of the observer to recognize such objects, the criteria for CERTSUB cannot be supported.

(2) Active or passive sonar, MAD, radar, ESM, EER, active or passive sonobuoys, towed acoustic arrays, and other devices; such contacts are investigated or tracked, without confirming all of the characteristics listed for PROBSUB, but are suspected to be of submarine origin.

(3) Surface flares, blinker lights, tracer lights, and similar indications are thoroughly investigated, do not lead to submarine sightings or sensor contact, but are suspected to be of submarine origin.

(4) Surface ship HF/DF contact on a signal classified as being of submarine origin.

d. Confidence Level. The classification POSSUB must always be amplified by adding an assessment of the confidence level. Confidence levels are specified as follows:

(1) LOW CONFIDENCE — A contact that cannot be regarded as NONSUB and requires further investigation. This assessment may be further amplified by using grades 1 and 2, 1 being the lower grade.

(2) HIGH CONFIDENCE — A contact that from the evidence is firmly believed to be a submarine, but it does not meet the criteria established for PROBSUB. This assessment may be further amplified by using grades 3 and 4, 3 being the lower grade.

e. NONSUB (Nonsubmarine Contact). After investigation, a contact that is shown to have characteristics that exclude the possibility that it is a submarine. NONSUB is a firm statement that the classifier is entirely satisfied his contact is not a submarine. When a contact is lost which was previously classified POSSUB or PROBSUB, it is dangerous and wrong to amend the classification to NONSUB without the most thorough investigation.

9203 CONTACT REPORTING

a. General Considerations.

(1) Initial Contact Reporting and Classification. To initiate rapid response to counter what may be an imminent enemy attack, the initial contact (whether classified or not) must be reported immediately. When not included in the initial report, a classification must be made in the subsequent amplifying report. Where possible, contacts should additionally be amplified by propulsion and class.

(NR) (NMM) Voice contact procedures are contained in APP 1. Enemy contact reports are contained in APP-11.

(2) Subsequent Evaluation. Reclassification of a contact continues throughout the entire ASW action, and subsequent reports by a unit may amend or amplify the classification. Prosecuting units must continually review contact classification using other sensors as available.

(3) Command Responsibility. When more than one ASW unit is in contact, the SAC or OTC (or ASWC if delegated) evaluates all information and classifications and reports the contact together with his classification.

(4) (NR) (NMM) Conditions. Since environmental conditions must be considered in the classification of contacts, ATP 28 should be consulted for the effects of environmental considerations on various sensors.

(5) Contact Information. The method in which contact was obtained, maintained, or localized may be of assistance in assessing a passive acoustic contact report.

(NC) (NMM) In order to readily describe the method, single-letter designators from Table 9-3 may be included in the amplifying data block of a Raid Report or Enemy Contact Report, e.g., "POSSUB 2251RED l23 TACK 456 ZULU-FOXTROT l0 NM POSSUB 225l.

Table 9-3. (NU) (NMM) Passive Acoustic Designation

Area of Probability (AOP)	F ( )	Acoustic/Doppler/TMA derived area of probability (accuracy estimate in miles)
	M ( )	Closest point of approach (CPA) (range in yards)
Line of Bearing	P	Bearing from single sensor
Omni-directional	L ( )	Convergence zone contact (first CZ range in miles)
	O	Non-convergence zone contact

(NATO-UNCLASSIFIED) (NMM)

b. (NC) (NMM) Submarine Contact Reporting. The precedence of contact reporting (i.e., task force alertment) or contact engagement; when, how, and to whom should the submarine report; and under which circumstances, is highly dependent upon the scenario and the distance of the friendly submarine from the force. Requirements placed on the submarine should be clearly specified by the OTC/SOCA as a preplanned response in associated support, direct support and integrated operations.

c. Choice of Reporting Method. The following guidelines are available to the submarine:

(1) If the initial contact report is made using a SLOT buoy and the first amplifying report is made within 30 minutes using a SLOT buoy, and a relay aircraft is on station, then either one or both of the reports will be delivered to the ASWC in approximately 95 percent of the cases.

(2) Unless the contact was initially assessed as near, a loss of contact information for l0 minutes is good cause to come to periscope depth and report by radio.

(3) When reporting by radio, it is appropriate to employ both UHF voice to an ASW aircraft and a hard-copy message via satellite relay when such communication paths are available. The hard-copy message provides accurate message delivery to the OTC/SOCA and the UHF voice report keeps the on-scene ASW aircraft current as to contact information for coordinated contact prosecution.

(4) In the course of a contact prosecution, extended periods (greater than 20 minutes) at periscope depth for the purpose of communications are to be avoided.

(5) For purposes of contact reporting, a contact that is regained after more than l hour of lost contact should be treated as a new contact if a lost contact report had been sent prior to regaining contact.

d. ASW Aircraft Relaying Contact Reports. Initial contact reports and amplifying reports will be relayed to the OTC/SOCA or other appropriate commander, exactly as received, without delay. When SLOT buoys are used, the channel number, time of receipt and, when available, SLOT location data will also be passed.

e. TAS Contact Reports. Towed array ships will report contacts using standard procedures (see Article 6320 and APP-11). However, during TAS contact prosecution, long-range communications will be required (see Article 4160(b)) to:

(1) Report contacts.

(2) Exchange contact data with other towed array ships.

(3) Report threat AOPs as a result of crossfixes or TMA.

9204 — 9209 SPARE

9210 ASW ATTACK POLICY

9211 GENERAL

a. Types of Attack. Attacks may be URGENT or DELIBERATE. The purpose of an URGENT attack is to upset the submarines plan of action and gain the initiative in the engagement; speed of action is essential and outweighs accuracy. The purpose of a DELIBERATE attack is destruction of the hostile submarine using the most effective ASW weapon for the prevailing tactical situation. Accuracy is more vital than speed.

b. (NC) (NMM) ASW Actions. These may be CLOSE (within 8,000 yards) or STANDOFF (outside 8,000 yards).

9212 (NC) (NMM) SURFACE SHIP ASW ATTACK POLICY

a. Sonar Contact:

(1) If the contact is an immediate threat, carry out an urgent attack.

(2) If the contact is not an immediate threat, take appropriate torpedo countermeasures and carry out a deliberate attack employing medium- and long-range weapons or vectored attacks whenever possible.

b. Other Than Sonar Contact:

(1) If the contact is an immediate threat, consider conducting an attack on available information while maneuvering to gain sonar contact and switching on other sensors ordered or permitted by the EMCON plan.

(2) If the contact is not an immediate threat, the detecting ship takes appropriate countermeasures and maneuvers to gain sonar contact but is not to leave her station or sector unless authorized; however, other ships in sectors or patrolling stations should anticipate possible detachment by moving toward the engaged side of their sector or patrol line.

9213 (NC) (NMM) FIXED-WING AIRCRAFT ASW ATTACK POLICY

a. Policy on Use of Weapons. Policy on the use of weapons must be specified at briefings or during the joining procedure. In general, attack policy depends on the tactical situation and on the classification of the contact. Fixed-wing aircraft should follow attack policy in force and, if required, show appropriate IFF.

b. Urgent Attacks. Regardless of the classification, urgent attacks are to be carried out on contacts which pose an immediate threat. At the SACs discretion, aircraft may attack individually or in coordination with other aircraft in accordance with the following:

(1) CERTSUB or PROBSUB. Aircraft should carry out attacks as frequently as opportunity offers, except in coordinated operations in which attacks are conducted in accordance with the attack policy in force.

(2) POSSUB, CONFIDENCE HIGH. Contact may be attacked by the first available means unless otherwise directed.

(3) POSSUB, CONFIDENCE LOW. Contact will be attacked if it presents an immediate threat.

9214 (NC) (NMM) HELICOPTER ASW ATTACK POLICY

a. Advanced Screening or Searching. Attack in accordance with the attack policy in force. Show the appropriate IFF, if required.

b. Screening (Deliberate Attack). Carry out a HOVERTAC in accordance with the attack policy in force, or maintain contact until assisting units arrive.

c. Screening (Urgent Attack). Carry out a HOVERTAC or SELFTAC if the contact is an immediate threat and no other unit is in a better position.

9215 (NC) (NMM) ATTACK RESTRICTIONS WHEN OPERATING WITH SUBMARINES

a. Requirements. ASW attack restrictions when operating with a submarine are governed by the type of action area in which the submarine is operating. See Chapter 6.

(1) No air or surface ASW attacks are permitted inside a SAA.

(2) No aircraft (including helicopters) or surface units may attack a submarine contact inside a JTAA unless a SGSA or NOTACK area has been established per the procedures of Chapter 6.

NOTE

No aircraft or surface unit may attack a submarine contact that is within a NOTACK area. Attacks may be conducted within a SGSA provided a NOTACK area has been established. Attacks within a JTAA but outside an established SGSA require authorization by the SGSA Coordinating Authority/Unit.

(3) Use of air or surface ASW weapons is unrestricted in an ASWFA.

b. Compensatory Allowances.

(1) Air/Surface ASW Attacks. For any ASW engagement, air and surface units shall apply a compensatory allowance that minimizes the risk of that weapon inadvertently entering an area containing a friendly submarine. Conceptually a compensatory allowance is a weapons danger zone with a navigation safety buffer that applies to SAA, JTAA, and activated SSL, MEADOW, NOTACK and SGSA boundaries.

(2) ASW Aircraft With Inoperable Navigation Systems. ASW aircraft which cannot make an accurate assessment of navigation error because of inoperable navigation equipment may not attack a submarine contact inside a JTAA or within 10 nm of a SAA or JTAA boundary without authority, and then only while under the direction of another unit with an adequate navigation capability, such as an ASW helicopter control ship.

9216 (NC) (NMM) ASSIGNED SUBMARINE ASW ATTACK POLICY

a. Urgent Attacks. If a contact poses an immediate threat to friendly units an urgent attack should be conducted if within weapons range. Otherwise, a contact report should be made in accordance with article 9203 to alert the force.

b. Deliberate Attack. The OTC/SOCA should clearly specify preplanned responses for assigned submarines, specifically identifying criteria when the submarine is expected to report first and when it is expected to conduct a deliberate attack first. A SLOT buoy may be used in order to simultaneously report the contact and conduct an attack (see article 9203). If the contact cannot be successfully reported using a SLOT buoy, the following factors should be considered when prioritizing force alertment or conducting attack:

(1) Can the submarine localize the contact for attack before an assisting platform would be able to attack.

(2) Can the submarine localize the contact for attack before the contact is able to close unalerted friendly units within its weapons range.

(3) Can the submarine localize the contact for attack before the contact will transit out of the friendly submarine's assigned area.

9217 (NR) (NMM) ASSESSING DAMAGE

The standard method of damage assessment is set forth in ATP 28.

9218 — 9219 SPARE

9220 COORDINATED ASW

9221 DATUMS

a. Establishing a Datum. A datum may be established by the OTC, ASW commander, screen commander, SAU commander, SAC, or the last unit losing contact. A unit or authority establishing a datum will report the following to the OTC and the appropriate commander in the sequence:

(1) Datum established.

(2) Datum position.

(3) Datum error.

(4) Last known course and speed of contact.

(5) Datum time.

(6) Source of information.

(7) Classification of contact on which datum was established.

b. Designating a Datum. The datum is given the track number of the submarine or sonar contact upon which it has been established. Subsequently, new datums established on the same contact retain the original track designator.

9222 ASW SEARCH PLANS

Table 9-4 summarizes the ASW search plans available for use by ships or by ships and helicopters. When helicopters are used, the letter H must be added as a suffix to the plan number. Search plans are shown in Figures 9-21, 9-22, 9-23, and 9-24.

(NR) (NMM) ASW surface searches are explained in ATP 28.

9223 COLLISION HAZARD DURING ASW OPERATIONS

a. Safety Maneuvers. ASW maneuvering plans for multiship ASW action are designed to reduce the collision hazard. However, International Regulations for Prevention of Collisions at Sea will take precedence over the maneuvers established by the maneuvering plans in use. If the situation becomes confused, or if there is a possibility of collision, the first ship recognizing such a danger is to order "Break off". At this order, the operation is discontinued, ships are to maneuver to avoid collision, and the action is resumed as soon as practicable.

b. Use of Navigation Lights. The attacking, directing, and assisting ships are required to burn sidelights when multiship attacks or close searches are being conducted during night operations, unless they are ordered to do otherwise. Dimmed sidelights may be used, but ships must have the facilities to rapidly switch them to full brilliance in an emergency. Dimmed stern lights should also be shown, whether or not they can be switched to full brilliance at short notice. This paragraph limits neither the authority of the SAU commander to order navigation lights darkened at any time, nor that of any commanding officer to turn them on at any time they are necessary.

Table 9-4. ASW Search Plans

Plan	Code	Purpose
1S	OAK TREE	For area search, intercept search, lost contact search, or bottom search by two or more ships.
2S **(NMM)**	ACORN	A lost contact search by two ships in close ASW action.
2SH MOD **(NMM)**	ACORN MODIFIED	A lost contact search by one ship and one helicopter in close ASW action.
14SH	CORDON	A sector search around a datum, involving one or more ships and/or helicopters.
Remark: **(NMM)** *For ASW surface search plans for convoy escorts (BEETROOT, CARROT), see Chapter 10.*		

NOTE

For lights to be shown by ships, helicopters, or other aircraft operating together at night or in low visibility, see Chapter 6.

c. Special Lights. Ships equipped with special lights are not to use such lights until their characteristics and meanings have been disseminated by the OTC to other units.

9224 — 9229 SPARE

9230 COORDINATED ASW ACTION

9231 ACTION ON GAINING CONTACT

A unit gaining contact is to report in accordance with Chapter 6 and assume the duties of SAC if not part of a SAU.

9232 (NC) (NMM) ACTION BY UNITS IN THE VICINITY OF THE UNIT GAINING CONTACT

Units in the vicinity of a unit reporting initial contact are to take immediate action to render assistance.

a. Surface Ship. The ship best placed to assist the detecting unit automatically acts as assisting ship unless otherwise directed. It is to report that it is assuming the duties of the assisting ship. If the detecting unit is an aircraft, the assisting ship may take control of the aircraft when in a position to control the action. Adjacent ships fitted with long-range weapons or weapon-delivery helicopters are to be prepared to provide immediate assistance.

b. Helicopter. Except when operating under close positive control, and when there is an immediate threat to a ship or the force, the helicopter nearest the detecting unit is to proceed to support the detecting unit and inform the detecting unit, HCU, or other appropriate authority of its intentions. When operating under close positive control, the helicopter is to await orders from the HCU before proceeding to assist the detecting unit.

(NC) (NMM) See article 9245 if the detecting unit is a friendly submarine.

c. (NC) (NMM) Fixed-Wing Aircraft. When a fixed-wing aircraft has received a request for assistance from the detecting unit, and when the tactical situation permits, the aircraft is to close that unit and inform the ASWACU of his intentions. The aircraft is to keep clear of weapon danger areas, using the limits provided by the ASWACU.

(NC) (NMM) See article 9245 if the detecting unit is a friendly submarine.

d. ASW Aircraft Control Unit. The ASWACU is to inform aircraft of the contact and:

(1) When a fixed-wing aircraft is in the vicinity of a contact that is an immediate threat, direct the aircraft to close the unit in contact and ensure that it keeps clear of weapon danger areas.

(2) If directed, transfer control of the aircraft to the unit in contact or to another unit in the vicinity of the contact.

e. Helicopter Control Unit. The ACU performing the duties of an HCU is to:

(1) Reassign helicopter screen stations as ordered by the OTC or appropriate commander.

(2) Inform helicopters of any contact that is an immediate threat.

(3) Direct the helicopter nearest the contact to a position in support of the detecting unit and:

(a) Inform the detecting unit of the helicopter's availability, weapon load, and control frequency in use.

(b) Be prepared to transfer control of the helicopter to the detecting unit, or the unit in the vicinity of the contact that is most capable of assuming HCU duties. Transfer of control may take place without further orders.

NOTE

Guidance in items 2 and 3 above applies to an aircraft performing HCU functions.

f. (NC) (NMM) Submarine. The detecting unit may gain contact inside the submarine's JTAA. If the submarine is aware of this, it may assist by contacting the detecting unit.

This will allow the detecting unit or SAC to request a NOTACK or conduct contact handover (see Chapter 12 to ATP 28).

9233 SENDING REINFORCEMENTS TO THE SCENE OF ACTION

a. Designation and Dispatch of a Search Attack Unit (SAU). The dispatch of a SAU is based on considerations of threat, mission, conditions, assets available, possibilities of evasion, environmental conditions, and so on. The assessment of the total threat will determine the type and number of units dispatched. The SAU may consist of ships and/or aircraft. Helicopters can provide a rapid reactive capability, provided the distance is such that the time on task will be worthwhile.

b. OTC/ASWC Functions.

(1) The OTC's general functions in ASW are in Table 1-4.

(2) Information required by SAU and SAU commander:

(a) Composition of the SAU and identity of the SAU commander.

(b) Identity of the SAC.

(c) Latest position, time, source of information, classification, and confidence level of the contact.

(d) If applicable: Datum designation, datum position, datum error, last known course and speed of contact, datum time, and SITREP.

c. SAU Communications. On dispatch of a SAU, responsibility for its communication requirements is transferred from the OTC to the SAU commander. Normally, the existing ASW circuits will continue to be manned by the SAU, with the remainder shifting to an alternative ASW control frequency (Procedure Alfa, see ACP 176) or screen tactical frequency (Procedure Bravo). Use should be made of standard tabulated messages, such as the ASW Action Table in ATP 1, Vol. II. The Single Letter Maneuvering Signals may be used for SAU action.

(NC) (NMM) Careful thought must be given to the Emission Policy adopted by the SAU commander to avoid alerting hostile units to the existence, composition, or position of the SAU.

9234 THE SAU COMMANDER

a. The SAU Commanders Responsibilities.

(1) Forming the units assigned and ordering the method of approach.

(2) Establishing communications on assigned SAU frequencies with units of the SAU and with the SAC.

(3) Designating the appropriate ACU; however, ACU duties are normally best carried out by the SAU commander.

(4) Establishing datums, as necessary.

(5) Promulgating helicopter alert states, if applicable.

b. Information To Be Passed by SAU Commander to SAU.

(1) Latest position, time, source of information, classification, and confidence level of contact.

(2) Identity of the SAC.

(3) ETA at contact or datum and, if applicable, the torpedo danger area.

(4) If applicable:

(a) Datum time, datum position, datum designation, and datum error.

(b) SITREP.

(c) Torpedo countermeasures to be employed.

(5) Intentions, including Plans RED and BLACK.

c. (NC) (NMM) Information To Be Passed by SAU Commander to SAC.

(1) Composition of SAU and call sign of SAU commander.

(2) Direction of approach, ETA at contact or datum (with revisions as applicable).

(3) Weapons available.

(4) Significant sensors operating at reduced efficiency or out of commission.

(5) If applicable:

(a) Altitude and off-task time.

(b) Intentions, if SWAP is contemplated, including time, and Plans RED and BLACK.

(c) Call signs of ACUs.

d. (NC) (NMM) Information To Be Passed by SAC to SAU Commander.

(1) Position, course and speed of contact, or datum position, time and error, source, and latest classification.

(2) Information necessary to enable the SAU to close the contact or datum.

(3) Number and type of weapons remaining.

(4) Weapons in water and the run-time remaining.

(5) Tactics and sensors employed.

(6) If applicable:

(a) Time remaining on task.

(b) Number of attacks made, types of weapons used, and results.

(c) Environmental conditions.

(d) Actions or operations by the SAU that are likely to interfere with the operations in progress.

(e) Sonobuoys in use, description of pattern, RF channel numbers, type, time laid, and life settings.

(f) Plans RED and BLACK.

(g) Submarine evasion tactics detected or believed to be in use.

9235 SAU APPROACH TO A CONTACT OR DATUM

The method of approach and countermeasures to be applied depend on the tactical situation. The SAU commander must balance the danger to the SAU against the subsurface threat to the main body, convoy, and to friendly land installations that may be targets for submarine-launched missiles and accept a calculated risk where necessary. Availability of a medium- or long-range weapon delivery capability, especially in good sonar conditions, may allow the SAU commander to use a more deliberate approach tactic than is necessary when only short- or medium-range weapons are available.

a. (NC) (NMM) Methods of Approach. Conditions under which the following approaches may be selected are summarized in Table 9-5.

(1) Direct. When a unit is in contact, the search line should take a course to the contact that allows for the submarines movement. When no unit is in contact, but time late is short enough to permit a single sweep to cover the furthest-on circle, the search line should proceed directly to the datum. Figure 9-2 may be used to verify whether the furthest-on circle can be covered with a single sweep. In any case, the

Table 9-5. (NU) (NMM) Selecting the Approach Method

UNITS	SITUATION	CONDITION	APPROACH
In contact			DIRECT
None in contact	URGENT (see Note 1)	Datum position is within 6 miles of the main body or convoy TDZ.	DIRECT
		Datum position is within 30° of the MLA of the main body or convoy and more than 6 nm from the main body or convoy TDZ.	OFFSET
		Datum position is more than 30° off the MLA of the main body or convoy and more than 6 nm from the main body or convoy TDZ.	INTERCEPT
		Submarine movement can be predicted.	INTERCEPT
	DELIBERATE (see Note 2)	Datum position is close enough to the SAU that the whole probability area can be covered by the search line.	DIRECT
		Probability area cannot be covered by the search line and there is no evidence of a likely submarine.	OFFSET or MIXED (see Note 3)

NOTE

1. Urgent situation applies when time is not sufficient to construct a datum approach triangle.
2. Deliberate situation applies when time is sufficient to construct a datum approach triangle.
3. *Mixed Approach:* Certain ships make an offset approach while others make a silent direct approach.

(NATO-CONFIDENTIAL) (NMM)

search line should be formed at an appropriate search distance, based on sonar conditions and the size of the area to be searched.

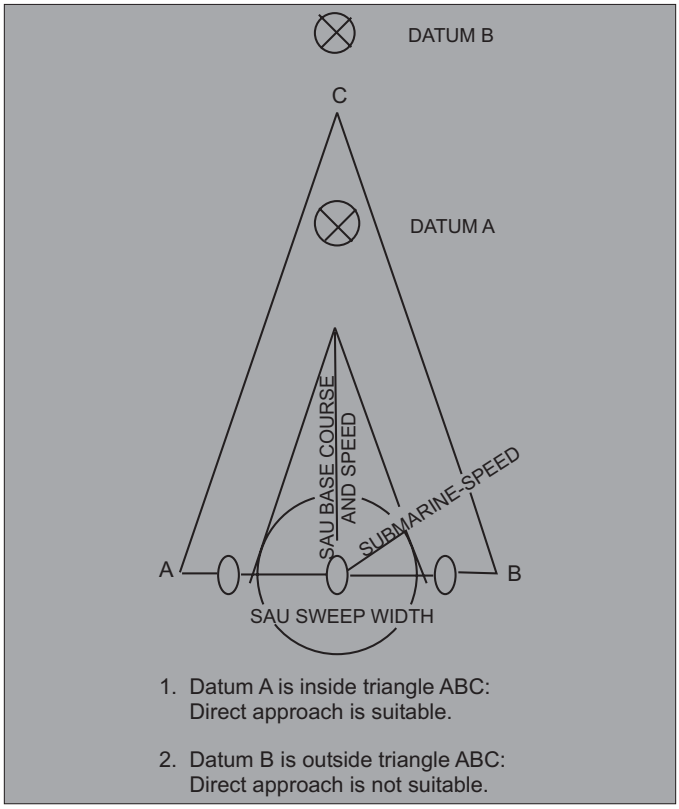
(2) Offset. When direct approach is not suitable (that is, spacing to cover the furthest-on circle would be too large for an acceptable probability of detection) or the direction of the enemy cannot be predicted, the search line shall proceed on a course that is offset 10º to 30º to one side of the direct course to the datum. The offset should normally be directed toward the mean line of advance (MLA) of the screened unit. This offset permits conduct of a logical search of the area and may deceive or persuade the submarine into steering a course away from the offset.

(3) Intercept. This method is used when direct approach is not suitable and the direction of the enemy can be predicted or when it is desired to place the SAU between the submarine and his target.

b. (NC) (NMM) Approach Tactics.

(1) Initial Approach. This approach should normally be made at maximum available speed. However, if the tactical situation dictates, maximum sonar speed and evasive steering may be used.

(2) Final Approach. This approach begins at the time that the SAU first reaches either the torpedo danger area (TDA) or the tactical sonar range (TSR) as measured from the furthest-on circle. In the absence of intelligence to the contrary, the TDA extends for 4 nm outward from the furthest-on circle. The SAU commander should order:



(NATO-CONFIDENTIAL) (NMM)

Figure 9-2. (NU) (NMM) Datum Approach Triangle

(a) Ships to proceed at optimum sonar speed or up to maximum sonar speed if circumstances so dictate.

(b) Employment of tactical countermeasures for which he can afford the time. Zigzag plans XRAY and YANKEE from ATP 3 are specifically designed for use within the TDA.

(c) Use of material torpedo countermeasures. The use of these devices may reduce sonar detection range.

c. (NC) (NMM) Antisubmarine Evasion and Torpedo Countermeasures (TCMs) To Be Executed by a SAU.

(1) Approach to Torpedo Danger Area (TDA). Units should use maximum speed and evasive steering (narrow weave or zigzag), or maintain a steady course as time and threat permit, and leave towed decoys activated, depending on the tactical situation.

(2) Before Entering Torpedo Danger Area. Units should carry out the following measures:

(a) Reduce to optimum sonar speed.

(b) Execute zigzag plan XRAY or YANKEE from ATP 3.

(c) Stream towed decoys (if not already done).

(d) Activate/deactivate decoys depending on the tactical situation.

(e) Consider the use of speed below cavitation speed.

(3) Initial Action on Gaining Contact.

(a) Report the contact.

(b) Conduct urgent attack when the contact poses an immediate threat.

(c) Ensure decoys are activated.

(d) Carry out tactical countermeasures.

(e) Continue with urgent or deliberate attack.

(4) During Medium- or Long-Range Attacks. Within the limits of maintaining sonar contact, units should:

(a) Use fine inclinations toward (15º to 30º) or away from (150° to 165°) the submarine.

(b) Use frequent alterations of course and/or speed. Although dependent on the range from the submarine, alterations should be conducted at least every 3 minutes. Course alterations should be of at least 30º and speed alterations of at least 3 knots.

(c) Continue to employ towed decoys in accordance with current employment doctrine for the decoy in use.

(d) Use speeds less than cavitation speed if tactically acceptable.

(e) If an attack with nuclear warhead torpedoes is likely, consider the advantages of remaining within 6,000 yards.

(5) Closing to Attack With Short-Range Weapons. Except when a silent approach is intended, units should:

(a) Use maximum sonar speed.

(b) Continue to employ towed decoys in accordance with current employment doctrine for the decoy in use.

(c) Use zigzag plan XRAY or YANKEE from ATP 3.

(d) Try to maintain an angular separation of 60º or more between ships, as measured from the submarine, while also trying to keep equidistant from the submarine.

9236 SAU COMMANDER/SAC INTENDED EMPLOYMENT OF UNITS

The SAC or SAU commander should promulgate, within the OTC's policies, the intended employment of units as soon as a contact is gained, under the heading Plan RED, and the intended employment of units immediately after contact is lost, under the heading Plan BLACK. The purpose is to advise all units, well in advance, of what is expected of them and to avoid confusion at the time that contact is lost. An order to Execute Plan RED or Execute Plan BLACK is all that is required to initiate the action; all units are then

Table 9-6. Coordinated Employment of ASW Units at Scene of Action

NOTE: SHADED TEXT IS **NC NMM**

	SHIPS AND HELICOPTERS	SHIPS AND FIXED-WING AIRCRAFT	FIXED-WING AIRCRAFT AND HELICOPTERS
Contact Held **PLAN RED**	a. VECTACs Method No. b. Ship Attack GEOGRAPHIC SECTOR. . . . . 3A MODIFIED GEOGRAPHIC SECTOR . . . . . 3A MOD Method No. c. Support BEAR . . . . . 11 A/AH CORDON. 14A/AH	a. VECTACs b. MADVECs Method No. c. Ship Attack GEOGRAPHIC SECTOR . . . . . 3A MODIFIED GEOGRAPHIC SECTOR . . . . . 3A MOD Method No. d. Support BEAR. . . . . 11 A CORDON 14A	a. VECTACs b. MADVECs c. MAD Trapping/ Tracking d. Individual Attacks
Immediate Action on Loss of Contact **PLAN BLACK**	a. Search Plan Plan No. OAK TREE. . . . . 1SH ACORN . . . . . 2S MODIFIED ACORN . . . . . 2SH MOD b. Support BEAR. . . . . 11A/AH Helicopters in Support CORDON. 14SH	a. Search Plan Plan No. (1) OAK TREE . . . . . 1S (2) ACORN . . . . . 2S (3) CORDON . . . . . 14S b. Aircraft (1) MAD Search (2) Active or Passive Sonobuoy (3) EER	a. Dipping Helicopters — Airplans 44, 47, or 48 b. Fixed-Wing Aircraft (1) MAD Search (2) Active or Passive Sonobuoy (3) EER

to proceed as previously directed. Table 9-6 will serve as a guide in selecting and ordering Plans RED and BLACK for the employment of ASW units at the scene of action.

a. (NC) (NMM) The SAC is Responsible for:

(1) Promulgating Plan RED, including:

(a) Disposition of units.

(b) Types of attacks.

(c) Employment of weapons.

(2) Promulgating Plan BLACK.

(3) Designating the attacking unit (if required.)

(4) Designating the appropriate ACU.

(5) Ordering countermeasures to be used.

(6) Directing the homing of air and surface reinforcements to the contact.

(7) Reviewing EMCON plan within the OTC's Emission Policy.

(8) Specifying aircraft altitude separation.

(9) Establishing additional datums, as necessary.

(10) Informing the OTC of progress.

(11) Executing time checks with the SAU commander.

(12) Promulgating estimated submarine speed to be used in constructing furthest-on circles.

(13) Knowing the location of SAAs and JTAAs, and enforcing attack restrictions when in their vicinity.

(14) Designating datums, if specifically delegated by the OTC.

(15) Conduct of nuclear ASW (see Article 9300).

b. SAU Commander Responsibilities. When contact is gained by a unit that is part of a SAU, the SAU commander is responsible for:

(1) Disposition of the air and surface units of the SAU.

(2) Ordering torpedo countermeasures.

(3) Assuming the duties of SAC.

9237 AIRCRAFT REPORTS TO THE SAU

An aircraft at the scene of action shall transmit reports to the SAU to assist in closing the contact or datum. However, attack procedures and maintaining contact take precedence over reporting. The aircraft may indicate the position of the submarine contact or datum relative to the approaching unit or relative to KINGPIN (an arbitrary reference position established by the aircraft). The procedures described below may be used to indicate contact, datum, or KINGPIN.

a. Radar On Top. When an approaching unit holds the aircraft on radar, the commander of the approaching unit may send the message "Request radar on top." On receiving this signal, the aircraft shall fly over the contact, datum, or KINGPIN and report, "On top contact (datum or KINGPIN) now, now, NOW," and using IFF squawk identity. The third "now" will be the on-top position.

b. Reverse Radar On Top. When an approaching unit does not hold the aircraft on radar, the aircraft should try to determine using its own radar the position of the unit relative to the contact, datum, or KINGPIN. The aircraft shall fly over the contact, datum, or KINGPIN and report, "On top contact (datum or KINGPIN) now, now, NOW," and transmit to the approaching unit the bearing and distance from the approaching unit to the datum, contact, or KINGPIN.

c. Visual On Top. When the aircraft is sighted, the commander of the approaching unit may send the message, "Request visual on top." On receiving this signal, the aircraft shall fly in a shallow dive over the contact, datum, or KINGPIN and signal, "On top contact (datum or KINGPIN) now, now, NOW." The aircraft is pulled out of the dive and a yellow Very light may be fired on the transmission of the third "now."

9238 (NC) (NMM) CHANGING SCENE OF ACTION COMMANDER (SWAP)

When approaching the scene of action, the SAU commander who intends to assume SAC duties must decide when to execute SWAP and must inform the present SAC of his intention and of the estimated time of SWAP. The SAC should advise the SAU commander to delay his approach if, in his opinion, the SAU may interfere with operations in progress. Upon execution of SWAP, the SAU commander is to report this fact to all units at the scene and to the OTC. The information flow contained in paragraph 9234d should precede any SWAP. If the SAC is an airborne unit, the SAU commander in a surface ship should endeavor to SWAP as soon as a satisfactory picture of the action is held. SWAP is frequently appropriate immediately after a DOG BOX has been established.

9239 SPARE

9240 (NC) (NMM) ACTION FOLLOWING CONTACT WHEN DIRECT SUPPORT FORCES ARE INVOLVED

These contact prosecution procedures are designed for use in Direct Support operations. Whenever submarines are in Associated Support, they should attempt to keep the OTC/ASWC of the supported forces informed and should coordinate with the other ASW units of the supported force as specified in the Submarine Force Summary message.

9241 (NC) (NMM) SUBMARINE GAINS INITIAL CONTACT

a. On initial contact, the submarine shall carry out procedures in Articles 9203 and 9216. In general, the following sequence will be carried out:

(1) Unless previously directed otherwise by the supported force commander, make the initial contact report. If the contact is very close at initial detection, the submarine may not have time to release a contact report prior to delivering an attack (ROE permitting). A post-attack report via SLOT buoy or by established communications with the ASW aircraft or the ASWC/SOCA should be sent as soon as possible after the attack.

(2) Commence prosecution, proceeding as mission assignment and target motion dictate.

(3) Make amplifying report.

(4) Be alert for downlink communication attempts.

(5) Continue prosecution within the guidelines of the established ROE and/or SAA/JTAA boundary limitations. Consider contact handover alternatives.

b. If attack is made, make post-attack report.

9242 (NC) (NMM) ASW AIRCRAFT GAINS INITIAL CONTACT

a. On initial contact, the ASW aircraft carries out procedures in Articles 9203 and 9213 and also the following:

(1) Be prepared to use ATAC/SUS to initiate communications with the friendly submarine in order to pass contact information when directed.

(2) If localization appears probable, request that a NOTACK area be established, if required (see Chapter 6).

(3) Ensure that attack authorization is received before descending below good communications altitude.

(a) Attack rules of this section apply.

(b) Advise the ASWC of reduced SLOT buoy monitoring capability while at low altitude.

(4) If contact is established with the friendly submarine, conduct a coordinated procedure.

9243 (NC) (NMM) PASSIVE SONAR CAPABLE SURFACE SHIP GAINS INITIAL CONTACT

a. On initial contact, the surface ship shall carry out a standard sequence:

(1) Make contact report to ASWC, reporting both towed array true bearings if appropriate (refine bearing when possible but do not delay initial report to resolve bearing ambiguity).

(2) Commence localization as SAC using ASW aircraft as feasible.

(3) Send amplifying reports at least every 30 minutes to the ASWC (if contact is lost or evaluated as nonsubmarine, make an immediate report).

(4) Be prepared to initiate downlink communications to the friendly submarine, as required.

(5) Request NOTACK area be established, if required.

(6) Observe attack rules of this section.

9244 (NC) (NMM) COORDINATED PROSECUTION WITH FRIENDLY SUBMARINE

A coordinated prosecution occurs when two or more platforms are cooperating in the prosecution of a contact, based on an information exchange between the platforms, or on direction provided by the ASWC/SOCA. When a coordinated prosecution in a JTAA evolves to the attack phase, and the attack is to be delivered by a unit other than the friendly submarine involved, either NOTACK or SGSA procedures must be followed.

9245 (NC) (NMM) ASW AIRCRAFT RESPONSE TO A SUBMARINE-GENERATED CONTACT

a. Contact Report on Enemy Submarines. When the aircraft receives a contact report on an enemy submarine from the supporting submarine, it will proceed as though assistance is required by the supporting submarine unless:

(1) The report is a post-attack report,

(2) Directed otherwise by the ASWC, or

(3) The aircraft is prosecuting a contact, in which case it shall advise the ASWC of the tactical situation and proceed as directed.

b. Action When Assistance is Required. When responding to a submarine contact report or Call for Assistance message (per APP 1), the aircraft will inform the submarine of the approach method,

request homing aids (if necessary), and provide ETA. The submarine will then provide updated contact information to the aircraft shortly before its arrival on-top and/or in the contact area. Procedures for providing assistance are in Chapter 12 to ATP 28.

9246 (NC) (NMM) CONTACT HANDOVER

a. General. The handover of an active contact from one platform to another normally shall be accomplished as an intercept by the relief platform under direction of the ASWC/SOCA. In the event that the ASWC/SOCA is not able to provide direction, handover will be coordinated and conducted in real time, using two-way radio communication circuits. The unit assuming responsibility for prosecution of the contact shall make a positive statement to the unit relinquishing the contact that it has assumed the duties of contact prosecution. This positive handover will be reported to the ASWC/SOCA.

b. Submarine to Aircraft. Handover from submarine to aircraft will be initiated by an exchange of call signs followed by the words, Contact handover, (as in APP 1). The aircraft will answer by indicating the latest amplifying report that it has copied or indicate at this time if unable to accept the Contact Handover message. The submarine will then transmit the Contact Handover message, excluding that information which the aircraft has already received via amplifying report information.

c. Aircraft to Submarine. Contact handover from an aircraft to a submarine or from/to any other unit will be accomplished as above with the exception of the amplifying report information.

d. Message Ordering. The following elements are to be included in the Contact Handover message:

(1) LOCATING (Number) SERIAL (Number).

(2) Classification (and Confidence Level if POSSUB).

(3) Type and operating mode.

(4) Contact or datum position.

(5) Course/speed in knots or contact movements in cardinal points of the compass.

(6) Additional contact information.

(7) Time of contact position (ZULU).

(8) Submarine current position.

9247 (NC) (NMM) SUBMARINE/AIR COORDINATION

Procedures for air/submarine cooperation are fully detailed in Chapter 12 of ATP 28.

9248 (NR) (NMM) COORDINATED SUBMARINE-TASK GROUP OPERATION MESSAGES

Message applications for support submarine operations are listed in ATP 18 and APP-11.

9249 SPARE

9250 (NC) (NMM) SHIP-TOWED ARRAY CONTACT PROSECUTION (See also ATP 28, Chapter 4)

9251 (NC) (NMM) LOCALIZATION

Localization of a ship's towed array contact to attack criteria can be a lengthy process. The methods available to conduct this localization are ship's Target Motion Analysis (TMA), cross-fixing with another ship using its towed array, or employing sensors from another unit.

a. Target Motion Analysis. TMA requires no external assets or communication circuits but it is time consuming and can require maneuvering by the ship. The present methods of surface ship TMA do not result in a position accurate enough for an attack without additional information from another sensor. TMA normally can generate an AOP of sufficient accuracy to allow the OTC to either avoid the submarine through maneuvering of his force or to dedicate other passive assets such as an MPA to further localize the contact.

b. Cross-Fixing. Cross-fixing provides a rapid method of contact localization although the resultant AOP will not be sufficiently small to allow for an attack. The contacts AOP should, however, be sufficiently refined to allow the OTC to avoid the contact by maneuvers or to task other active or passive assets to continue the localization. The disadvantages of cross-fixing are that it requires ships to be stationed specifically for this purpose, that reliable communications between the TAS ships are necessary, and that the probability of both TAS ships gaining contact cannot be guaranteed.

c. Other Units. Cross-fixing plus TMA alone will not produce attack criteria. Ships and aircraft can be tasked to localize a TAS contact. Aircraft are ideally suited for this because of their range, speed, sensor fit, and weapons-carrying ability. In their absence, acoustically quiet ships can be used in a SAU. Certain TAS ships have organic helicopter assets which may be used to assist in localization.

9252 (NC) (NMM) TAS SHIP/AIRCRAFT COOPERATION

In general, an aircraft is the most effective unit to prosecute a TAS contact but only if clear, concise, and specific tasking information is exchanged between the TAS ships and the aircraft. The following activities should occur to accomplish a successful prosecution.

a. OTC/Shore Authority. The OTC/ shore authority should consider establishing a procedure whereby the TAS ship can obtain support from a fixed-wing aircraft or helicopter to assist in the localization of a TAS contact without a formal request to the OTC/shore authority. The procedure is to be promulgated in the Form GREENs, OPGENs, or Joining Instructions. In any event, the TAS ship must be aware of the means by which aircraft support is to be obtained.

b. Gaining Contact. Upon gaining contact, the TAS ship sends a contact report to the OTC/shore authority (see Article 9203e).

c. Localization. If localization is desired, the OTC/shore authority tasks an aircraft to join the TAS ship for contact prosecution. If previously authorized, the TAS ship directs the assigned aircraft to join for contact prosecution.

d. Aircraft Communication. The aircraft establishes communications with the TAS unit, receives employment and contact information, and proceeds to investigate the bearing line or AOP. The TAS ship is the SAC for the overall prosecution and is the ACU for the assigned aircraft.

e. TAS Ship. The TAS ship can task the aircraft using air plans. The bearing origin may not be necessary to the TAS ship but could be indicated as a geographic or related position or by a sonobuoy. The TAS ship may be required to radiate on radar, tacan, or IFF interrogator in order to establish the point of origin. Units must plot-lock. The following information should be included with the air plan:

(1) Target bearing, bearing accuracy, time of bearing.

(2) Acoustic signature information.

(3) Range estimate, and how obtained.

(4) Array depth.

(5) Localization sensors to be employed.

(6) Observed target behavior.

f. Investigation of the TAS Contact. During the aircraft's investigation of the TAS contact, the TAS ship is to pass to the aircraft updated contact information. The TAS ship either maintains contact or resumes its patrol as previously directed by the OTC/shore authority. In the latter case, the aircraft will assume the duties of the SAC once in contact.

g. Aircraft Gains Contact. When the aircraft gains contact, it will pass contact information to the TAS ship in the form of a Raid Report, unless otherwise directed by the OTC/shore authority. Similar procedures can be used with other units, such as surface ship pouncers.

9253 (NC) (NMM) LOST CONTACT PROCEDURES

There is a high probability that a submarine will be unaware of the fact that it has been detected by a TAS. It will therefore tend to continue its patrol or intercept in the same manner it did prior to detection. For this reason, TAS bearing and tracking information decays very slowly and is tactically exploitable, depending on submarine speed, for an hour or more after losing contact.

9254 — 9259 SPARE

9260 COORDINATED ATTACK METHODS

a. For attacks in which more than one ASW unit are involved in close prosecution, the attacking unit must upon attack announce an area from which assisting units should remain clear for their own safety. For torpedoes, an area (DOGBOX) is established within which units interfere with or are endangered by running torpedoes. DOGBOX is based upon type of torpedo, method of employment, and estimated acquisition range. The DOGBOX is time limited to torpedo expiry.

(NR) (NMM) ASW torpedo parameters can be found in the ATP 29 Supplement.

b. The presence of surface ships or employment of other ASW weapons within a DOGBOX may degrade the performance of the running torpedo. Therefore, the attacking unit must reconsider the attack and cancel it if:

(1) There is a risk to a friendly unit, or

(2) The anticipated effect of the weapon is unacceptably degraded due to friendly unit interference.

9261 ASW SHIP AND HELICOPTER ATTACK AND SUPPORT METHODS

Table 9-7 summarizes the ASW attack and support methods available for use by ships alone or by ships and helicopters. When helicopters are used in these methods, the letter H must be added as a suffix to the method number.

9262 ASW SHIP ACTIONS

a. Attacking Ship. The ship conducting an attack or using aircraft to conduct an attack is considered to be the attacking ship. The attacking ship's duties include:

(1) Delivering a deliberate or urgent attack, as appropriate, to keep maximum pressure on the submarine.

(2) Indicating that she is the attacking ship and the weapon she will use.
(NC) (NMM)…as directed by the SAC.

(3) Maneuvering in accordance with the rules for the attack method ordered. If deemed necessary to keep a constant range or open the contact, use a figure-of-eight maneuver to ensure the stern is never pointed towards it. This will limit chances of the contact being lost in the stern arcs of the sonar.

(4) Exchanging information and passing movements and intentions of own ship and attacking aircraft under control.

(5) Indicating by signal immediately when the contact is lost or the contact becomes doubtful.

(6) In a close ASW action, transferring the attacking ship responsibility to an assisting ship holding contact as the situation dictates.

(7) Promulgating the torpedo interference/weapon danger (DOG BOX) where appropriate.

b. Assisting Ship. The assisting ship's duties include:

(1) Maneuvering to keep clear of the attacking ship and to avoid obstructing the attack.

(2) Maneuvering in accordance with the rules for the attack method ordered to gain and maintain sonar contact and remain clear of torpedo interference/weapon danger (DOG BOX) areas. If deemed necessary to keep a constant range or open the contact, use a figure-of-eight maneuver to ensure the stern is never pointed towards it. This will limit chances of the contact being lost in the stern arcs of the sonar.

(3) Exchanging information with the attacking ship.

(4) Reporting immediately when the contact is lost or becomes doubtful.

(5) Reporting when ready to assume the duties of attacking ship.

c. Supporting Ship. Ships not engaged in a close ASW action may be used in support.
(NC) (NMM) Medium-range, long-range, or variable depth sonars may best be employed in this role. Support ships may then hold contact at long range. Vector ships or aircraft may hold contact when the attacking and assisting ships lose contact. Ships are ordered to support a close action in accordance with the rules for the support method employed.

Table 9-7. ASW Attack and Support Methods

NOTE: SHADED TEXT IS **NC NMM**

Method	Code	Purpose	Special
3A	Geographic Sector	Coordinated 2-ship attack	1. Suitable for ships with a variety of weapon systems. 2. May be used against submarines using high speed.
3A MOD	Modified Geographic Sector	Coordinated 2-ship attack	To be used when one ship is equipped with short-range weapons and the combination of weapon systems does not allow Attack Method 3A.
11AH	Bear	1. Line of bearing support for a close ASW action. 2. Stand-off attack from a definite direction.	To cover a definite direction or a probable course of action by the submarine.
14AH	Cordon	1. Sector support for a close ASW action. 2. Stand-off attack in sectors. 3. Circular attack in zone. 4. Automatic search plan.	1. When support or attack is desired from one or more specified sectors. 2. 3,000-yard attack zone based on contact. This is a designated sector zero. The radius may be amended by the SAC, if required.
NOTE These methods are initiated by the SAC. The radius for plan Cordon may be amended by the SAC/SAU commander, if required			

NOTE

Multiship participation in an ASW action may cause a considerable increase in voice communications. Assisting ship and supporting ship(s) should therefore restrict their information in such a manner that the attacking ships data on weapon delivery and safety factors take priority over other information.

9263 VECTORED ATTACKS (VECTACs)

a. Rules. The rules for the conduct of VECTACs follow:

(1) The type of weapon must be agreed upon and the aircraft's delivery speed and altitude mutually understood.

(2) The attacking aircraft should be prepared to inform the controlling unit of the forward throw of the weapon to be used and the desired splash point relative to the submarine.

(3) All bearings and courses must be specified at the outset as either magnetic or true and ranges shall be given in hundreds of yards.

(4) The attacking aircraft should inform the controller of all weapon drops and MAD marks.

(5) When the unit in contact is a helicopter, fixed-wing aircraft overflying the helicopter must maintain vertical separation of at least 200 feet.

(6) When more than one unit is in contact with the same target, only one unit shall conduct VECTACs on that target at any given time. In this case, the SAC shall designate the controlling unit. If the controlling unit is a ship, then that ship must also be designated as the attacking ship in accordance with Article 9262.

(7) The attacking aircraft shall be informed of all contact course and speed changes.

(8) The controlling unit may at any time after initiating a VECTAC order "Cancel VECTAC." After this order is given, a subsequent attack must start with the full VECTAC procedure.

b. Methods. The methods of ordering and executing VECTACs are described below.

(1) Radar VECTAC. The attacking aircraft is directed to the weapon release point by the controlling unit. The controlling unit initiates the attack by ordering "Execute radar VECTAC." During the run towards the target, the controlling unit passes correcting vectors as necessary and frequent range information. The attack is ordered by "Stand by weapons," followed by "Drop, now, now, NOW."

(2) Reverse Radar VECTAC. The attacking aircraft uses its radar to determine the position of the unit in contact and, from that unit, plots the range and bearing of the sonar contact. The unit in contact orders, "Execute reverse radar VECTAC" and the attacking aircraft will determine the optimum splash point depending on the contacts course and speed and the type of weapon. The attacking aircraft maneuvers, using its own navigation system, to the weapon release point for release of the weapon.

(3) Informative VECTAC. The unit in contact gives bearing, range, course, and speed of the contact to the attacking aircraft to enable it to maneuver to the weapon release point. The controlling unit orders, "Execute informative VECTAC," and specifies whether the bearing origin will be the controlling unit or a marker. The attacking aircraft plots the contact information, visually marks on top the units in contact or marker to lock plots, and is responsible for its own navigation to the weapon release point and for the release of the weapon at the proper time.

(4) Visual VECTAC. The unit in contact gives the attacking aircraft a course and time to fly, either from the controlling unit or a nominated marker, to the weapon release point. The attack is ordered by, "Execute visual VECTAC," and the departure point and approximate attack heading are passed to the aircraft. The attacking aircraft makes a warning call, "Stand by 1 minute," when approximately 1 minute away from the departure point. The controlling unit then computes the splash point for the expected attack time and the attack heading and time to fly. When the attacking aircraft is on top of the departure point on the attack heading, the attacking aircraft reports "On top, now, now NOW." The controlling unit then times the run and orders weapon release. A visual VECTAC may be employed when the controlling unit cannot conduct a radar VECTAC and the attacking aircraft has no navigation system.

c. Types of Attack. VECTACs may be either urgent or deliberate. Since the VECTAC is considered to be primarily a form of deliberate attack, an urgent attack, if desired, must be specifically ordered.

d. (NC) (NMM) MAD During VECTACs. Should a MAD-equipped aircraft on an urgent VECTAC gain MAD contact prior to reaching the weapon release point, a weapon will be launched immediately. When MAD contact is gained on a deliberate VECTAC, prior to reaching the weapon release point, the attack should be conducted according to standard MAD procedures, with the controlling unit continuing to provide target course and speed information.

9264 (NC) (NMM) MAD VERIFICATION (MADVEC) RUNS

An informative or radar method may be used that is ordered in a similar way to a VECTAC (for example, "Execute radar VECTAC)." Procedures are virtually the same as for a VECTAC except that the aircraft will fly at a minimum safe altitude and will be directed to the submarine's position. The controlling unit shall state whether an attack is to be conducted by the aircraft, or by the controlling unit, when MAD contact is gained. If the controlling ship intends to conduct the attack following MAD verification, the aircraft will be advised, "Stand clear on MAD." The aircraft will leave the area after MAD detection and await further instructions.

SECTION III — NUCLEAR OPERATIONS (NMM)

9300 (NC) (NMM) EMPLOYMENT OF NUCLEAR ASW WEAPONS

a. Employment. Employment of nuclear ASW weapons is prohibited under any circumstances until approval has been given by national authority of the nuclear power(s), without which the applicable Strategic Commander will not send a properly authenticated release message.

b. Procedures. Procedures for obtaining approval for the release of nuclear weapons are laid down in the Strategic Commander's Nuclear Weapon Release Procedures (SC's NWRP) and in specific national regulations.

c. Command and Control. Command and control considerations for the general and selective release of nuclear ASW weapons will be subject to the criteria laid down in the appropriate operational plans of the Strategic Commanders.

d. Selective Release. Selective release of nuclear ASW weapons will be subject to such constraints and restrictions as are directed by higher authority. These limitations will be defined in the release message, originated by the Strategic Commander, authorizing the use of nuclear ASW weapons.

e. Clearance. Once clearance has been obtained, the local commander should, as a matter of operational practice, resort to the use of nuclear ASW weapons only under those conditions in which he believes, with reasonable certainty, that the use of available conventional weapons will fail to deny the submarine its objective.

9301 (NC) (NMM) CONSIDERATIONS IN EMPLOYMENT OF NUCLEAR ASW WEAPONS

a. Recognition. In recognition of the fact that the reliability of the data contained in this chapter has not been thoroughly verified by testing, a degree of conservatism has been applied to the information presented.

b. Carrying Nuclear Weapons. Nuclear ASW weapons may be carried by a number of maritime units earmarked for assignment to NATO commanders. Specific information on the capabilities of these units is provided in ATP 29.

c. Comparison With Conventional Weapons. The great value of the nuclear ASW weapon in comparison with its conventional counterpart is that the former may succeed in a submarine kill under conditions of target speed, depth, and localization in which the latter may fail. However, there may be clear disadvantages in the former's use under many circumstances. For example:

(1) Use of a nuclear ASW weapon against a submarine whose position has not been properly localized, with kill probability doubtful, will make re-establishing contact extremely difficult. Sonar systems, particularly passive systems, may be rendered virtually useless for varying periods. Contamination of the area around surface zero (SZ) will add to the difficulty of re-establishing contact.

(2) Stand-off requirements for surface ships and aircraft (that is, clearing the area) may induce delays in delivery of the nuclear ASW weapon that will increase the chances for the submarine to escape.

(3) ASW efforts at great distances from the operational scene may be hampered by the effects of reverberations of a nuclear detonation on acoustic equipment (BLUEOUT).

d. Effects of Underwater Burst. Of all of the effects of an underwater burst, the least predictable is the degree of radioactive contamination that may result from a very shallow burst. A blowout, which

takes the form of a column of water and a mushroom cloud, can be anticipated and will subject a wide area to radioactive fallout. Because of lack of confidence in predictions on blowout effects, it is expedient to avoid a blowout in nuclear antisubmarine warfare.

e. Use of Nuclear ASW Weapons. When considering the tactical use of nuclear ASW weapons, four main questions must be answered:

(1) Is it the best weapon to use?

(2) Is one readily available?

(3) Can it be used without danger to own forces?

(4) How will the after-effects limit own forces future action?

9302 — 9209 SPARE

9310 (NC) (NMM) COMMANDER'S RESPONSIBILITIES AND INTENTIONS

9311 (NC) (NMM) OTC'S RESPONSIBILITIES

a. Designating an OTC. An OTC may be designated as the Executing Commander by an MNC providing he holds the required documents including the MNCs NWRP and authenticators. This gives the OTC the authority and responsibility for directing the use of nuclear weapons in accordance with the instructions in the MNCs request and release messages. The OTC as Executing Commander directs the employment of nuclear weapons by means of an OPTASK NUC and in so doing may delegate another ASW Commander or Scene of Action Commander to direct weapon employment on his behalf as the Delivery Force/Unit Commander. However, when designating a subordinate commander to direct the employment of nuclear weapons, the OTC requires the designated Delivery Force/Unit Commander to validate the release message. Nevertheless, the responsibility for the correct use of nuclear weapons as authorized by the MNC always rests with the Executing Commander.

b. Informing OTCs. OTCs not in possession of the MNCs NWRP may make unformatted requests for the release of nuclear weapons to the next higher military authority holding the relevant documents and authentication. When such requests have been forwarded and approval for release is received via the MNC and national authority of the nuclear power(s), the designated Executing Commander will inform the OTC and the Delivery Unit Commander(s) supporting the request of such approval, criteria for use and constraints. When the delivery unit is subordinate to the OTC, the Delivery Unit Commander will validate the release message, inform the OTC of correct validation and use of nuclear weapons in accordance with both the MNCs and OTCs guidance. The latter is promulgated in the OPTASK NUC.

9312 (NC) (NMM) OTC'S INTENTIONS

The promulgated policy in the OPTASK NUC is to include:

a. The OTC's intentions for the use of nuclear weapons and the areas in which those intentions apply.

b. Availability and arming of aircraft and ships including parent units, duty cycles, and alert states.

c. Criteria for use.

d. Criteria for acceptable contamination by own forces and stand-off ranges in force.

e. Any delegation of authority to include release message validation if required.

f. The OTC's intentions for the use of nuclear ASW weapons by units under his tactical command by means of the following color code:

(1) DUSTBIN BLACK — No unit may release a nuclear ASW weapon.

(2) DUSTBIN ORANGE — Units may, WITH the OTC's prior approval, release a nuclear ASW weapon, provided that the appropriate release criteria are met.

(3) DUSTBIN GREEN — Units may, WITHOUT the OTC's further approval, release a nuclear ASW weapon, provided that the appropriate release criteria are met.

9313 (NC) (NMM) RESPONSIBILITIES OF COMMANDERS SUBORDINATE TO THE OTC

a. ASW and Screen Commanders. In addition to possibly being designated Delivery Force/Unit Commander with the subsequent responsibilities of validation and weapons employment, the ASW or Screen Commander may be authorized by the OTC to decide on and promulgate specific items from the OTC's policy with regard to the use of nuclear ASW weapons. Such items might be the stationing, duty cycles, and alert states of available nuclear capable forces. The authorized commander is responsible for informing MPA, particularly those in direct support, of the OTC's nuclear ASW weapon policy and the limits of DUSTBIN areas. This may also apply to other forces in the vicinity that the authorized commander can inform using the means of communication he is allowed to use. If DUSTBIN areas extend beyond the identification safety range of the force, this information must be signalled to maritime headquarters for aircrew briefing prior to takeoff or, if to inform other forces, as soon as the communication policy permits.

b. Scene of Action Commander. The aim must be to achieve the highest probability of success while ensuring the required degree of safety of own forces. This aim demands the use of a high-yield weapon at optimum splash point. In the case of surface ship action, this is best achieved either by an ASROC delivery based on a fire control solution or by a nuclear ASW weapon dropped by a helicopter or MPA. Failing this, the SAC should consider the use of time late or offset, ESOR, or low yield. This may involve asking the OTC for a change in the release criteria.

(1) In deciding which of the above options is appropriate, the SAC must consider:

(a) The degree of threat.

(b) Advantages to be gained by an immediate attack.

(c) Ability to maintain contact, particularly while approval for a change to the OTC's release criteria is being obtained.

(d) Water depth.

(e) Vicinity of own forces.

(2) Table 9-8 summarizes the courses of action open to the SAC. Furthermore, the SAC is responsible for:

(a) The final decision that a nuclear ASW weapon is to be used on a specified target at the scene of action, taking into full account the required target classification outlined in the OTC's release criteria.

(b) Ensuring that the OTC's final approval has been obtained for release of a nuclear ASW weapon in DUSTBIN area ORANGE.

(c) Designating the control and attack unit(s).

Table 9-8. (NU) (NMM) SAC Courses of Action With Nuclear ASW Weapons

CONTROL UNIT	BELOW LAYER TSR < OSOR	BELOW LAYER TSR > OSOR
SHIPS OR HELICOPTERS ONLY	1. Use ESOR if allowed. 2. If required probability of success can be achieved, use one or more of the following: (a) Open to OSOR and use time late. (b) Use offset. (c) Use low-yield weapon.	Keep outside OSOR and attack with high-yield weapon where possible.
BOTH SHIPS AND HELICOPTERS AVAILBLE	1. Helicopter takes over control. 2. Ships withdraw.	First unit to make contact retains control.

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(d) Informing the control unit that other units within 4 miles of the intended SZ are clear or not clear.

c. Control Unit. Aircraft carrying nuclear ASW weapons may be controlled for a nuclear ASW weapon drop by any NATO unit, provided the appropriate level of NATO controller is available. However, single-crewed helicopters which require special procedures are only to be controlled nationally. The control unit is responsible for:

(1) Ensuring that the release criteria are met.

(2) The correct and safe conduct of the attack, including broadcasting the position of the intended SZ and the yield to be used.

d. Units at the Scene of Action. (1)Units under the command of the SAC and any other units within 4 miles of intended SZ are to report DUSTBIN (ECHO/OSCAR) CLEAR to the SAC if they are outside the ordered stand-off range (ESOR/OSOR) at the time that the control unit broadcasts the intended position of SZ.

(2) Units which will not be clear, except the control unit and weapon carrier, are to report DUSTBIN (ECHO/OSCAR) FOUL to the SAC. Subsequently they are to report:

(a) Estimated time to go to DUSTBIN (ECHO/OSCAR) CLEAR.

(b) DUSTBIN (ECHO/OSCAR) CLEAR when clear of ESOR/OSOR.

(3) The SAC is to report DUSTBIN (ECHO/OSCAR) CLEAR and FOUL information to the control unit.

(4) If the scene of action is in the vicinity of the main body, the OTC will report DUSTBIN (ECHO/OSCAR) CLEAR/FOUL for formed units of the main body. If DUSTBIN FOUL, report time in minutes to DUSTBIN CLEAR.

9314 — 9319 SPARE

9320 (NC) (NMM) CONTROL PROCEDURES

9321 (NC) (NMM) DUSTBIN AREAS

a. General. It will be necessary, primarily for reasons of safety, to define the areas in which the OTC's degrees of control are to be applied. These areas are known as DUSTBIN areas BLACK, ORANGE, and GREEN. The following factors should be considered when deciding on the size and shape of DUSTBIN areas:

(1) Need for simplicity and ease of ordering.

(2) Size and disposition of force.

(3) Location of SAAs or JTAAs.

(4) Ability of the force and individual units to avoid the base surge.

(5) Ability of the force and individual units to transit the base surge safely, and their military effectiveness while in transit.

(6) Weapon yield, optimum burst depth, and therefore, the size of the base surge.

(7) Wind velocity.

(8) Standardization with other areas and zones already established to meet other threats.

(9) Importance of maintaining the PIM of the force or the need to remain in a particular area.

(10) Flying and replenishment operations in a particular area.

(11) Proximity of land.

b. DUSTBIN Area BLACK. The OTC can use DUSTBIN area BLACK:

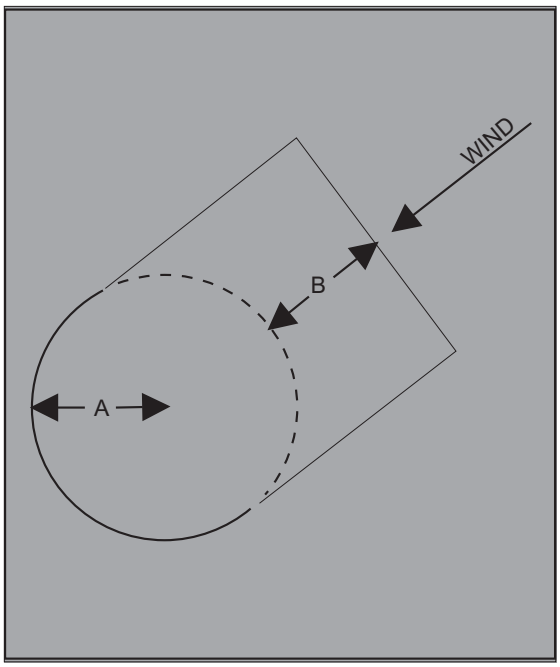
(1) To safeguard particular areas from contamination, such as amphibious landing and carrier operating areas.

(2) To prevent the use of nuclear ASW weapons:

(a) In areas no longer considered to be worthwhile.

(b) In confused tactical situations, until the situation has clarified.

c. DUSTBIN Area ORANGE. In general, DUSTBIN area ORANGE is an area within a circle centered on the center of the force with an extended upwind sector (see Figure 9-3). Radius (A) of the circle should depend on factors indicated in paragraphs a(2) through a(6). The extended portion normally has a depth (B) equal to one-half of the wind speed, although a slow, unmaneuverable force may require the distance to be increased. It may also be necessary for the OTC to impose additional restricted areas for special purposes, such as flying operations. The tendency to make DUSTBIN area ORANGE unnecessarily large must be resisted, since this will impair flexibility and speed of reaction. This is particularly significant in the case of an MPA, when, for example, a DUSTBIN area ORANGE whose radius is 10 miles and whose upwind extension is 10 miles (for a 20-knot wind) covers up to one-fifth of the area of a close support airplan of 2,400 square miles.



(NATO-CONFIDENTIAL) (NMM)

Figure 9-3. (NU) (NMM) DUSTBIN Area ORANGE

d. DUSTBIN Area GREEN. DUSTBIN area GREEN is any area in which nuclear ASW weapon release has not been authorized by the OCA and that is not already designated ORANGE or BLACK by an OTC.

9322 (NC) (NMM) RELEASE CRITERIA

The release criteria must include the information provided in the following paragraphs:

a. Water Depth. Nuclear ASW weapons are not to be dropped in water with a depth of less than 46 meters (150 feet).

b. Proximity of Land. Nuclear ASW weapons are not to be dropped within 5 nautical miles of a friendly or neutral coastline (except as authorized by the MNC), nor should they be used in areas where residual contamination can endanger the shore. With an on-shore wind, weapon release must be beyond the distance that the base surge will travel in 90 minutes.

c. Merchant Ships. Nuclear ASW weapons are not to be dropped within 5 nautical miles of friendly or neutral merchant ships.

d. Warships and Aircraft. Fixed-wing aircraft attacking on their own sensor information are not to drop nuclear ASW weapons within 4 nautical miles of a friendly warship or helicopter or within 2 nautical miles of other friendly aircraft. Whenever nuclear ASW weapons are to be expended against contacts held by warships or helicopters, including the use of fixed-wing aircraft as a weapon carrier, the OTC is to establish the degree of risk which is acceptable to units of his force. The risks depend on weapon yield, water depth, and wind velocity, and are expressed as two stand-off ranges: OSOR and ESOR.

e. Target Classification Required for Actual Attack. The expenditure of a nuclear ASW weapon cannot be justified unless the responsible commander is certain in his own mind that the contact is

a submarine. A nuclear ASW weapon is normally not to be expended unless the contact is classified PROBSUB or higher. UK(M) will permit their helicopter-carried HE 600-pound bomb to be dropped on a contact with a classification of POSSUB confidence HIGH FOUR.

9323 (NC) (NMM) CONTROL PROCEDURES FOR NUCLEAR ASW WEAPON ATTACK

a. SAC. The final decision that a nuclear ASW weapon attack is to be conducted is the responsibility of the SAC. In cases in which other units are in the vicinity, the SAC is to warn all concerned that a nuclear ASW weapon attack is imminent by ordering, "Standby DUSTBIN," followed by the designation of the control and attack unit(s). For example:

b. Control Unit. Two minutes before the attack the control unit is to broadcast, Two minutes before DUSTBIN.

c. Helicopter SELFTAC. A helicopter carrying out a SELFTAC is required to:

(1) Report, "Beware, beware," thirty (30) seconds before weapon release.

(2) Pass the position of SZ to all forces in the vicinity.

(3) Check that no surface unit is within the stand-off range authorized by the OTC.

(4) Check that all aircraft are headed radially away from SZ and should be outside the authorized stand-off range at the time of burst.

(5) Report, "DUSTBIN, DUSTBIN," on weapon release.

d. MPA/Helicopter VECTAC by a Sonar-Fitted Ship. A sonar-fitted unit controlling an MPA or helicopter for a nuclear ASW weapon drop will take action as follows:

(1) Pass the position of SZ to all forces in the vicinity.

(2) If radar is operating, check that no surface unit is within the stand-off range authorized by the OTC.

(3) If radar is operating, check that all assisting aircraft are headed radially away from SZ and should be outside the authorized stand-off range at the time of burst.

(4) The delivery aircraft is required to:

(a) Report, "Beware, beware," when executing its final run for weapon release.

(b) Check the safety of forces in the vicinity, if radar is operating, as in (2) and (3) above, irrespective of the capabilities of the control unit.

(c) Report, "DUSTBIN, DUSTBIN," on weapon release.

e. MPA Attacking on Own Sensor Information. If other forces are in the vicinity, the MPA is to:

(1) Pass the position of SZ to all forces in the vicinity.

(2) Follow the requirements of d(4) above.

Table 9-9. (NU) (NMM) Material Limitations

	WATER DEPTH		
WEAPON	Less than 46 meters (150 feet)	46 to 107 meters	More than 107 meters (350 feet)
600-pound	NOT TO BE USED	Only low yield can be obtained	Yield selected will be obtained
B57	WILL NOT DETONATE		

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f. Units Action After Weapon Release. Individual units are to act in accordance with the OTC's instructions after release of a nuclear ASW weapon. In the absence of instructions, units are to proceed clear of the contaminated area.

9324 — 9329 SPARE

9330 (NC) (NMM) NUCLEAR ASW WEAPON YIELDS AND EFFECTIVENESS

a. HE 600-Pound Bomb. When employing the HE 600-pound bomb, the pilot may select high or low yield as directed. B57 weapons carried by fixed-wing aircraft give only a relatively high yield. Choice of yield, when available, must be made in light of tactical considerations, but there are some overriding material limitations built into the weapons that can affect the outcome. (See Table 9-9.)

b. Specific Kill Characteristics. It is not necessary for units to know the specific kill characteristics of different weapon yields to fulfill their missions. What is required is a knowledge of the probability of success in causing either surfacing or moderate damage to a submarine under varying conditions of submarine speed.

c. Highest Probability of Success. The highest probability of success will always be achieved when the weapon is dropped while still in contact and at optimum splash point. However, if the target is held inside the promulgated stand-off range for friendly units, an adequate probability of success may still be achieved by off-setting SZ to a safe distance from them or by using a time late to allow friendly forces to gain the safe distance. Offset distance and time late are tabulated against probability of success for varying submarine speeds in Table 9-10.

9340 (NC) (NMM) AIRCRAFT ARMING POLICY

a. Aircraft Characteristics. Aircraft characteristics are provided in ATP 29. It is inevitable that some detections will be made in positions such that a nuclear ASW weapon cannot be used for safety reasons. Ideally, therefore, both torpedoes and nuclear ASW weapons should be releasable at short notice.

b. Arming of Screen Helicopters. It will normally be unprofitable to arm some types of helicopters used in the screen, due to their reduced endurance and overall availability. However, if in-flight refuelling facilities are available from screen ships, arming may be worthwhile. The operational endurance of helicopters is reduced when carrying both torpedoes and nuclear ASW weapons simultaneously. It may be preferable to arm screening helicopters only with torpedoes and allocate nuclear ASW weapons to dedicated weapon-carrying aircraft.

Table 9-10. (NU) (NMM) Time Late or Offset — Probability of Success

Time Late Mins Secs	Range (yards) by which Ship can open from Surface Zero at 22 knots	Probability of Causing Surfacing/Moderate Damage (%)			Offset (yards) to achieve Probability shown against 20 knot Submarine
		Submarine Speed (kts)			
		10	20	30	
HIGH YIELD WEAPON					
0 00	0	95/95	95/95	95/95	600
0 30	365	95/95	95/95	86/95	600
1 00	730	95/95	90/95	68/92	1000
1 30	1095	95/95	75/95	50/76	1200
2 00	1460	95/95	62/90	36/62	1400
3 00	2190	90/95	42/76	16/47	1600
LOW YIELD WEAPON					
0 00	0	57/93	53/90	47/85	0
0 30	365	46/85	26/62	10/35	500
1 00	730	33/73	4/29	0/4	-
1 30	1095	20/58	0/12	0/0	-

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c. Stationing of Ships Providing Weapon Carriers. Ships supplying helicopters armed with nuclear ASW weapons should be stationed as close as possible to those areas in which nuclear ASW weapons can be used safely.

d. Changes in Helicopter Arming. It may be necessary to change the helicopter arming policy as the force moves into different threat or geographic areas. The time taken to change an aircraft's role (approximately 4 hours) will temporarily reduce its availability. The implications of the change must be considered well in advance.

e. Availability of Fixed-Wing Aircraft. The proximity of fixed-wing aircraft equipped with nuclear ASW weapons and torpedoes must be kept in mind when considering the arming policy. A fixed-wing aircraft 15 miles from the force is equivalent to a helicopter at about Alert 4 (4 minutes notice). However, restricting the radius of action of a fixed-wing aircraft detracts from its deep field effectiveness. Even so, at a normal longer range, the availability of fixed-wing aircraft must not be overlooked. For example, a high-speed modern aircraft at 90 miles from the force is equivalent to a helicopter at Alert 15 (15 minutes notice).

9350 (NC) (NMM) SAFETY CONSIDERATIONS

a. There have been several underwater detonations of nuclear devices and weapons that have served to provide phenomena from which source data on underwater burst could be derived.

b. Hazards from the explosion of a nuclear ASW weapon can be divided into shock and contamination. Shock effects vary with water depth, burst depth, and yield, and, for a submarine, with the submarines depth and aspect. Contamination includes:

(1) The base surge.

(2) The spread of contamination from the base surge downwind.

(3) Contamination of the water around the burst.

c. It is particularly important to realize that hazards for surface ships and aircraft vary with yield, water depth, burst depth, and wind velocity, each of which must be assessed in order to set safety limits. In some circumstances, shock may be the limiting factor; in others, contamination.

d. The OTC has to decide to what extent he will accept the risk of contamination of his own forces when conducting an attack. Apart from the basic rules laid down in the release criteria for the use of nuclear ASW weapons, the OTC may add other tactical information based on the NBCD capability of his force and the information contained in this chapter and in ATP 45.

e. The use of nuclear ASW weapons places additional responsibilities on all concerned and may require areas within the OTC's control to be divided into those over which the OTC wishes to retain close control, and those in which more freedom may be given. If the OTC is unable or does not wish to delegate authority to use nuclear ASW weapons, rapid communications throughout the whole chain of command is vital.

9351 (NC) (NMM) SPREAD OF BASE SURGE

The base surge is visible initially as a cloud or fine mist of water which spreads out from SZ. Thereafter, the base surge spreads outward, at first at the rate of 100 fps, but then slows down as it mixes with the air. The base surge can be expected to reach a range of approximately 2,300 yards in 100 seconds. The figures given below for the maximum spread of the base surge allow a considerable margin of safety:

(1) In light and variable wind conditions in which surface wind direction is not known, the base surge is assumed to spread to a maximum radius of 3,000 yards for a low-yield weapon and 6,000 yards for a high-yield weapon.

(2) When surface wind direction is known, the base surge is assumed to spread downwind at wind speed for a period of 1 to 1-1/2 hours, after which the danger can be ignored.

9352 (NC) (NMM) SAFE STAND-OFF RANGES

Safe stand-off ranges are classified as operational stand-off range (OSOR) and emergency stand-off range (ESOR).

a. OSOR. The range from SZ at the time of burst at which:

(1) A ship will receive no damage that will prevent it from carrying out its tactical mission, including follow-on attacks on a target submarine.

(2) A helicopter in the dip has 90 seconds from weapon release to raise the sonar transducer and achieve a safe escape to beyond the furthest limit of base surge with an acceptable degree of overpressure.

(3) No personnel will suffer from radiation if escape maneuvers are carried out properly.

b. ESOR. The distance from SZ at the time of burst at which:

(1) A ship may receive damage that will interfere with its tactical mission, including re-attack on the target submarine.

Table 9-11. (NU) (NMM) Helicopter Stand-off Ranges

		OSOR (yards)	
WEAPON	WIND SPEED	UPWIND	DOWNWIND
600 pound (HIGH)	1-15 16-40	3,000 3,000	5,000 6,000
600 pound (LOW)	1-15 16-40	2,000 2,000	3,500 4,500
B57	1-15 16-40	4,000 4,000	6,000 7,000

		ESOR (yards)	
WEAPON	WIND SPEED	UPWIND	DOWNWIND
600 pound	All	900*	1,800*
B57	All	1,500*	3,000*

*Shock limitation

NOTES

NOTE 1. 195 and AOS fitted helicopters break dip at weapon release and cut cable.

NOTE 2. Allowances have been made for aiming and delivery errors.

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(2) A helicopter dipping between ESOR and OSOR at time of release will have to cut the cable to achieve a safe escape maneuver.

(3) No personnel will suffer from radiation if escape maneuvers are carried out properly.

c. Less Than ESOR. At ranges less than ESOR, units will suffer unacceptable damage.

d. Helicopters. Helicopter aircrews must be briefed on the current OSOR and ESOR for ships before take-off and be kept informed of significant changes by the helicopter control unit. Operational and emergency stand-off ranges for helicopters are given in Table 9-11.

e. Surface Ships. Safe stand-off ranges for surface ships vary with yield, water depth, and wind conditions. Surface ships may more conveniently use the upwind and downwind figures for OSOR and ESOR, calculated for a 22-knot escape speed, that are provided in Table 9-12. Surface ships operating pre-wetting and at shelter stations can operate safely in the base surge. They therefore use the upwind figures for OSOR and ESOR from Table 9-12 in the downwind sector. However, attacks from upwind are preferred, since there may be tactical considerations which make the use of pre-wetting and shelter stations undesirable.

f. Submarines. The safe stand-off ranges for a submarine are 5,000 yards when above a depth of 125 meters (400 feet) and 10,000 yards when below 125 meters (400 feet). The submarine should normally be brought to a depth above 125 meters (400 feet) before weapon release if the target is within 10,000

Table 9-12. (NU) (NMM) Surface Ship Stand-off Ranges

HIGH YIELD WEAPON						
Depth		WIND SPEED	OSOR (yards)		ESOR (yards)	
(feet)	(meters)		UPWIND	DOWNWIND	UPWIND	DOWNWIND
150 to 299	46 to 91	1-5 6-15 16-25 26-40	4,500 4,500 4,500 4,500	4,500 4,500 4,500 4,500	1,600 1,600 1,600 1,600	1,800 2,300 3,500 4,500
300 to 497	92 to 151	1-5 6-15 16-25 26-40	2,000 2,000 2,000 2,000	2,000 2,600 4,100 7,000	1,500 1,500 1,500 1,500	2,000 2,600 4,100 7,000
498 to 719	152 to 219	1-5 6-15 16-25 26-40	2,500 2,500 2,500 2,500	2,500 2,500 3,700 6,100	1,600 1,400 1,400 1,400	2,000 2,500 3,700 6,100
720 to 1139	220 to 347	1-5 6-15 16-25 26-40	3,000 3,000 3,000 3,000	3,000 3,000 3,400 5,600	1,700 1,700 1,700 1,700	1,900 2,400 3,400 5,600
1140 to 2459	348 to 749	1-5 6-15 16-25 26-40	4,500 4,500 4,500 4,500	4,500 4,500 4,500 5,600	1,700 1,700 1,700 1,700	1,900 2,400 3,400 5,600
2460 to 5099	750 to 1544	1-5 6-15 16-25 26-40	5,600 5,600 5,600 5,600	5,600 5,600 5,600 5,600	1,700 1,700 1,700 1,700	1,900 2,400 3,400 5,600
5100 to 9900	1555 to 3018	1-5 6-15 16-25 26-40	4,500 4,500 4,500 4,500	4,500 4,500 4,500 5,600	1,700 1,700 1,700 1,700	1,900 2,400 3,400 5,600

LOW YIELD WEAPON						
Depth		WIND SPEED	OSOR (yards)		ESOR (yards)	
(feet)	(meters)		UPWIND	DOWNWIND	UPWIND	DOWNWIND
150 to 959	46 to 292	1-5 6-15 16-25 26-40	1,700 1,700 1,700 1,700	1,700 1,700 1,700 1,900	500 500 500 500	700 900 1,200 1,900
960 to 3059	293 to 932	1-5 6-15 16-25 26-40	2,200 2,200 2,200 2,200	2,200 2,200 2,200 2,200	500 500 500 500	700 900 1,200 1,900
3060 to 3779	933 to 1151	1-5 6-15 16-25 26-40	1,700 1,700 1,700 1,700	1,700 1,700 1,700 1,900	500 500 500 500	700 900 1,200 1,900
3780 or greater	1152 or greater	1-5 6-15 16-25 26-40	900 900 900 900	900 900 1,200 1,900	500 500 500 500	700 900 1,200 1,900

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yards, since it is quicker for the submarine to change depth than to increase range. In addition, a fine aspect is desirable.

9353 (NC) (NMM) SHIP'S TEMPLATE

a. Production of Templates. Production of templates at a suitable scale for antisubmarine plots is a national responsibility. An example of a suitable template is provided in Figure 9-4. The template indicates:

(1) Limits of initial base surge by circles at 3,000 yards and 6,000 yards for low- and high-yield weapons, respectively.

(2) Division of the area into upwind and downwind sectors by a line through SZ at right angles to the wind direction.

(3) Spread of contamination downwind within lines tangential to the limits of initial base surge.

b. Template. The template is completed before an attack is carried out by drawing in the stand-off ranges in the upwind and downwind sectors. The template is centered either on the submarine's position or on the expected position of SZ and aligned with surface wind direction. It is then possible to:

(1) Determine the degree of risk to own ship or other units.

(2) Decide what evasive course should be steered.

c. Realignment of Template After Weapon Release. The template is realigned after weapon release to the actual position of SZ as soon as it is known. To allow for a margin of safety the furthest-on position of the base surge downwind from the initial limit shown on the completed template should be plotted within the tangent lines starting at weapon release.

d. Information the Template Provides. (See Figure 9-4.) When completed, the template provides:

(1) Stand-off ranges.

(2) Limits of initial base surge.

(3) Spread of contamination downwind.

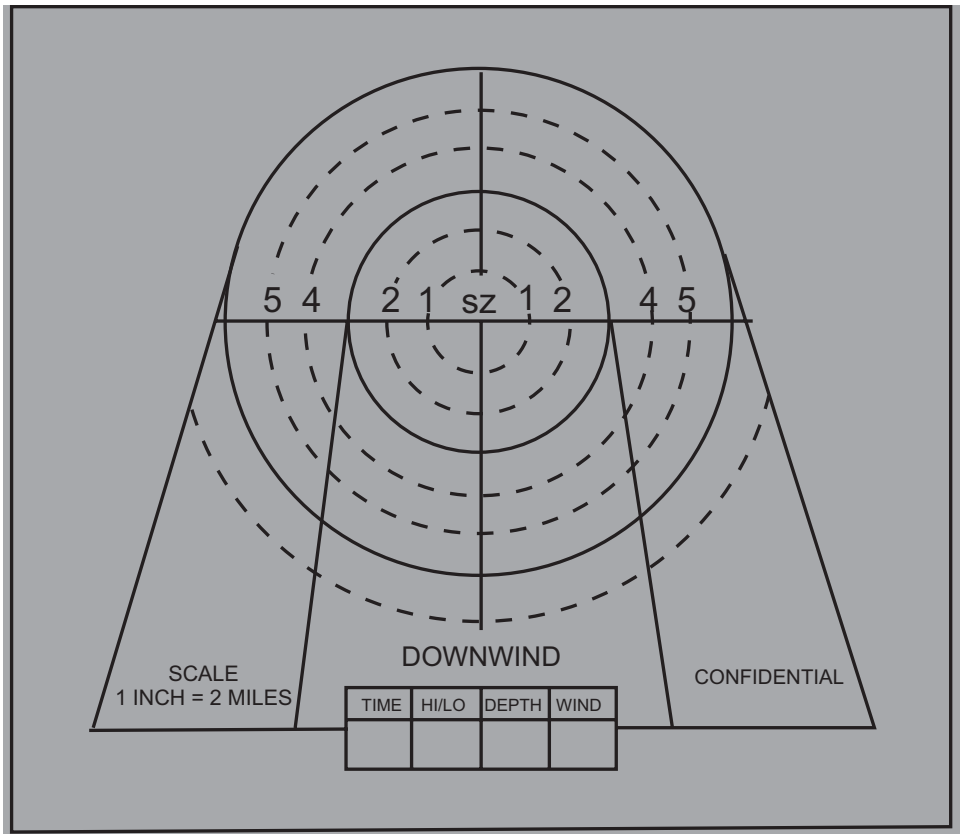
9354 (NC) (NMM) ESCAPE MANEUVERS

a. Surface Ships. Escape maneuvers for surface ships are determined from their positions relative to SZ and wind direction.

(1) Downwind Sector. Surface ships initially steer 45º off the downwind direction and adjust course as necessary to clear the contaminated area. Choice of course depends on wind speed. The downwind sector extends downwind from SZ to a distance in miles equal to 1.5 times the wind speed in knots.

(2) Upwind Sector. Surface ships should steer directly away from SZ until clear of the area shown by the edge of the template.

b. Helicopters. Dipping helicopters are to raise sonar transducers or cut the cables, as appropriate, and turn while accelerating from the hover to escape radially away from SZ, if in the upwind sector, or to escape crosswind, if in the downwind sector, to beyond the limit of the spread of the base surge.



(NATO-CONFIDENTIAL) (NMM)

Figure 9-4. (NU) (NMM) Template for ASW Plans

c. Aircraft and Helicopters in Transit. Supporting fixed-wing aircraft and helicopters in transit are to be heading away from SZ at the time of weapon release and are to report clear when steady on the escape heading.

9355 (NC) (NMM) RE-ENTRY INTO CONTAMINATED AREA

Tactical considerations, particularly obtaining proof of success, may cause own forces to re-enter the contaminated area after a nuclear burst.

a. Surface Ships. Contamination of the water around the burst may extend to a range of 2,500 yards from SZ, 15 minutes after the burst. Contamination of the water will spread gradually and may extend up to 5,000 yards, 4 hours after the burst. The contaminated area around SZ should be avoided for at least 30 minutes and for 90 minutes if possible.

b. Aircraft. The base surge is unlikely to exceed a maximum height of 2,000 feet. Aircraft may therefore overfly the radioactive pool at altitudes in excess of 5,000 feet very shortly after the burst. Once the base surge has dissipated or blown clear, an aircraft may make a single pass over the radioactive pool:

(1) At 1,000 feet, 5 minutes after the burst.

(2) At 100 feet, 10 minutes after the burst.

Aircrews are to be aware of the acceptable total doses that they may receive while conducting prolonged operations over the radioactive pool. Aircrews are to check the actual doses received themselves.

9356 (NC) (NMM) SUMMARY OF DECISIONS AND ACTIONS

A summary of decisions and actions by all units, before, during, and after an attack with a nuclear ASW weapon is provided in Table 9-13.

Table 9-13. (NU) (NMM) Summary of Decisions and Actions for Nuclear ASW Weapon Attack

	OTC	ASWC/SOCA/SC	SAC	Control Unit	Attack Unit	Other Forces
	BEFORE ACTION					
1	1A. Promulgates nuclear weapons policy, using OPTASK NUC: (1) Disposition of weapon carriers. (2) Duty cycle. (3) Alert states. (4) DUSTBIN color areas. (5) Release criteria. (6) Contamination criteria. (7) Delegation of authority.	1B. Any information from 1A not already ordered by the OTC.		1C. Informs OTC and/or ASWC/SOCA/SC if duty cycles or alert states cannot be met.	1D. As 1C, if applicable.	
2		2A. Informs applicable MPA (on joining).				
	ON CONTACT					
3			3. Decides if nuclear ASW weapon is usable with: (1) Ship/helicopter/MPA/SSN. (2) DUSTBIN/GREEN/ORANGE areas. (3) HIGH/LOW yield. (4) OSOR/ESOR. (5) Time late/offset. (6) Target identification.			
4	4B. Responds to 4A(2).	4C. Dispatches attack and/or control unit(s).	4A. Requests: (1) Attack and/or control unit(s). (2) OTC's approval if in ORANGE area.	4D. Dispatches attack unit, if necessary.		

(NATO-CONFIDENTIAL) (NMM)

Table 9-13. (NU) (NMM) Summary of Decisions and Actions for Nuclear ASW Weapon Attack (Cont.)

	OTC	ASWC/SOCA/SC	SAC	Control Unit	Attack Unit	Other Forces
5		5C. Informs supporting submarines and vectors to a safe haven, if applicable.		5A. Moves to position from which attack can be controlled; if applicable, gains contact.	5B. Moves to position from which attack can be performed; if applicable, gains control.	
6		6A. Informs applicable MPA.				
7		7B. Dispatches additional (control) units.	7A. Requests additional (control) units.			
8	8B. If applicable, makes change of release criteria.	8A. Is any change of release criteria required? If so, contacts the OTC.				
9			9A. Makes final decision to use nuclear ASW weapon. Informs OTC and control and/or attack unit(s). STANDBY DUSTBIN (confirms designation of control and attack unit(s)).	9B. Informs attack unit of decision to use nuclear ASW weapon.		
10						
	ON ATTACK					
11				11. Broadcasts time and position of intended SZ and yield.		
12		12A. Informs applicable MPA.				

(NATO-CONFIDENTIAL) (NMM)

Table 9-13. (NU) (NMM) Summary of Decisions and Actions for Nuclear ASW Weapon Attack (Cont.)

	OTC	ASWC/SOCA/SC	SAC	Control Unit	Attack Unit	Other Forces
13	13A. OTC informs SAC that main body is DUSTBIN CLEAR/FOUL. If FOUL, reports time in minutes to CLEAR.					13B. All other units in the ORANGE area report to SAC as in 13A.
14		14A. SOCA informs SAC whether all submarines under his control are clear or not as in 13A.	14B. (1) Checks that units within 4 nm of SZ are clear or not and advises control unit. (2) When all units are clear, informs control unit and orders attack to be made.			
15			15. Decides post-attack deployment of units at scene of action.			
16				16A. Starts count-down. Reports 2 minutes before DUSTBIN release.	16B Same as 16A, if applicable.	
17					17A. Selects weapon, if applicable.	
18				18B. Broadcasts BEWARE, BEWARE.	18A. Broadcasts BEWARE, BEWARE.	
19				19A. Controls attack unit to weapon release point.	19B. Releases weapon.	
20						

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Table 9-13. (NU) (NMM) Summary of Decisions and Actions for Nuclear ASW Weapon Attack (Cont.)

	OTC	ASWC/SOCA/SC	SAC	Control Unit	Attack Unit	Other Forces
	After Attack					
21				21B. Broadcasts DUSTBIN DUSTBIN.	21A. Broadcasts DUSTBIN, DUSTBIN.	
22				22. Reports actual position and time of SZ.		
23		23A. Inform applicable MPA of DUSTBIN release.				
24						24. All units plot SZ and contamination spread. Avoid over-contamination and rejoin.
25			25. Alters post-attack deployment of units at scene of action, if required.			
26	26B. Promulgates NEWBURST message.		26A. Decides how to obtain proof of success, if required.			

(NATO-CONFIDENTIAL) (NMM)

9360 (NC) (NMM) BREVITY CODE WORDS

Brevity code words and their meaning are as shown in Table 9-14.

Table 9-14. (NU) (NMM) Brevity Code Words

DUSTBIN BLACK	No unit may release a nuclear weapon.
DUSTBIN GREEN	Unit may, without the OTC's further approval, release a nuclear ASW weapon, provided that the appropriate release criteria are met.
DUSTBIN ORANGE	Unit may, with the OTC's prior approval, release a nuclear ASW weapon, provided that the appropriate release criteria are met (see Article 9313).
DUSTBIN LIMA	Low-yield nuclear ASW weapon.
DUSTBIN HOTEL	High-yield nuclear ASW weapon.
CARTWHEEL OSCAR	OSOR extends ____ yards upwind, ____ yards downwind from SZ. (Wind direction from ____ .)
CARTWHEEL ECHO	Same as for CARTWHEEL OSCAR, but for ESOR.
RHINO	An aircraft with a nuclear ASW weapon on board. (RHINO may be used as a suffix to an aircraft's call sign to indicate which aircraft has a nuclear ASW weapon on board.)
DUSTBIN OSCAR CLEAR/FOUL	I (or unit indicated) am/am not clear of OSOR.
DUSTBIN ECHO CLEAR/FOUL	I (or unit indicated) am/am not clear of ESOR.
STANDBY DUSTBIN	Nuclear ASW weapon attack approved.
NEGATIVE DUSTBIN	Nuclear ASW weapon attack not approved.
BEWARE, BEWARE	The cautionary report made by an ASROC-fitted ship or a nuclear ASW weapon delivery aircraft about 30 seconds prior to weapon firing/release.
DUSTBIN, DUSTBIN	The report made by an ASROC-fitted ship on firing an RTDC (rocket-thrown nuclear depth charge) or an aircraft on releasing a nuclear ASW weapon.
ABORT DUSTBIN	I cannot attack with a nuclear ASW weapon but will attack with conventional weapons if possible.

(NATO-CONFIDENTIAL) (NMM)

AIRPLAN 1

a. DESCRIPTION. A close search designed for use by one aircraft to investigate a bearing.

b. EXECUTION. The aircraft flightpath depends on the search method employed. When an aircraft is required to start the search from the origin of the bearing it is to be so ordered.

c. ORDERING. The following information is to be included in the orders to the aircraft:

Airplan Designation

A Bearing and type of bearing

B Time bearing obtained

C Origin of the bearing

D Distance in miles along bearing to be searched

E Starting position (optional).

EXAMPLE

EXECUTE AIRPLAN ONE

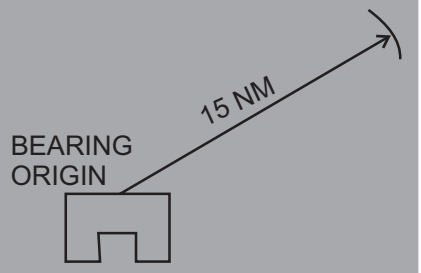
ALFA—060 CLASS CHARLIE RACKET I-BAND

BRAVO—1900Z

CHARLIE—UNIT CALLSIGN

DELTA—15

ECHO—(Aircraft Commander's discretion)



(NATO-CONFIDENTIAL) (NMM)

Figure 9-5. (NU) (NMM) Airplan 1

AIRPLAN 2

a. DESCRIPTION. A close search designed for use by one aircraft to investigate a datum or contact.

b. EXECUTION. The aircraft proceeds to the required position to localize and classify the contact. The aircraft commander reports results to the OTC who will determine the duration of the search.

c. ORDERING. The following information is to be included in the orders of the aircraft:

Airplan Designation

A Datum and datum error or contact position

B How datum or contact position was established

C Datum time or time contact obtained

D Contact classification.

EXAMPLE

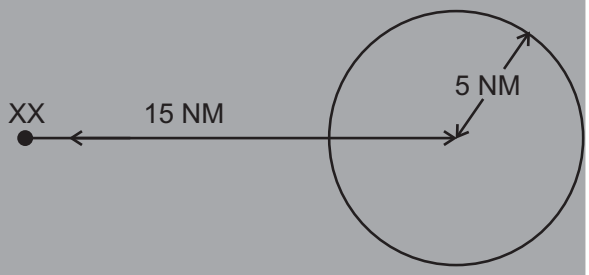
EXECUTIVE AIRPLAN TWO

ALFA—DATUM 3123—090XXX15 DATUM ERROR 5 MILES

BRAVO—CRISS-CROSS INDIA BAND

CHARLIE—1426Z

DELTA—POSSUB HIGH 3



(NATO-CONFIDENTIAL) (NMM)

Figure 9-6. (NU) (NMM) Airplan 2

AIRPLAN 3

a. DESCRIPTION. An airplan designed for use by one aircraft to provide a barrier along a given line either fixed geographically or relative to a force. Unless otherwise ordered, the aircraft commander will choose the sensor(s) to be employed. If the sensor to be employed is specified by the ordering authority, the following should be considered.

(1) JULIE/ACTIVE SONOBUOY. A barrier of short duration and relatively short length (12 miles approximately). This barrier is fixed, and cannot be relative to a moving force; it can, however, be extended to cover a moving force for a short time.

(2) MAD. A medium duration barrier which must be short in total length to be effective (5 miles approximately).

(3) JEZEBEL. A passive barrier which may be maintained by either lofar or codar. It should be located beyond the interference range of ships.

(4) OTHER SENSORS may be used, depending on aircraft equipment and the tactical situation.

b. EXECUTION. The aircraft flight path depends on the search method employed.

c. ORDERING. The following information is to be included in the orders to the aircraft:

Airplan Designation

A Relative or geographic

B Origin (true bearing and distance in miles from a reference point) and time (when origin is ordered with reference to a moving position)

C Bearing and distance of each leg

D Duration

E Sensor to be employed (normally aircraft commander's discretion)

F Encoded course and speed elements of PIM (for relative airplans only).

(NATO-CONFIDENTIAL) (NMM)

Figure 9-7. (NU) (NMM) Airplan 3

AIRPLAN 3 (Cont.)

EXAMPLE

EXECUTE AIRPLAN THREE

ALFA—RELATIVE

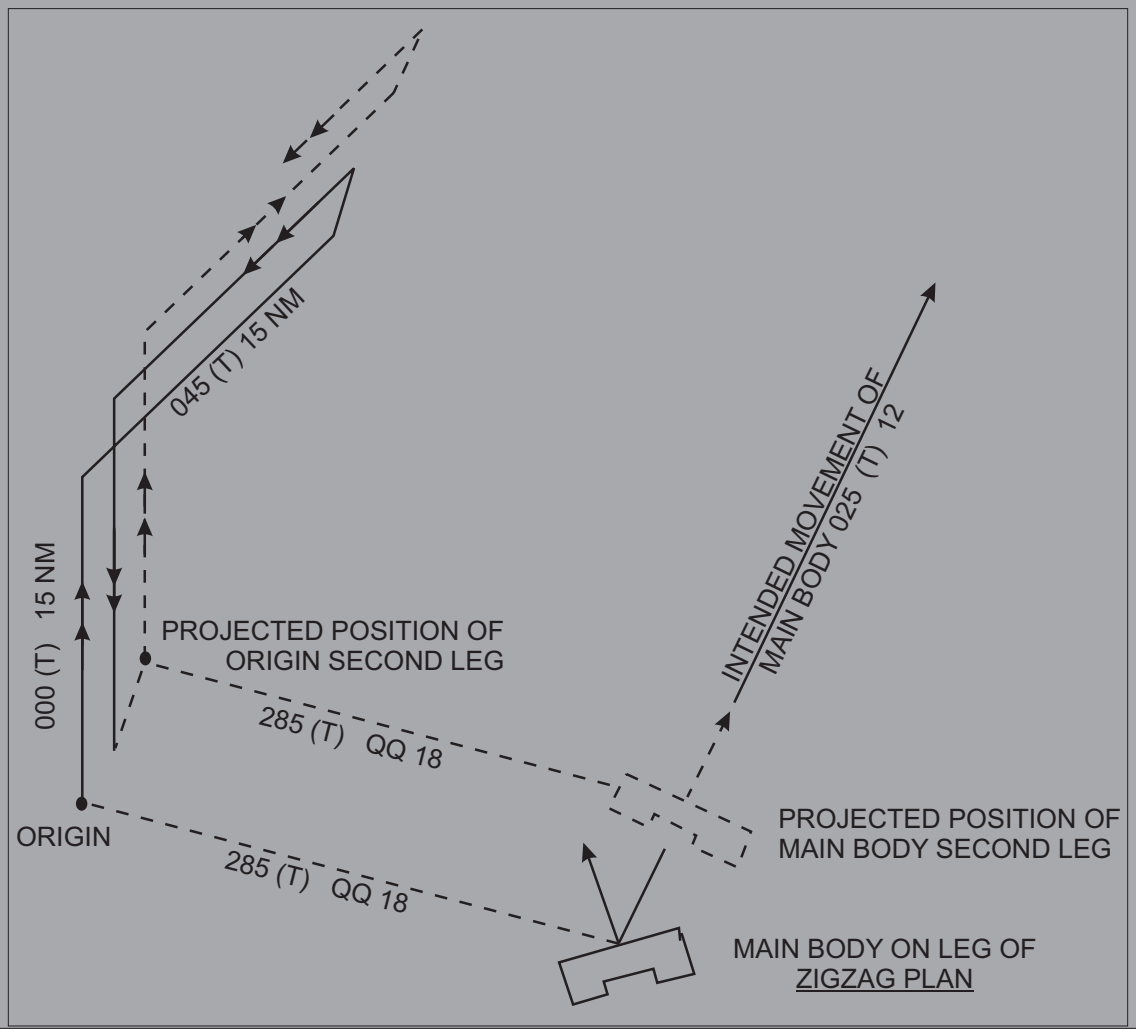
BRAVO—285 QQ 18 AT 1015Z

CHARLIE—000-15 THEN 045-15

DELTA—UNTIL FURTHER ORDERS

ECHO—VISUAL

FOXTROT—025-12 (encoded)



(NATO-CONFIDENTIAL) (NMM)

Figure 9-7. (NU) (NMM) Airplan 3 (Cont.)

AIRPLAN 4

a. DESCRIPTION. An airplan used to search relative to a force. The area around the force is divided into quarters designated Sector One through Sector Four. Additionally, for all round search the four quarters are combined in Sector Five. Other divisions may also be ordered by the methods shown in the diagram. All such sectors and divisions are based on the DR position of ZZ or QQ (origin) as it advances along the PIM.

b. EXECUTION. When more than one aircraft is assigned, each aircraft task is to be ordered individually and a distinct area assigned to each aircraft.

c. ORDERING. The following information is to be included in the orders to the aircraft:

Airplan Designation

A Sector number(s), and either depth of search in miles (Sectors 1-4) or in miles ahead, abeam and astern (Sector 5).

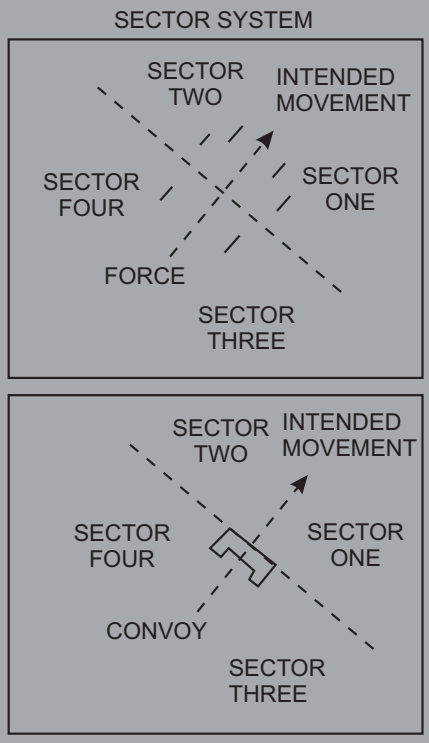
B Origin, time and encode position, course and speed elements of PIM.

EXAMPLE

EXECUTE AIRPLAN FOUR

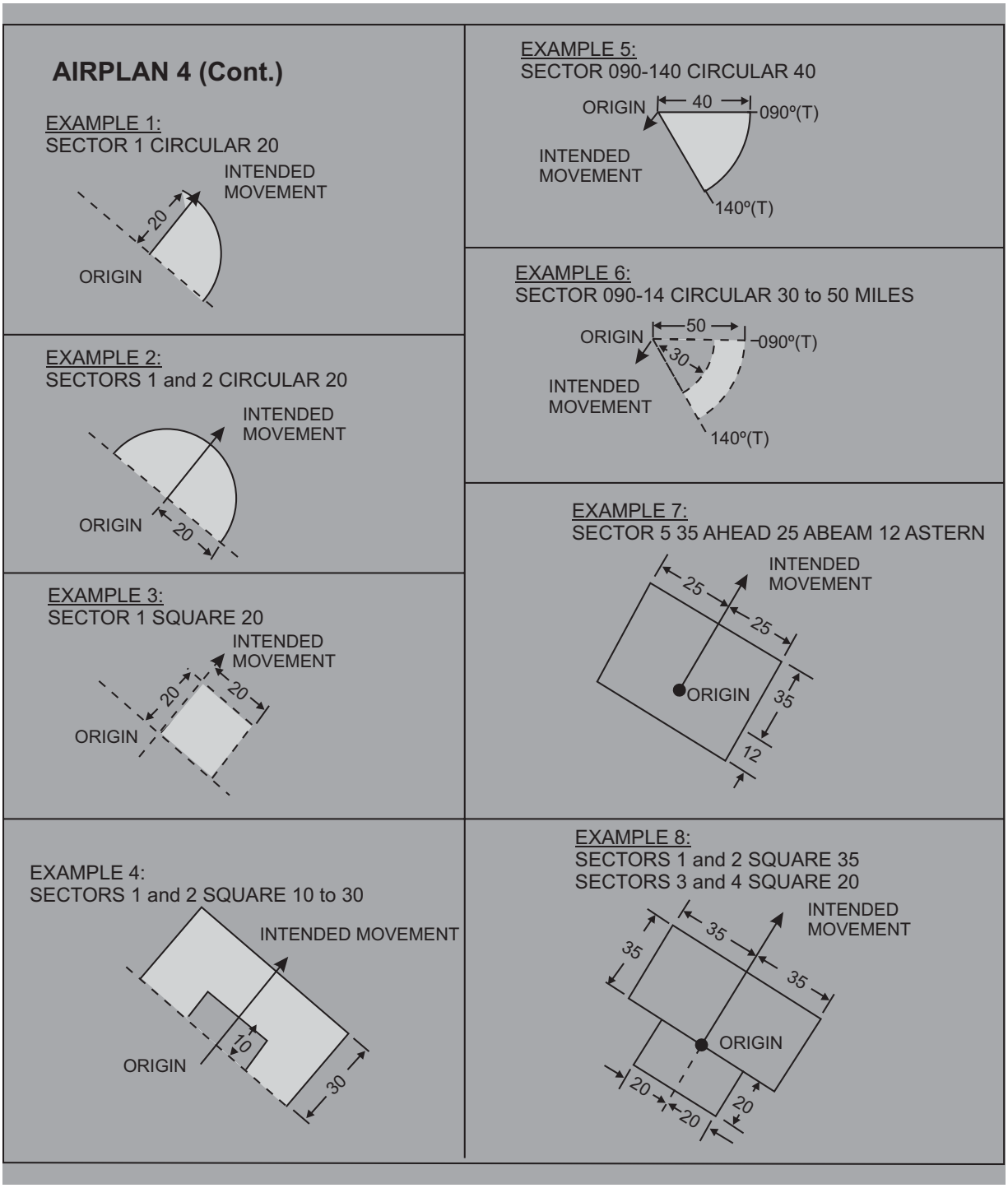
ALFA—SECTOR 1 SQUARE 30

BRAVO-ZZ-0800Z-encoded 180 XX 40-090-10



(NATO-CONFIDENTIAL) (NMM)

Figure 9-8. (NU) (NMM) Airplan 4



(NATO-CONFIDENTIAL) (NMM)

Figure 9-8. (NU) (NMM) Airplan 4 (Cont.)

AIRPLAN 5

a. DESCRIPTION. An airplan for use by one aircraft to search an area of any size or shape. The area may be either geographic or relative to a force.

b. EXECUTION. The aircraft commander will normally determine the aircraft flightpath independently.

c. ORDERING. The following information is to be included in the orders to the aircraft:

Airplan Designation

A Relative or geographic

B Corners (for areas with straight sides)

C Center (for circular area) and radius in miles

D Encoded course and speed elements of PIM (for relative areas only)

EXAMPLE 1

EXECUTE AIRPLAN FIVE

ALFA — GEOGRAPHIC

CHARLIE — 240 WW 120 RADIUS 35

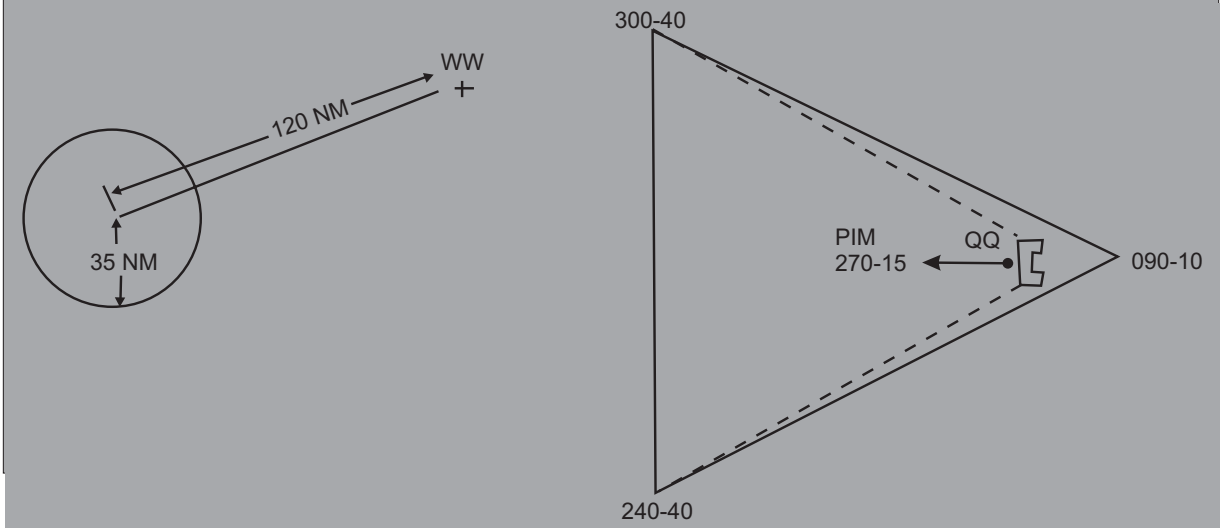
EXAMPLE 2

EXECUTE AIRPLAN FIVE

ALFA — RELATIVE

BRAVO — 090 QQ 10—
240 QQ 40—
300 QQ 40

DELTA — 270 — 15 (encoded)



(NATO-CONFIDENTIAL) (NMM)

Figure 9-9. (NU) (NMM) Airplan 5

AIRPLANS 41, 42, AND 43

a. PURPOSE. These airplans are designed to investigate a bearing or a small area with two or more helicopters.

b. DESCRIPTION.

(1) AIRPLANS 41, 42, and 43 are all line abreast searches. In Airplan 41, the helicopters dip along the direction of advance. In Airplans 42 and 43, the dips are offset so that each jump is at 45° (Airplan 42) or 60° (Airplan 43) to the direction of advance. Thus, Airplan 41 provides the fastest speed of advance of the three plans, but the narrowest search front. Airplan 43 provides a wide search front but requires a slower speed of advance, and Airplan 42 provides a compromise between the two.

(2) OPTIMUM STATIONING between any two short-range sonar helicopters, and the jump distance required, for various speeds of advance of the sonar front, depend on TSR. TSR is normally expressed in multiples of 500 yards. The formula used is 1.6 x TSR.

(3) INITIAL DIP LINE is normal to the direction of advance.

c. ORDERING.

Airplan Designation

A Center of the initial dip line from reference point or unit

B Direction of advance

C Duration of search or distance to be covered

D Initial dip stations relative to center of initial dip line

E Optimum stationing distance in hundreds of yards (1.6 x TSR)

F Jump distance in hundreds of yards (1.6 x TSR)

EXAMPLE (see figure)

EXECUTE AIRPLAN FOUR ONE

ALFA — 090 ZZ 10

BRAVO — 000

CHARLIE — 20 MINUTES

DELTA — HELO 15 LEFT

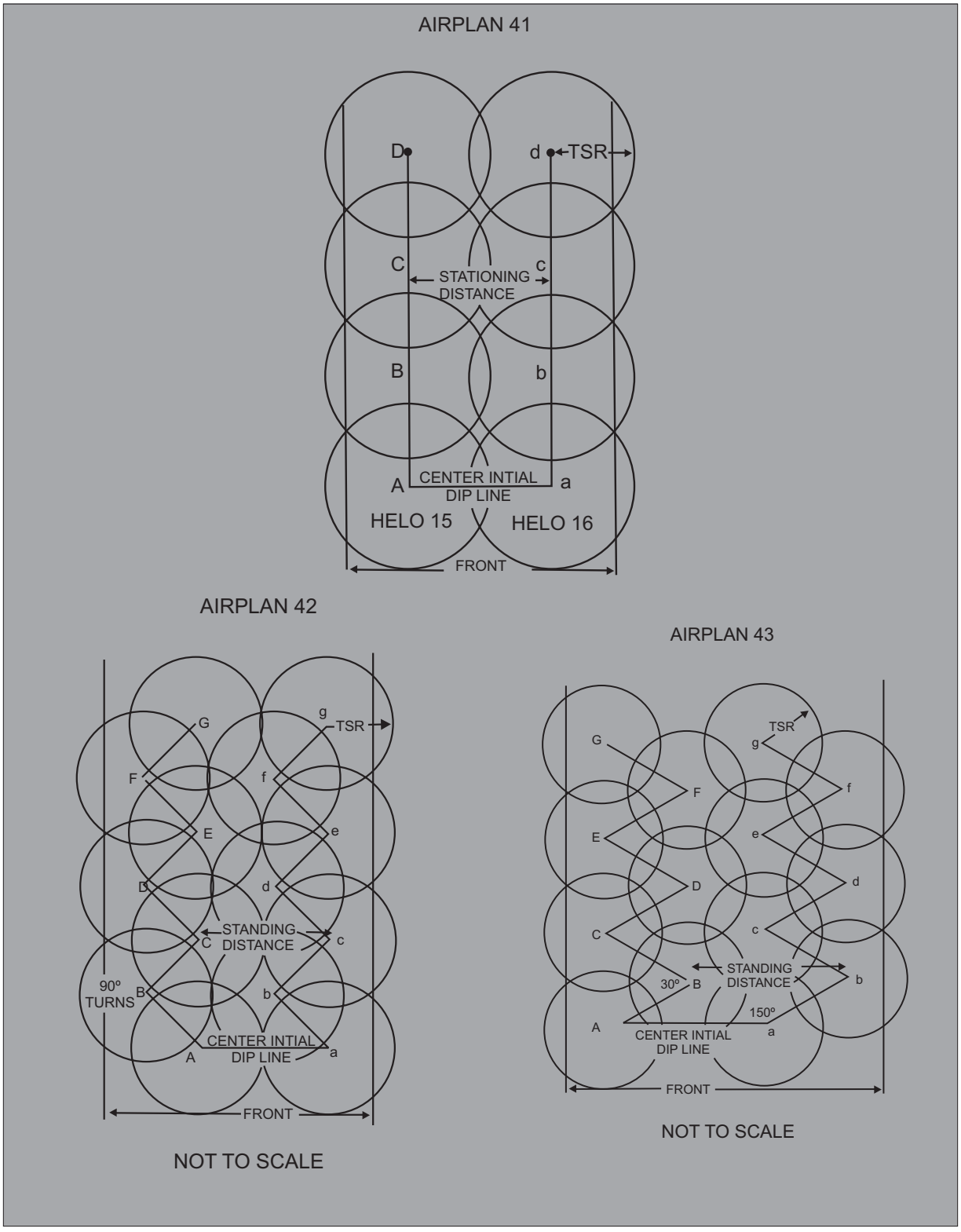
HELO 16 RIGHT

ECHO — 32

FOXTROT — 32

(NATO-CONFIDENTIAL) (NMM)

Figure 9-10. (NU) (NMM) Airplans 41, 42, 43



(NATO-CONFIDENTIAL) (NMM)

Figure 9-10. (NU) (NMM) Airplans 41, 42, and 43 (Cont.)

AIRPLAN 44

a. PURPOSE. A lost contact or datum search for use by two, three, or four helicopters. It is suitable when time late is less than 20 minutes and when there is no estimate of the submarine's most likely course. This plan provides high density coverage near datum, and dip positions do not vary with estimated submarine speed.

b. AXIS. The search axis is always north.

c. EXECUTION. Before reaching datum, the unit ordering the search is to assign one helicopter to make its initial dip to the north of the datum (on the axis) and assign remaining helicopters to initial dip positions such that the angular spacing between helicopters is equal (i.e., two helicopters start at 000° and 180° from datum, three helicopters start at 000°, 120°, and 240° from datum). Initial dip positions are at TSR from datum.

Subsequent dips are positioned to form an expanding clockwise spiral search. The table shows each dip position as a range and bearing from datum.

Should the helicopters arrive late at datum, the unit ordering the search can order helicopters to start their search at the 2nd or 3rd dip.

No coordination between helicopters is needed once datum has been established.

d. ORDERING.

Airplan Designation

A Position of search center or datum

B TSR

C Initial dip bearings

EXAMPLE (see figure)

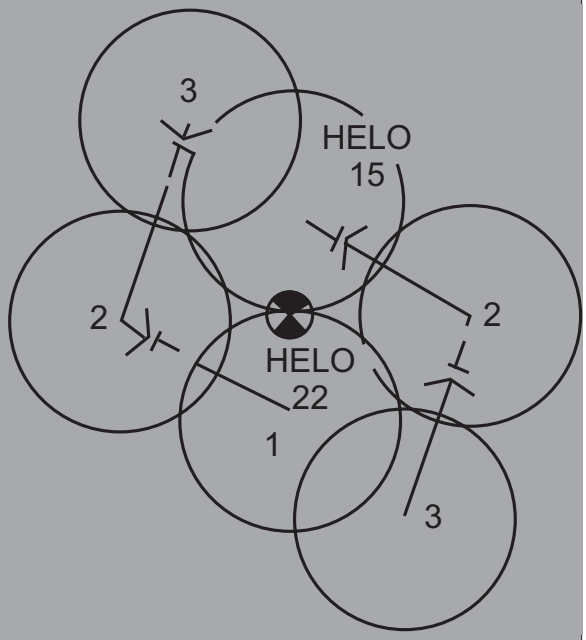
EXECUTE AIRPLAN FOUR FOUR

ALFA — 220 ZZ 41

BRAVO — 6000

CHARLIE — HELO 15 000

HELO 22 180



(NATO-CONFIDENTIAL) (NMM)

Figure 9-11. (NU) (NMM) Airplan 44

AIRPLAN 44 (Cont.) TABLE FOR AIRPLAN 44

Dip Number	Distance from Datumn (X TSR)	
	2 Helos	3 or 4 Helos
1	1	1
2	1 1/2	2
3	2	3
4	2 1/2	4
5	3	5
6	3 1/2	6
7	4	7
8	4 1/2	8

Dip Position Bearing True or Magnetic as Ordered from Datum for First Helicopter When Number of Helicopters Used Is:		
2	3	4
000	000	000
090	060	045
162	109	090
216	143	124
259	169	150
295	190	171
326	208	189
353	223	204
2nd helo add 180 degrees to all figures above	2nd helo add 120 degrees, 3rd helo add 240 degrees to all figures above	2nd helo add 90 degrees, 3rd helo add 180 degrees, 4th helo add 270 degrees to all figures above

(NATO-CONFIDENTIAL) (NMM)

Figure 9-11. (NU) (NMM) Airplan 44 (Cont.)

AIRPLAN 45

a. PURPOSE. An airplan intended for use when one or more helicopters are available to establish a barrier.

b. DESCRIPTION

(1) BARRIER ORIGIN. Selected by the officer ordering the barrier. It is the initial dip position of a helicopter which is to be stationed at one end of the barrier.

(2) BARRIER AXIS. Selected by the officer ordering the barrier. It is the bearing from the origin along which the barrier is established. (And will therefore usually be at right angles to the expected submarine course.)

(3) INITIAL DIP POSITIONS. One helicopter is ordered to dip at barrier origin and the remainder dip at twice jump distance apart along the axis. Dip stations are numbered consecutively along the axis (see figure and example on next page) and are assigned by the senior helicopter commander, taking into account the relative position of the helicopters in relation to the datum.

(4) SECOND DIP POSITIONS. After completing initial dips, helicopters jump one distance up the axis to start their second dip position.

(5) SUBSEQUENT DIP POSITIONS. On completion of the second dip, helicopters return to their initial dip positions. They then continue dipping alternatively in their two dip positions.

c. SELECTION OF JUMP DISTANCE. Jump distance is selected by the officer ordering the search. Theoretical complete coverage of the barrier can be achieved, using the graph, as follows:

1. Decide maximum expected submarine speed (V knots).
2. Assess dip cycle time (T minutes) as dip time (time in dip) plus jump time.
3. Establish submarine travel per dip cycle (D kiloyards) from formula:

$$D = \frac{VT}{30}$$

4. From D and TSR extract from the graph the recommended jump distance.
5. Action when TSR is low: Theoretical coverage may be best achieved by ordering Helo Station distance at 1.6 times TSR apart and Helos remain in the dip (see Example 2).

d. ORDERING

Airplan Designation

A Position of origin

B Axis

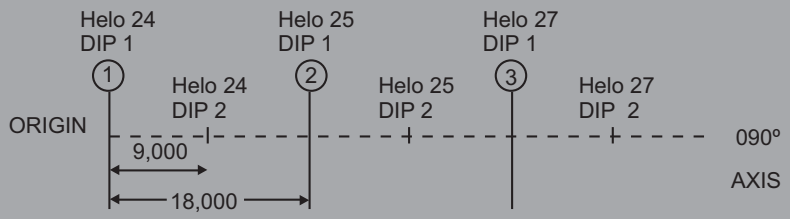
C Helicopter station numbers

D Distance apart between station numbers

(NATO-CONFIDENTIAL) (NMM)

Figure 9-12. (NU) (NMM) Airplan 45

AIRPLAN 45 (Cont.)



EXAMPLE 1

EXECUTE AIRPLAN FOUR FIVE

ALFA—070 XX 25

BRAVO—090

CHARLIE—HELO 24 STATION ONE—
HELO 25 STATION TWO—
HELO 27 STATION THREE

DELTA—EIGHTEEN THOUSAND YARDS.

EXAMPLE 2 (When TSR is low)

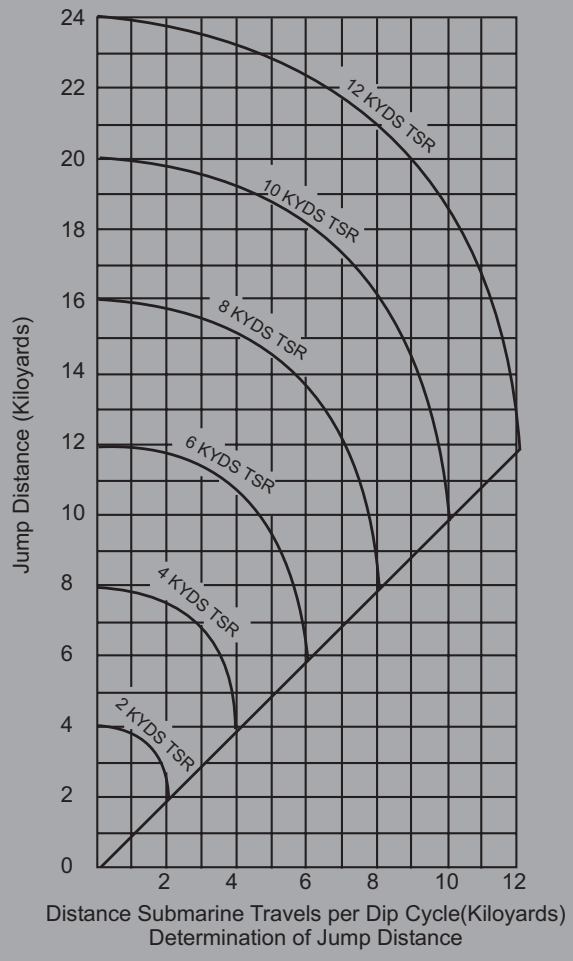
EXECUTE AIRPLAN FOUR FIVE

ALFA — 070 XX 25

BRAVO — 090

CHARLIE — HELO 24 STATION ONE—
HELO 25 STATION TWO—
HELO 27 STATION THREE

DELTA — THIRTY TWO HUNDRED YARDS, NO JUMPS



Determination of Jump Distance

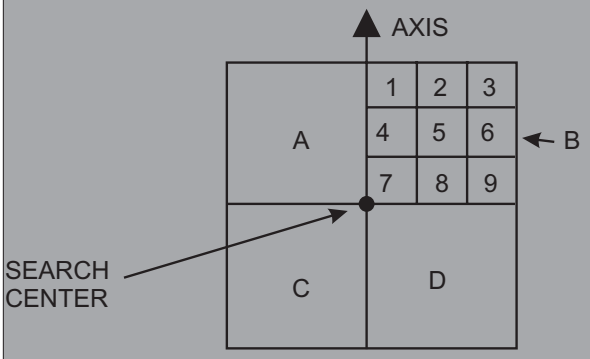
(NATO-CONFIDENTIAL) (NMM)

Figure 9-12. (NU) (NMM) Airplan 45 (Cont.)

AIRPLAN 46

a. PURPOSE. A helicopter search plan for use when one or more helicopters are to be used on random search of a geographical area.

b. DESCRIPTION OF SEARCH AREA. Airplan 46 can be used to allocate each helicopter to one or more quarters of an overall square area. The overall area is divided into four lettered squares, which are themselves subdivided each into nine smaller squares, as illustrated below:



(1) AXIS. The axis (originating at search center and dividing squares A and B) is always north.

(2) SIZE OF AREAS. At discretion of officer ordering search. It is recommended that the numbered squares should normally have sides of about twice TSR. NOTE: It is not always necessary to allocate all four squares. A square, rectangle or L-shaped search can be ordered (see example below).

c. EXECUTION. Each helicopter is ordered to search one or more lettered squares. The helicopters then dip at the center of each of the numbered squares within the allocated area. The order of dips may be at the pilot's discretion, or may be ordered from the random table below:

Column	1	2	3
Dip Section	4	6	2
Sequence	9	2	4
	2	3	6
	6	8	8
	3	1	3
	7	4	9
	8	5	5
	5	7	1
	1	9	7

When using this table, the column may be entered at any point and then followed sequentially to the bottom, returning to the top and down to the starting point and so on.

d. ORDERING

Airplan designation

A Search center (center of total square area)

B Helicopter assignments

C Length of side of each lettered square

D Dip sequence column allocation (optional)

(NATO-CONFIDENTIAL) (NMM)

Figure 9-13. (NU) (NMM) Airplan 46

AIRPLAN 46 (Cont.)

EXAMPLE

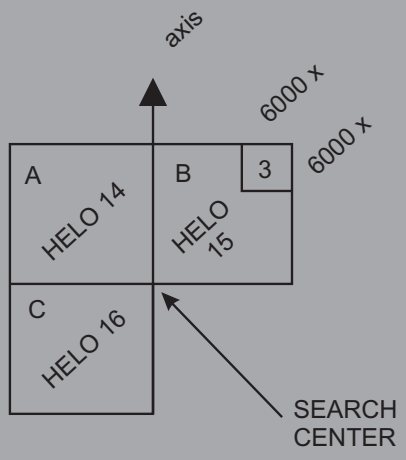
EXECUTE AIRPLAN FOUR SIX

ALFA—220 POINT XRAY 85

BRAVO—HELO 14 SQUARE A—
HELO 15 SQUARE B—
HELO 16 SQUARE C—

CHARLIE—18,000 YARDS

DELTA—HELO 14 COLUMN 1—
HELO 15 COLUMN 2—
HELO 16 COLUMN 3—



(NATO-CONFIDENTIAL) (NMM)

Figure 9-13. (NU) (NMM) Airplan 46 (Cont.)

AIRPLAN 47

a. PURPOSE. A lost contact search for two helicopters. It is suitable for use against medium speed submarines. When the plan is started on an accurate datum within 5 minutes of lost contact and TSR is at least 2,000 yards, Airplan 47 should give a good relocation chance against submarines doing up to 15 knots.

b. INITIATION. The senior helicopter will select Airplan 47 as his intended action on lost contact. The plan is then initiated by either helicopter as soon as it loses contact, and when no other unit has contact. This helicopter becomes the directing helicopter of the search and establishes datum at a range and bearing from its present position. This bearing is then used as the search axis.

c. SELECTION OF "LEFT" OR "RIGHT" PLAN. The directing helicopter selects the "Left" or "Right" plan depending on the last known bearing movement of the submarines (e.g., if bearing movement was to the left, the left plan should be chosen).

d. ORDERS BY DIRECTING HELICOPTER. As soon as a helicopter has reason to doubt its contact holding and no other unit is in contact, it should prepare for Airplan 47 by passing the following message:

STANDBY AIRPLAN FOUR SEVEN LEFT/ RIGHT

A Axis

B Datum range

C Helo assignment

D Datum time

EXAMPLE

STANDBY AIRPLAN FOUR SEVEN LEFT

ALFA—050 TRUE

BRAVO—2300

CHARLIE—HELO 22 ALFA—
HELO 24 BRAVO

DELTA—1513Z

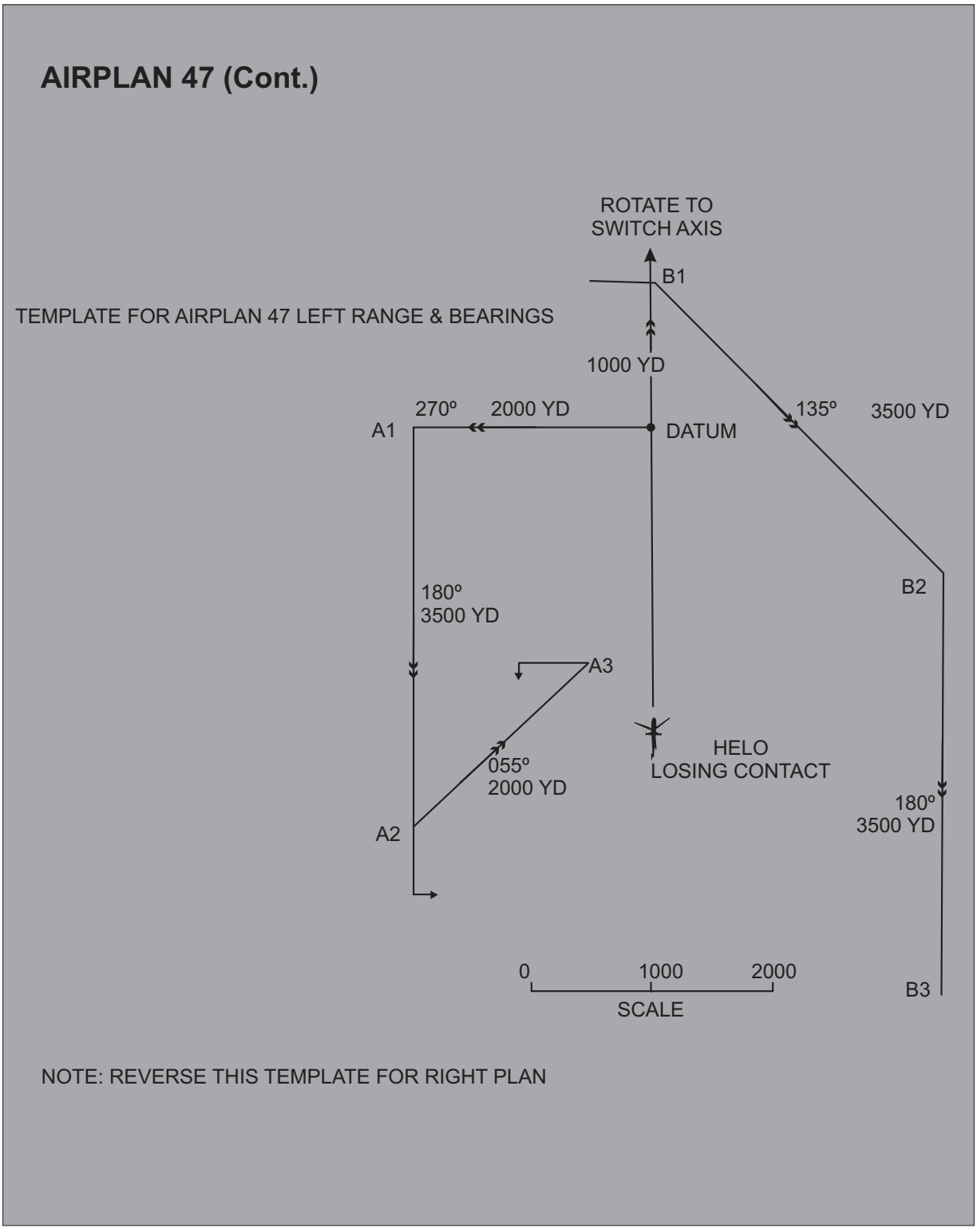
Once contact is lost, the helicopter orders, EXECUTE AIRPLAN 47 and marks his present position with smoke and/or a sonobuoy.

e. EXECUTION OF SEARCH. The execution of the search is conducted as outlined in the template.

f. ACTION ON REGAINING CONTACT. When contact is regained by one helicopter, the other is directed to a suitable position for tracking to be continued. If however, contact is lost before this action can be effected, a fresh Airplan 47 is to be ordered.

(NATO-CONFIDENTIAL) (NMM)

Figure 9-14. (NU) (NMM) Airplan 47



(NATO-CONFIDENTIAL) (NMM)

Figure 9-14. (NU) (NMM) Airplan 47 (Cont.)

AIRPLAN 48

a. PURPOSE. A datum sector search designed for two helicopters against submarine speeds up to 20 knots and time late up to 15 minutes.

b. DESCRIPTION

(1) SEARCH ORIGIN. Selected by the officer ordering the airplan. It is the datum position.

(2) SEARCH AXIS. Selected by the officer ordering the airplan. It is the submarine's most probable course from the search origin.

(3) DIP STATIONS. These are fixed stations as detailed below and are assigned by the senior helicopter commander, taking into account the relative positions of the helicopters in relation to the datum.

Dip Number	Helicopter A	Helicopter B
1	310° DATUM X .8TSR	050° DATUM X .8TSR
2	315° DATUM X 2.8TSR	045° DATUM X 2.8TSR
3	000° DATUM X 2.3TSR	000° DATUM X 3.7TSR

c. ORDERING

Airplan Designation

A Search origin and time

B Search axis

C Designate Helos

D Tactical sonar range (TSR)

E Control method (optional)

EXAMPLE

EXECUTE AIRPLAN FOUR EIGHT

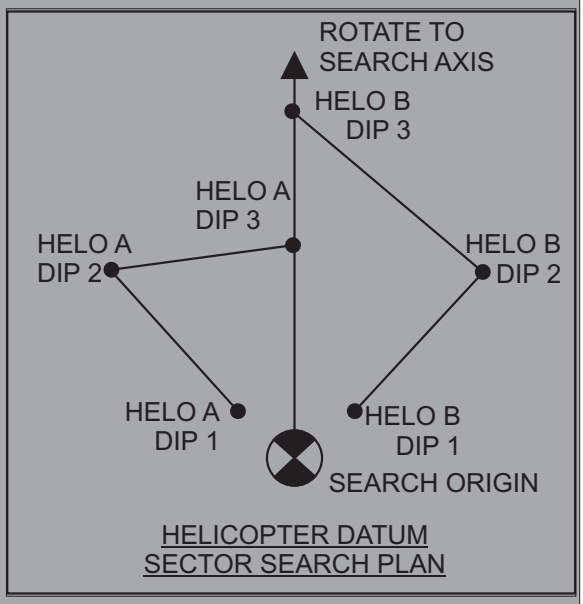
ALFA—180 ZZ 30 1515Z

BRAVO—060 TRUE

CHARLIE—HELO 10 ALFA
HELO 14 BRAVO

DELTA—6000

ECHO—LOOSE ADVISORY



HELICOPTER DATUM SECTOR SEARCH PLAN

(NATO-CONFIDENTIAL) (NMM)

Figure 9-15. (NU) (NMM) Airplan 48

ATTACK METHOD 1A
LOCK ON ATTACK

This method is a coordinated attack for use in a multiship ASW action. It is particularly useful when difficulty is experienced in holding contact on a high-speed submarine by the sector method. It also provides a good safety factor for ships maneuvering at high speeds. Other ships present may be ordered to carry out support plans Bear (11A). The aim is to contain the submarine between the ships of the SAU, maintain contact, and attack.

a. GENERAL

(1) DISTANCE APART OF SHIPS. Optimum distance between ships is between 2,000 and 3,000 yards. This may, however, be amended as dictated by sonar conditions, characteristics of weapons fitted, and compatibility of sonars.

(2) TACTICAL DIAMETER. With ships of similar characteristics, the attacking ship should pass the rudder, speed, and engine orders. With ships of dissimilar characteristics, it is necessary for the SAC to signal the tactical diameter to be used.

(3) LOCK ON RANGE. The lock on range is the range from each unit of the SAU to the attacking ship.

b. PROCEDURES

(1) ORDERING THE ATTACK. The SAC orders "EXECUTE LOCK ON RANGE . . . (in hundreds of yards)," designates the attacking ship and, where applicable, the tactical diameter to be used. Thereafter, the SAC executes tactical command and the attacking ship executes tactical control of ships ordered to "LOCK ON" and directs the action.

(2) ACTION BY ATTACKING SHIP. The attacking ship immediately informs the assisting ship(s) of her present course and speed. If in a position to attack, she does so. She then endeavors to keep the submarine inside the attack formation, maneuvering the SAU by either of two methods. In Method A, the lock on control ship passes rudder, speed, and engine orders over the tactical net. In Method B, the lock on control ship passes direction of turn and the desired course and speed over the tactical net. The attacking ship passes the duties of attacking ship to another ship as circumstances require.

(3) ACTION BY ASSISTING SHIPS. When the SAC orders the attack, assisting ships maneuver to stations at the range ordered by the SAC to contain the contact within a good holding formation. For two ships, stations should be in the quarter opposite the attacking ship. For three ships, stations should be apexes of an equilateral triangle oriented to best suit the position of all ships at the time of ordering and centered on the contact. For the few times when ambiguity could arise, the SAC can clarify by ordering "(CALL SIGN) EAST, (CALL SIGN) WEST" or a similar delineation. When ships are in station, they are to report "LOCKED ON." In Method A, assisting ships comply with all maneuvering orders immediately. In Method B, assisting ships comply with the direction of turn and come to the required course and speed. They are to be prepared to assume duties of attacking ship at any time and should report if they find themselves in a good attack position. Ships are to acknowledge all maneuvering information with the single word "(Ship's call sign)" in alphabetical sequence.

(4) REVERTING TO GEOGRAPHICAL SECTOR ATTACK METHOD. The SAC may revert to the Geographical Attack Method at any time by ordering "Unlock" and then ordering the Geographic Sector Attack Method. If more than one assisting ship is present, the SAC must redesignate the assisting ship and assign others to support stations.

c. ACTION WHEN CONTACT IS LOST. These attack procedures are repeated as appropriate until the submarine is destroyed or all ships have lost contact. When all ships have lost contact, the lost contact search plan specified by the SAC is to be carried out.

(NATO-CONFIDENTIAL) (NMM)

Figure 9-16. (NU) (NMM) Attack Method 1A (Lock On)

ATTACK METHOD 2A
DEEP CREEP ATTACK

This method is designed for a two-ship depth charge or short-range homing torpedo attack on a submarine which is using deep submergence and slow speeds for evasion. It is effective only when surprise can be achieved.

a. OCCASIONS FOR USE. This method may be used when ships have no effective depth determining sonar and under any one, or any combination of, the following conditions.

1. When intelligence indicates that the submarine is damaged and has gone deep.
2. When one of the ships involved has the only weapons available, but its sonar is inoperative.
3. When sonar conditions prevent attack by other procedures.

CAUTION

Deep Creep Attack procedures may place both ships in danger if the submarine decides to take offensive action.

b. PROCEDURES

(1) ASSISTING SHIP

1. Maneuvers to maintain a position in sonar contact 1,000 to 2,000 yards from, and on the quarter of, the submarine.
2. Vectors the attacking ship to start the run from a point about 800 yards at right angles to the line of bearing between the assisting ship and the submarine and, if possible, forward of the submarine beam. If this is not possible, bring the attacking ship up from astern of the submarine.
3. Vectors the attacking ship to the attack position by ordering courses and speeds at frequent intervals. Low speed should be ordered whenever possible.
4. Advises the attacking ship “Fifty yards to go” to the attack position.
5. Orders the attacking ship to “Fire” at attack position.
6. Vectors attacking ship to a new approach position for the next attack when she has reported “Weapon fired.”

(2) ATTACKING SHIP

1. Takes position as directed by the assisting ship.
2. Listens with sonar, but does not transmit.
3. Steers courses, and regulates speed as ordered by the assisting ship.
4. Lays a depth charge pattern, or fires torpedo, as directed by the assisting ship.
5. On completion of attack reports “Weapon fired.”

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Figure 9-17. (NU) (NMM) Attack Method 2A (Deep Creep Attack)

ATTACK METHOD 3A
GEOGRAPHIC SECTOR ATTACK

A two-ship close ASW action system designed to allow attacks by two ships while containing the submarine between them.

a. GENERAL

(1) Sectors are described by cardinal and half-cardinal points of the compass as follows:

N/S W/E NW/SE SW/NE

(2) One ship acts as attacking ship and another as assisting ship. Remaining ships are ordered by the SAC to carry out a support ship operation.

(3) The attacking ship is to signal immediately the sector in which it will maneuver. This automatically allocates the opposite sector to the assisting ship. Designation of sector should be made so that maneuvering both ships to maintain assigned sectors is minimized; furthermore, maneuvering by both ships is normally eased if the sector boundaries roughly coincide with the submarine's overall course.

(4) Ships proceed to their assigned sectors and are then free to maneuver within them.

(5) If neither ship is able to attack, both maneuver within their sectors to maintain contact and to be in a favorable position to resume attack when ready. The ship that is in the best position for maintaining contact should be designated as attacking ship even if she is not able to attack because of the high submarine speed.

b. ATTACKING SHIP

(1) At the start of action, the attacking ship is the first ship gaining sonar contact or the ship so designated by the SAC. The attacking ship may subsequently order the exchange of duties between the two ships as the tactical situation requires.

(2) The attacking ship signals sectors as specified in item 3 of the general procedures.

(3) The attacking ship maneuvers within her sector as necessary to conduct her attacks. Before attacking, the type of weapons to be fired and the firing side are signaled. This side should be selected so that the submarine is placed between the two ships when the attack is completed.

(4) The attacking ship should not hesitate to reassign sectors in order to improve own ship's and the assisting ship's positions relative to the submarine. Continual changing of sectors may be necessary. The attacking ship should avoid entering a new sector until the assisting ship has acknowledged the change in sectors.

(5) The attacking ship should not hesitate to pass control to the assisting ship should the latter be in a more favorable position from which to conduct the attack.

NOTE

The attacking ship should not leave its sector before reassignment of sectors has been ordered.

c. ASSISTING SHIP

(1) Maneuvers to gain or maintain contact from within its assigned sector.

(2) Maneuvers to keep clear of the torpedo interference (DOG BOX) or weapon danger areas of the attacking ship's weapons. If the assisting ship is tactically obliged to enter this area, it is to warn the attacking ship of its intention to do so.

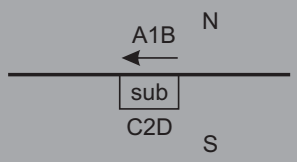
(3) If the attacking ship allocates itself a new sector, the assisting ship is to maneuver to take the opposite sector.

(4) The assisting ship must be ready to assume the duties of attacking ship if so ordered by the attacking ship.

EXAMPLE

C2D THIS IS A1B
EXECUTE PLAN RED 3A
A1B BROTHER SECTOR NORTH

A1B THIS IS C2D
ROGER C2D SISTER SECTOR SOUTH



(NATO-CONFIDENTIAL) (NMM)

Figure 9-18. (NU) (NMM) Attack Method 3A (Geographic Sector Attack)

ATTACK METHOD 3A MOD
MODIFIED GEOGRAPHIC SECTOR ATTACK

A two-ship close ASW action system to be used when at least one of the two ships is equipped with short-range weapons and when the combination of weapon systems does not allow Attack Method 3A.

a. GENERAL

(1) Sectors are as described in Attack Method 3A, but the attacking ship may maneuver within a circle radius of 3,000 yards centered on the contact, unless otherwise ordered by the SAC, as well as within her assigned sector. The assisting ship maneuvers within her assigned sector but is to keep outside 3,000 yards from the contact. The circular zone radius of 3,000 yards is designated Sector Zero. Exchange of information on actual and intended movements of attacking and assisting ships is paramount due to the close nature of the ASW action.

(2) Sectors are prescribed by the attacking ship and ships proceed as in Attack Method 3A.

b. ATTACKING SHIP

(1) As in Attack Method 3A.

(2) As in Attack Method 3A.

(3) The attacking ship maneuvers within her sector as necessary to conduct her attacks. Before attacking, the type of weapon to be fired and the withdrawal sector of the attacking ship after the attack is to be signaled to the assisting ship. The withdrawal sector is established by estimating the relative position of attacking and assisting ships by the time of weapon delivery.

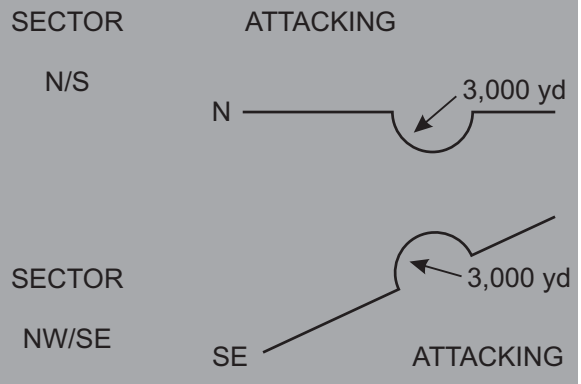
(4) As in Attack Method 3A.

(5) As in Attack Method 3A.

(6) On completion of her attack, the attacking ship reassigns sectors according to item 3 and refires into the new sector. If the attacking ship assigns the duty of attacking ship to the assisting ship, the attacking ship moves in order to withdraw as soon as possible from the sector of the new attacking ship.

c. ASSISTING SHIP. Maneuvers as in Attack Method 3A. However, under no circumstances must ship approach the contact to a distance of less than 3,000 yards, unless otherwise directed by the attacking ship.

EXAMPLES



(NATO-CONFIDENTIAL) (NMM)

Figure 9-19. (NU) (NMM) Attack Method 3A MOD (Modified Geographic Sector Attack)

ATTACK AND SUPPORT METHOD 11AH BEAR

a. When ASW action is being conducted, this method may be used to provide support from a specific direction, to order the direction from which ships are to conduct stand-off attacks, or to order a barrier across the assumed course of a submarine.

b. Plan BEAR may be based on a submarine, datum, or unit. Selection of the origin for the plan will depend on the mission and also the circumstances of the action. Plan BEAR can be used as a support plan to a Plan RED and/or Plan BLACK.

c. Use of Plan BEAR to form a barrier is a quick alternative for changing the orientation of the screen or creating defense in depth.

d. Use of a submarine or datum position is more appropriate when they are within or close to the TDZ:

(1) ACTION BY SAC. The SAC must specify the origin of the plan, the bearing, and the distance at which ships and helicopters will establish their patrol. The bearing will generally be the submarine's most dangerous course, its probable escape course, or up sea. The range will be dependent on the tactical situation.

(2) ACTION BY SHIPS. Maneuver on a patrol line at right angles to the bearing ordered. Movements should be coordinated by the SAC or senior officer.

(3) ACTION BY HELICOPTERS. Helicopters are to dip on a line at right angles to the bearing ordered and at the range ordered or execute Air Plan 45 as directed by the SAC or HCU.

EXAMPLE

C2D THIS IS A1B

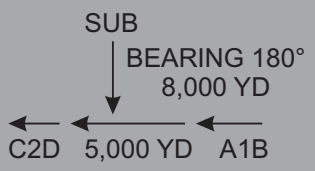
EXECUTE PLAN RED BEAR

BEARING 180 RANGE 80

SIGNALS EXECUTE TO FOLLOW

FORMATION OSCAR 270 TACK 50

SPEED 18



(NATO-CONFIDENTIAL) (NMM)

Figure 9-20. (NU) (NMM) Attack and Support Method 11AH Bear

ATTACK, SUPPORT, AND LOST CONTACT METHOD 14AH/14SH CORDON

a. WHEN EMPLOYED AS A SUPPORT METHOD — to provide support in one or more specified sectors, to units engaged in a close ASW action.

b. WHEN EMPLOYED AS AN ATTACK METHOD — to provide:

(1) Sectors in which ships/helicopters are free to maneuver while conducting stand-off attacks or carrying out assisting unit duties.

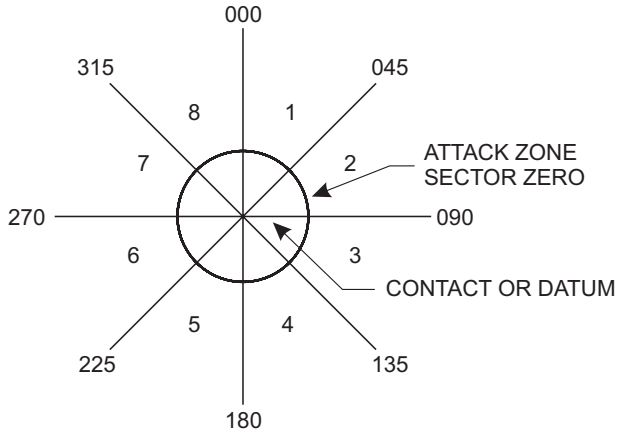
(2) A circular attack zone with a 3,000-yard radius centered on the contact, unless otherwise ordered by the SAC, within which only the attacking unit and/or aircraft under its control have freedom to operate entering or leaving, as required, to maintain contact and employ weapons. The attack zone is designated Sector Zero.

c. WHEN EMPLOYED AS A SEARCH PLAN — to provide an automatic search plan when contact is lost.

(1) When contact is lost, the origin of the search is based on the DATUM.

(2) The establishment of the DATUM is the authority that initiates the search plan, units remaining in their existing sectors, unless otherwise ordered by the SAC.

SECTOR ASSIGNMENT



d. METHOD OF EXECUTION

(1) ACTION BY SAC. The SAC is to order:

(a) Sector assignments. Sectors to be designated by a single numeral.

(b) Radius of attack zone/Sector Zero if other than 3,000 yards.

(c) Exchange of duties between units as the tactical situation requires.

(2) ACTION BY SHIPS OR HELICOPTERS. Units have freedom of movement within assigned sectors, but they must not approach within 500 yards of adjacent occupied sectors. The inner limit of sectors is the boundary of the attack sector/Sector Zero with no outer limit.

NOTE

1. When being used as a lost contact search, care must be taken to ensure that ships mutually support each other.

2. SACs may order a range or distance with sector assignments. If this is done, units are to remain within 1 mile of that range/distance from the center of Plan CORDON.

3. **(NC) (NMM)** Against modern submarines, this method will generally only be valid for a limited period before another search plan will be required.

Figure 9-21. Attack, Support, and Lost Contact Method 14AH/14SH Cordon

SEARCH PLAN 1S
OAK TREE

Oak Tree is a search by ships in a loose formation into which helicopters may be integrated. It may be used as an area, intercept, lost contact or bottom search.

a. DIRECTING SHIP. The SAU commander or SAC is the directing ship.

b. FORMATION. Units should be formed on a loose line abreast. Distances between units and speed are to be ordered by the SAU commander. Accurate station keeping in this search is not necessary. The SAU commander is to order and coordinate the deceptive or evasive steering of the formation and/or individual ships.

c. METHODS

(1) AREA SEARCH. An area can be searched by:

(a) A SINGLE SWEEP through the area, using a broad zigzag if necessary to widen the front. This method could be used if the area is small, or if it is desired to carry out a rapid but comparatively low probability search.

(b) A SERIES OF SWEEPS in the form of an expanding square search based on a datum or search center. In this case units are required to be in a loose line abreast. This provides a slow sweep rate.

(c) A SERIES OF PARALLEL SWEEPS through successive portions of the area. This provides thorough geographic coverage but a slow sweep rate.

(d) A SERIES OF RANDOM SWEEPS within the area. This provides maximum deception when it is believed that the submarine will remain within the area.

(2) INTERCEPT SEARCH. Units search a moving area. The position and size of the area at any moment depend upon the estimate of the submarine's probable courses of action. This moving area can be searched by a series of sweeps if the area is large and if time permits. When intercepting a submarine assumed to be closing a convoy or force, time is normally limited. The requirement to keep the units between the submarine and the force will in most cases permit only a single sweep of the area.

(3) LOST CONTACT SEARCH. This method is used in the following cases:

(a) When the submarine would be outside the area covered by a close lost contact search by the time it can be effectively started.

(b) When the execution of a close lost contact search would involve excessive maneuvering of the ships as a result of their positions with reference to the datum.

(c) When the submarine's most dangerous course can be predicted, or when it is essential that the units should remain between the submarine and his target.

(4) BOTTOM SEARCH. When searching for bottom contacts, an area search should be conducted with the direction of the search at right angles to the current.

d. SEARCH TURN. If a zigzag is in use when a search turn is executed, the zigzag is to cease automatically and units are to return to base course. The zigzag is only to be resumed on signal. While the formation is completing the maneuver, ships are particularly vulnerable. Individual ships are therefore to carry out their own torpedo countermeasures during this time.

e. HELICOPTER MANEUVER DURING SEARCH TURN. When a ship alters course using a search turn, helicopters stationed on it are to be repositioned on the other side of that ship on the new course.

EXAMPLE
C2D THIS IS A1B
EXECUTE PLAN BLACK OAKTREE
SIGNALS EXECUTE TO FOLLOW
FORMATION YANKEE 090 TACK 40
SPEED 16

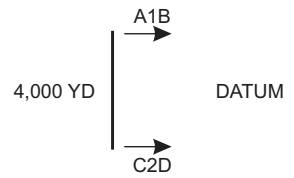


Figure 9-22. Search Plan 1S Oak Tree

SEARCH PLAN 2S
ACORN

a. DIRECTING SHIP. The directing ship is the attacking ship of the ASW attack method in use at the time of lost contact, unless the SAC orders otherwise.

b. ORDERING. The directing ship is to signal:

(1) "Execute ACORN left" or "Execute ACORN right."

(2) Position of datum and datum time.

(3) Direction of the axis.

(4) Speed.

(5) Initial dip position(s) for helicopter(s).

c. DESCRIPTION.

(1) AXIS. The axis is a line passing through the datum and defining two sectors of 180° each in which the two ships maneuver during the search. The tracks to be followed by the ships are related to this axis according to the search plan illustration. This plan may be laid out on plots with a template if desired but, after initial maneuvers have been carried out, exact adherence to the planned track is not necessary.

(2) CHOICE OF AXIS. The axis is chosen so that the two ships are within the two sectors determined by the axis and the initial maneuver of the directing ship is made easier. The selection of the axis does not depend on any estimate of the present or predicted submarine movement.

(3) DIRECTION OF SEARCH. The ACORN search consists of a left plan or a right plan. In the right plan the directing ship maneuvers on the right of the axis.

d. EXECUTION.

(1) DIRECTING SHIP. The directing ship executes a slow turn as necessary to pass through point D, then continues to follow the general search pattern, using random evasive steering. She should inform her consort when passing through point D and should also pass bearings and distances of the datum during these initial maneuvers.

(2) ASSISTING SHIP. The assisting ship maneuvers to pass through point A, reporting when she does so, then continues to follow the general search pattern, using random evasive steering.

NOTE

To avoid violent maneuvering, ships are not obliged to pass directly through points A and D, but should join the first leg as close as possible.

(3) ACU. The ACU at the time of the lost contact retains control and orders helicopter(s) as follows:

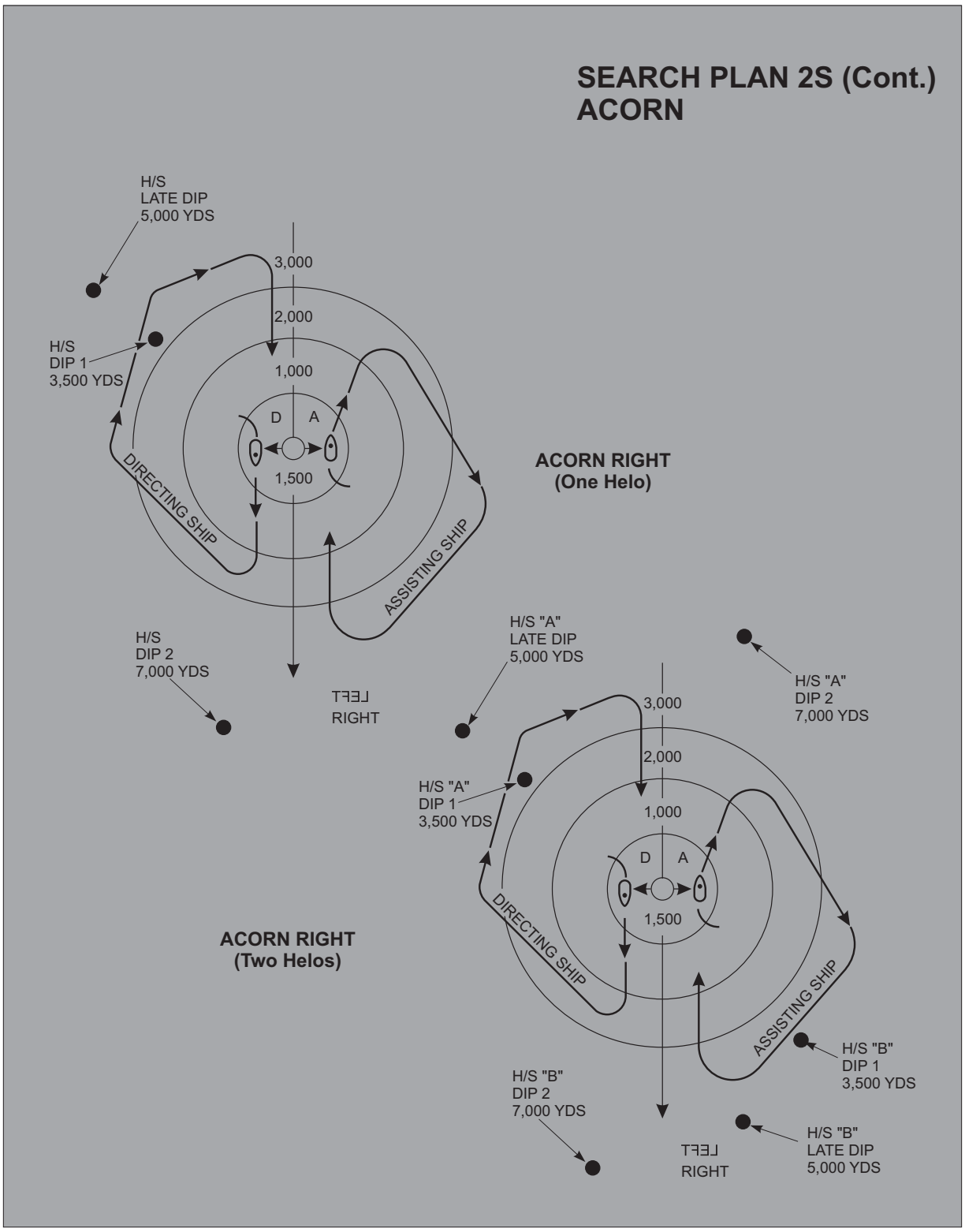
(a) "Execute ACORN."

(b) (H/S c/s) vector to initial dip/late dip.

(c) (H/S c/s) vector to initial dip/late dip.

(NATO-CONFIDENTIAL) (NMM)

Figure 9-23. (NU) (NMM) Search Plan 2S Acorn



(NATO-CONFIDENTIAL) (NMM)

Figure 9-23. (NU) (NMM) Search Plan 2S Acorn (Cont.)

SEARCH PLAN 2S (Cont.)
ACORN

(4) HELICOPTERS: The ACU shall station helicopters as indicated in the following table in accordance with the time in which they can be in dip position.

(5) SUPPORT SHIPS. On initiation of Acorn, the SAC is to specify his intentions should the Acorn plan fail to regain contact. This will enable support ships to assume appropriate positions.

(6) TERMINATION OF SEARCH. The SAC should terminate the search as soon as tactical considerations indicate that an area search would be more profitable.

			BEARING[1] AND RANGE		
CASE	POSITION	TIME	ONE H/S	TWO H/S	
			H/S A	H/S A	H/S B
CASE A[2] H/S IN DIP POSITION BEFORE END OF MIN. 6	INITIAL DIP SECOND DIP	UP TO END OF MIN. 8 FROM MIN. 13 ON	130 - 3,500 010 - 7,000	130 - 3,500 200 - 7,000	310 - 3,500 010 - 7,000
CASE B[3] H/S IN DIP POSITION AFTER END OF MIN. 6	LATE DIP	FROM TIME IN DIP ON	130 - 5,000	130 - 5,000	340 - 5,000

NOTES:
1. Bearings of dip positions are measured clockwise from the axis in ACORN RIGHT and counter clockwise in ACORN LEFT. Ranges are in yards from datum.
2. If case A applies, and contact has not been made, helicopter(s) will not remain in initial dip position past the end of minute eight before proceeding to second dip position.
3. If case B applies, helicopters will remain in the late dip position.

(NATO-CONFIDENTIAL) (NMM)

Figure 9-23. (NU) (NMM) Search Plan 2S Acorn (Cont.)

SEARCH PLAN 2SH MOD
ACORN MODIFIED

a. DIRECTING SHIP. The directing ship is the ship taking part in the search.

b. ORDERING. The directing ship is to take the helicopter under close positive control and is to order it to:

(1) "Execute ACORN Modified"

(2) "Vector to initial dip position"

c. DESCRIPTION

(1) CHOICE OF AXIS. The axis is chosen so that the initial maneuvers of the directing ship are made easier.

(2) DIRECTION OF SEARCH. The ACORN Modified search consists of a left or a right plan. In the left plan the directing ship maneuvers on the left side of the axis; in the right plan, she maneuvers on the right side.

d. EXECUTION.

(1) DIRECTING SHIP. The ship which takes part in the search selects the axis and maneuvers in the same manner as the directing ship in the Acorn plan.

(2) HELICOPTER. The helicopter which operates as an assisting unit is to be positioned as follows:

H/S A

Dip 1: 270° DATUM 1,250 yards
Dip 2: 225° DATUM 3,000 yards
Dip 3: 315° DATUM 3,500 yards

H/S B

Dip 1: 130° DATUM 3,500 yards
Dip 2: 270° DATUM 4,000 yards

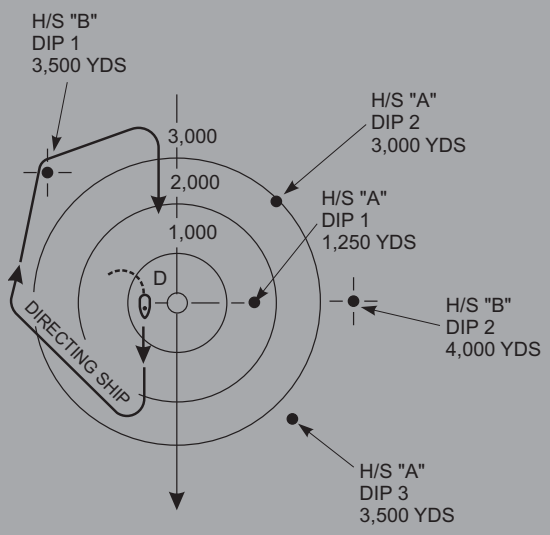
Bearing of dip positions are measured clockwise from axis in Acorn right and counter-clockwise in Acorn left. If convenient, the helicopter may be taken under loose advisory control at the end of first dip; in this case, the directing unit is to order:

Execute ACORN Modified
Direction of search (RIGHT or LEFT)
Axis
Datum (from YY)
Advisory Control

(3) SUPPORT SHIP. As in Acorn plan.

(4) TERMINATION OF SEARCH. As soon as the SAC determines that an area search would be more profitable.

ACORN MOD
(Right)



(NATO-CONFIDENTIAL) (NMM)

Figure 9-24. (NU) (NMM) Search Plan 2SH Mod (Acorn Modified)

CHAPTER 10

Naval Co-operation and Guidance for Shipping

SECTION I — GENERAL INFORMATION

10000 INTRODUCTION

a. The sea line of communications (SLOC) is of fundamental strategic interest to NATO because ships carry the overwhelming majority of its economic and military cargoes. Allied nations are economically dependent on the seas and, in particular, are reliant on distant countries for supply and trade. There is also a key requirement for seaborne reinforcement and resupply in times of crisis and war. Such ships may require protection from the full range of potential threats including asymmetric ones like terrorism and piracy.

b. This chapter gives an overview of the measures that can enhance the safety of merchant ships and how military operations may be conducted in their presence. The employment of Naval Co-operation and Guidance for Shipping (NCAGS) procedures will minimize mutual interference and considerably enhance the merchant ship element of the surface picture.

10001 NAVAL CO-OPERATION AND GUIDANCE FOR SHIPPING

The provision of NATO military co-operation, guidance, advice, assistance and supervision to merchant shipping to enhance the safety of participating merchant ships, and to support military operations.

10002 THE MISSION OF NCAGS

To provide NCAGS support to military commanders and merchant shipping in peacetime, tension, crisis and conflict through co-operation, guidance, advice or assistance in respect of participating nations' global, maritime commercial interests to enhance the safety of merchant ships and to support military operations.

10003 THE BENEFITS OF NCAGS

a. NCAGS can provide the following principal benefits to the military commander:

(1) More comprehensive picture of merchant activity in the maritime portion of the common operating picture (COP) and/or recognized maritime picture (RMP).

(2) Deconfliction of merchant ships from military operations.

(3) Improved safety and security of merchant ships in a crisis area.

(4) Improved effectiveness in supporting crisis response operations (CRO).

(5) Better understanding of commercial constraints.

(6) Improved counter-terrorism and counter-piracy capability.

(7) More efficient and cost-effective employment of military forces.

(8) More opportunities for training with merchant ships in both planned and unplanned PASSEXes.

b. NCAGS can provide the following principal benefits to merchant shipping:

(1) Improved safety and security in crisis areas.

(2) Minimizing disruptions to passages through areas where military operations are being conducted.

(3) Maintenance of economic flow.

(4) Quicker reaction to changing threats.

(5) Better understanding of military constraints.

(6) Potential for stabilizing insurance costs.

(7) Minimizing disruption to commercial schedules.

(8) Improved support to counter-terrorism and counter-piracy.

10004 DEFINITIONS AND DESCRIPTIONS

a. NCAGS Toolbox. The NCAGS Toolbox comprises a series of procedures and tactics available to the maritime component commander (MCC). These tools are described in ATP 2B, Volume I and may be used in combination or alone as required. The descriptions are generic and each tool must be modified and tailored to meet specific mission objectives. 100 series measures may be implemented with the authority of military commanders. 200 series measures are for implementation during Naval Supervision of Merchant Ships and require prior North Atlantic Council (NAC)/Defence Planning Committee (DPC) approval.

b. Merchant Shipping. For the purposes of NCAGS, merchant shipping includes the complete commercial maritime industry, including the fishing industry.

c. Naval Supervision of Merchant Ships. The ultimate response of NCAGS exercised by naval authorities of mandatory routing, control of movement and/or convoy organisation. Naval Supervision of Merchant Ships will be implemented only with NAC/DPC approval.

d. NCAGS Area. An area within which NCAGS procedures have been implemented. An NCAGS area is based on, or is the same as, the operational area.

e. Participating Ships. Any merchant ships, including fishing vessels, which by the submission of the appropriate proforma are participating in an NCAGS operation. Note that such participation is purely voluntary.

f. Designated Ships. Merchant ships nominated as "designated" by NATO nations through their National Shipping Authorities (NSA). These ships may have priority over other ships for higher level NCAGS activities and, under Naval Supervision of Merchant Ships, will comply with military orders. On request, the NAC/DPC may allow non-NATO nations to nominate ships.

g. Shipping Risk Area (SRA). An SRA delineates an area of higher or specific risk to merchant ships within an operations area. An NCAGS area may contain one or more SRAs.

h. Communications Reporting Gate (CRG). A CRG is established to provide a position at which merchant ships should call the NCAGS Organization (NCAGSORG) in order to establish initial

contact or to update previous information. A CRG should be positioned in such a way that a minimum notice period of 36 hours is available to merchant ships to contact their owners/operators for onward passage instructions before reaching the area of operations (AOO)/NCAGS area/SRA. The CRG will normally be represented as a line of latitude or longitude. For practical purposes a minimum distance of 600 nautical miles (nm) should be observed.

i. Accompaniment. Accompaniment is a voluntary arrangement under which participating ships may be organized for passage through a specific area of increased risk, such as an SRA, in company with military assets. The NCAGSORG will facilitate the military and merchant aspects of accompaniment with the MCC.

j. Lead Through. The NCAGSORG can recommend and facilitate lead-through operations with the Mine Warfare Commander.

10005 NCAGS ORGANIZATION

a. NCAGS can be implemented at any stage of an operation in accordance with ATP 2, Volume I. Early implementation is strongly advised as it may take some time for NCAGS to become fully effective.

b. The conduct of NCAGS is vested in the NCAGSORG that supports both military commanders and merchant shipping employing procedures that are described in ATP 2, Volumes I and II.

10006 ELEMENTS OF THE NCAGS ORGANIZATION

a. NCAGS Commander (NCAGS CDR). The NCAGS CDR will be the officer assigned to command the NCAGSORG. He will plan and execute NCAGS and will promulgate the OPTASK NCAGS.

b. Staff Officer NCAGS (SO NCAGS). An experienced officer who augments military staffs at all levels to provide expertise and advice to the command on all aspects of NCAGS as they affect the planning and execution of operations.

c. NATO Shipping Centre (NSC). A permanent operational organization based at HQ NAVNORTH, the NSC is tasked with establishing and maintaining links with the military, merchant shipping, NSA, and international maritime agencies. The NSC's missions are:

(1) Collect and process merchant shipping factual and movement data and develop an accurate shipping picture of relevant merchant ships in order to support the NCAGS CDR/military commander and facilitate his operations.

(2) Advise merchant shipping of potential risks and identify possible interference with maritime operations.

d. NCAGS Unit. A team of NCAGS personnel, deployed ashore or afloat to provide specific local NCAGS services including the gathering of local merchant shipping information, providing guidance to merchant ships, and co-operating with and advising local merchant shipping.

e. Shipping Co-operation Point (SCP). The SCP is multi-functional and where a larger NCAGS staff will provide the means to brief merchant shipping on risk, routing and organization for protection. The SCP will, depending on the level of an operation, encompass co-ordination, co-operation or control when Naval Supervision of Merchant Ships is authorized. The location of SCPs will be at the discretion of the NCAGS CDR and could be ashore or afloat. When established an SCP will manage and administer NCAGS units in its AOO.

f. NCAGS Liaison Officer (NCAGS LO). An officer deployed aboard a merchant ship to provide liaison between the merchant ship master and military authorities.

g. NCAGS Rear Staff. It will rarely be possible to locate all the necessary NCAGS staff at the military commander's HQ, particularly if it is afloat. An NCAGS Rear Staff may therefore be established ashore in support of an embarked or remotely located NCAGS staff.

SECTION II — NCAGS OPERATIONS

10020 COMMAND AND CONTROL

a. The development of the Concept of Operations (CONOPS) by the Strategic Commander and the subsequent command estimate and development of the Operation Plan (OPLAN) by the Operational Commander will determine the NCAGS requirement.

b. The Military Commander is responsible for deciding the level of NCAGS support required for an operation, and establishing the command and control (C2) structure to implement it, including the nomination of the NCAGS CDR.

c. When assigned, the NCAGS CDR is responsible for the activities of the NCAGSORG, and is to implement those tools from the Toolbox best suited to fulfil the operational aims and objectives.

10021 FACTORS AFFECTING NCAGS PLANNING

The risk to shipping will govern the size and type of NCAGS support provided for an operation. The mission requirements will dictate which branches within military staffs should be augmented by NCAGS personnel. Early consideration during the planning process must be given to the level of augmentation that may be required. The following factors should be addressed during planning in order to assess the level of NCAGS support required:

a. The mission.

b. The threat.

c. The type and intensity of merchant shipping in the area.

d. Whether the presence and activity of merchant shipping will affect the operation.

e. The effect of the operation on merchant shipping activity.

f. The geography, hydrography and environmental conditions in the area.

g. The level and type of information to be sought from the merchant shipping community.

h. The level and type of guidance to be provided to the merchant shipping community.

10022 THE APPLICABILITY OF NCAGS

Having established NCAGS, the NCAGS CDR will wish to have data on, and the co-operation of, any and every merchant ship in his AOO. These ships will then be invited to contact the NCAGSORG by use of Radio Navigation Warnings, Internet websites and other such facilities. Ships that submit their voyage data are called “Participating Ships” and they may then be briefed on the best way of transiting the AOO with the minimum disruption to their passage. Allied nations may, however, wish to nominate some ships for particular NCAGS care and attention, or even for priority over other participating ships. These may include, for example, national (flagged) vessels, those from dependent territories, or named ships assessed as being of economic benefit to that nation. Such ships are called “Designated Ships.”

10023 IMPLICATIONS OF NON-COMPLIANCE AND/OR NON-PARTICIPATION

A non-participating vessel, or a participating ship which is non-compliant, may quickly and easily achieve suspect criteria within the surface picture and therefore attract greater military attention, with the consequent potential for the disruption of its voyage or activity.

10024 CRISIS RESPONSE OPERATIONS (CRO)

In CRO the NCAGSORG will aim to deconflict naval and merchant ships in the AOO, to collect merchant ship information for the RMP and support the logistics organizations.

10025 MARITIME INTERDICTION OPERATIONS (MIO)

Under MIO, elements of the NCAGSORG may be integrated into the maritime component commander (MCC) and MIO commander (MIOC) staffs to provide advice on merchant shipping issues. This will provide the MIOC with a predictive element to the RMP, assisting in clearance of non-suspect ships. By providing intelligence support, NCAGS will aid in locating and identifying Suspect vessels (SUS), contacts of interest (COI), and critical contacts of interest (CCOI). This will assist the MIOC in utilizing his assets effectively and to help minimize delays to merchant ships when passing through MIO areas.

10026 CRISIS RESPONSE SHIPPING (CRS)

a. The purpose of CRS is to augment forces in an area of risk in order to enhance military capability. In CRS the term RE/RE covers reinforcement, resupply and retrograde ships. The NCAGSORG will liaise with other warfare disciplines such as surface and amphibious warfare and the logistics organization to ensure that all aspects of RE/RE are considered in all levels of NCAGS operations and planning.

b. When RE/RE shipping is under military direction and control, very little may be required from the NCAGSORG. However, when RE/RE is sailing independently NCAGS may provide direct liaison with the ship concerned for advice and information, positional report for RMP purposes, routing advice and deployment of NCAGS LOs. NCAGS will also advise military commanders on all merchant shipping aspects of RE/RE.

c. For NCAGS purposes, RE/RE shipping may be considered to be Designated Ships.

SECTION III — NAVAL SUPERVISION OF MERCHANT SHIPS

10030 NAVAL SUPERVISION OF MERCHANT SHIPS

In conditions of increased risk it may become necessary to exercise control over merchant shipping through Naval Supervision of Merchant Ships. When approved the military commander is permitted to institute mandatory routing and/or convoys.

10031 MANDATORY ROUTING

Mandatory routing encompasses:

a. Date and time of departure

b. Final destination and date time of arrival

c. Route to be followed

d. Reporting and communications instructions

e. EMCON and COMSEC

f. Self-protection measures

g. Diversion procedures

10032 CONVOY OPERATIONS

Convoying will only be necessary under extreme conditions. Full instructions for the organization, protection and administration of convoys are contained in the NATO Supplement to ATP 2, Volume I (to be issued).

CHAPTER 11

Amphibious Operations

SECTION I — INTRODUCTION

11000 GENERAL

a. This chapter contains a summary of NATO doctrine for amphibious operations and their associated command and control procedures. More detailed information on this subject can be found in ATP 8, Doctrine for Amphibious Operations.

b. Amphibious operations offer great strategic mobility together with both political and military flexibility. Because they do not require specific points of entry, such as ports or airfields, they pose significant operational problems for an enemy. However, they are complicated and require detailed specialist knowledge, planning, and training.

c. Amphibious forces constitute a major force multiplier as the enemy must commit a significantly greater number of forces to secure coastlines and all other possible points of entry. Once committed, however, this capability is much reduced until the force has re-embarked, on completion of an amphibious operation.

d. An amphibious operation is defined as "An operation launched from the sea by naval and landing forces against a hostile or potentially hostile shore" (AAP 6).

e. An amphibious operation is always tactical in nature, and should not be confused with an administrative maritime reinforcement operation, for which the information in this chapter is not necessarily applicable. Neither should amphibious operations be confused with riverine operations, a river crossing, or logistics-over-the-shore operations.

SECTION II — EMPLOYMENT CONSIDERATIONS

11010 CONCEPT

a. Amphibious warfare incorporates virtually all types of ships, aircraft, weapons, and landing forces in a concerted military effort against a hostile or potentially hostile shore. The inherent naval character of the amphibious operation is reflected in the principles which govern the organization of the forces involved and the conduct of the operation.

b. Mobility, flexibility, and sound up-to-date intelligence are fundamental requirements of amphibious operations. These operations exploit the element of surprise and capitalize upon enemy weaknesses. This is achieved through application of the required type and degree of force at the most advantageous locations at the most opportune times. The mere threat imposed by the existence of powerful amphibious forces may induce the enemy to disperse his forces; this in turn may cause him to make expensive and wasteful efforts to defend the coastline.

11011 TYPES AND SEQUENCE OF AN AMPHIBIOUS OPERATION

a. Types.

(1) Amphibious Assault. This is the principal type of amphibious operation and involves establishing a force on a hostile or potentially hostile shore. The requirement to be able to create a rapid build-up of combat power ashore accounts for the organizational and technical differences between amphibious and land warfare.

(2) Amphibious Withdrawal. This is the withdrawal of forces by sea in naval ships or craft from a hostile or potentially hostile shore.

(3) Amphibious Demonstration. This is an operation conducted to deceive the enemy in order to make him take up positions which are unfavorable to him.

(4) Amphibious Raid. This is a landing from the sea onto a hostile shore, involving swift incursion into, or temporary occupation of, an objective, followed by a planned withdrawal. Raids might be conducted to:

(a) Inflict loss or damage.

(b) Obtain information.

(c) Create a diversion.

(d) Capture or evacuate individuals or equipment.

NOTE

The last three types of amphibious operation do not involve establishing a landing force ashore.

b. Sequence. An amphibious operation is complete within itself and consists of a sequence of five phases, some of which may be concurrent.

(1) Planning. The planning phase starts on an order (called the Initiating Directive — see Article 11015) that directs the operation to take place and ends with the embarkation of forces. Planning must be

conducted in some detail before any of the other phases can start. Although the phase formally ends at embarkation, planning continues for the remainder of the operation.

(2) Embarkation. The embarkation phase is the period during which the forces, with their equipment and supplies, embark in assigned shipping.

(3) Rehearsal. The rehearsal phase is the period during which the prospective operation is rehearsed for the purpose of:

(a) Testing the adequacy of plans, the timing of detailed operations, and the combat readiness of participating forces.

(b) Ensuring that all echelons are familiar with plans.

(c) Testing communications.

(4) Movement to Amphibious Objective Area (AOA) (see paragraph 11022.b). The movement phase is the period during which the components of an amphibious task force move from the points of embarkation or from a forward deployed position to the AOA. This move may be via rehearsal, staging, and/or rendezvous areas. The movement phase is completed when the components of the amphibious task force arrive in their assigned positions in the AOA.

(5) Assault. The assault phase is the period between the arrival of the major assault forces of the amphibious task force in the AOA and the accomplishment of the amphibious task force mission. Development of the area for its ultimate use may be initiated during this period.

c. Termination.

(1) The termination of the amphibious operation is predicated on the accomplishment of the mission of an amphibious task force in accordance with the specific conditions contained in the Initiating Directive. The firm establishment of the landing force ashore is usually specified as one of these conditions.

(2) The landing force is regarded as firmly established ashore when, in the opinion of the Commander Landing Force (CLF) (see Article 11020):

(a) The force beachhead has been secured.

(b) Sufficient tactical and supporting forces have been established ashore to ensure the continuous landing of troops and material requisite for subsequent operations.

(c) Command, communications, and supporting arms coordination facilities have been established ashore.

(d) The CLF has stated that he is ready to assume full responsibility for subsequent operations.

(3) When the Commander Amphibious Task Force (CATF) (see Article 11020) and the CLF are satisfied that the conditions of paragraphs c.(1) and c.(2) have been met, the CATF will report these facts to the higher authority designated in the Initiating Directive. This authority will then terminate the amphibious operation, dissolve the amphibious objective area and the amphibious task force, and provide additional instructions as required, to include command arrangements and disposition of forces. However, the naval forces and navy support elements of the amphibious task force may remain intact.

11012 ORGANIZATION

a. The Amphibious Task Force. The task organization formed for the purpose of conducting an amphibious operation is the amphibious task force. The amphibious task force always includes naval forces and a landing force, with their organic aviation. Other air forces may be included as required.

b. Naval Forces. The naval element of an amphibious task force may include any of the following groups. Two or more of the groups may be joined together for more effective control and their names altered accordingly, at CATF's discretion.

(1) Transport Groups. Groups which provide for the embarkation, movement to the objective, landing, and logistic support of the landing force. They comprise all shipping in which the landing force is embarked, including shipping which transports the helicopters and helicopterborne troops. Navy landing craft to be employed in the ship-to-shore movement are organic to or attached to the transport groups.

(2) Control Group. Personnel, ships, and craft designated to control the waterborne ship-to-shore movement.

(3) Tactical Air Control Groups. Shipborne organizations necessary to operate a tactical air control center (TACC) and a tactical air direction center (TADC) (afloat) for the control of air operations.

(4) Fire Support Groups. Groupings of naval combatants charged with supporting landing force operations ashore by naval gunfire and guided missile support.

(5) Shore-Based Navy Tactical Air Groups. Task organizations of tactical air units assigned to the amphibious task force which are to be land based within, or sufficiently close to, the objective area to provide tactical air support to the amphibious task force.

(6) Support Carrier Force. A task organization of aircraft carriers with embarked aircraft and supporting ships which provides naval air support to the amphibious task force.

(7) Screening Group. A task organization to furnish protection to the amphibious task force en route to the objective area and during operations in the objective area.

(8) Mine Warfare (MW) Group. A task organization of mine warfare units for the conduct of surface minelaying and/or mine countermeasures (MCM) in maritime operations. In amphibious operations, the CATF, the advance force commander, or the respective local area commander is responsible for the overall direction of mining/MCM forces and will normally issue the MCM OPDIR. The surface mining and MCM commanders, who may be combined in one person, are responsible for the detailed tasking of their units. The establishment of such groups, if required to accomplish the mission, will be detailed in the Initiating Directive. Command and control arrangements for MW operations in amphibious warfare will be in accordance with ATP 6 and ATP 24.

(9) Reconnaissance and VSW MCM Group. A task organization including ships, embarked reconnaissance troops, underwater demolition personnel, and VSW MCM assets which conduct reconnaissance, hydrographic surveys, and demolition of natural, man-made obstacles or mines.

(10) Tactical Deception Group. A task organization which conducts deception operations against the enemy, including electronic, communication, visual, and other methods designed to misinform and confuse the enemy.

(11) Inshore Undersea Warfare Group. A task organization that provides surface and subsurface detection of enemy targets in the seaward approach to the AOA. It is normally composed of one or more inshore undersea warfare surveillance units.

(12) Close Covering Group. Naval combatants assigned to CATF to provide protection against air, surface, and subsurface threats.

(13) Patrol Plane Group. A task organization of patrol aircraft units which conduct such missions as scouting, reconnaissance, and antisubmarine operations while the amphibious task force is en route to and in the objective area.

(14) Air Transport Group. A task organization of transport aircraft units which provides air transport for landing force components or provides logistic support.

(15) Administrative Group. The agency which is responsible for administrative and special details in the objective area: repair and salvage; hydrographic surveys; laying of nets, buoys, and beacons; initial harbor development and control; port control functions; boat pools; mail; and other tasks as assigned. During the initial stages of the assault, virtually all administrative functions are performed by CATF or his subordinate participating in the assault. Administrative duties are passed to the commander of the administrative group as the progress of the assault permits.

(16) Naval Beach Group. A task organization which may consist of traffic control, communications, beach surf salvage, pontoon and fuel elements of the beach party, assault craft (not organic to assault shipping), and combat stevedore elements.

c. Landing Force. The landing force consists of ground, aviation, and combat support units together with their logistic support units. They are organized to conduct the amphibious operation and may be functionally organized for specific tasks at various times; e.g., for:

(1) Embarkation.

(2) The landing.

(3) Further combat ashore.

d. Air Force. Air support can be provided by both naval and land-based air elements depending upon the location. When the preponderance of tactical aviation is provided by the air force for an amphibious operation, an air force officer will be designated by the air force commander of the participating air forces to direct the total air effort in the AOA. He will exercise such direction under the CATF or, when control of air operations is passed ashore, under the CLF or an appropriate commander ashore who has the capability to control such operations. The joint or combined use of air assets must be carefully coordinated to ensure that maximum use is made of the firepower available.

e. Advance Force. An advance force is a temporary organization within an amphibious task force which precedes the main body to the objective area. Its function is to participate in preparing the objective for assault by conducting such operations as reconnaissance, seizure of supporting positions, mine countermeasures, preliminary bombardment, underwater demolition, and air support.

11013 FIRE SUPPORT

The success or failure of an amphibious operation will depend on the effective integration of air, naval gunfire, and artillery support. Until the assault phase, the protection of the force is very much a naval matter but, once the landing has begun, control of these assets has to be transferred ashore. The provision of

continuous fire support during a landing and subsequent operations ashore is complicated and requires planning and execution by specially trained personnel.

11014 PLANNING STAGES

Planning for an amphibious operation is a continuous process from receipt of the Initiating Directive by CATF to termination of the operations. Amphibious planning procedures are distinguished by the necessity for concurrent, parallel, and detailed planning by all participating forces. There are three distinct planning stages:

a. The Initiating Directive.

b. Basic decisions.

c. Detailed planning.

11015 THE INITIATING DIRECTIVE

The Initiating Directive is issued at high level (Strategic or Operational Commander) and must contain, at least, the following information:

a. Mission.

b. Forces.

c. Commanders.

d. Command relationships.

e. Amphibious objective area (AOA).

f. Target date(s).

g. Related supporting operations.

h. Termination details.

i. Nuclear, biological, and chemical weapons.

j. Code names.

k. Operational and signal security.

11016 BASIC DECISIONS

In this stage the various options open to the amphibious task force are considered and an outline plan decided upon. The various factors to be considered either jointly or by single Service headquarters are listed diagrammatically in Figure 11-1.

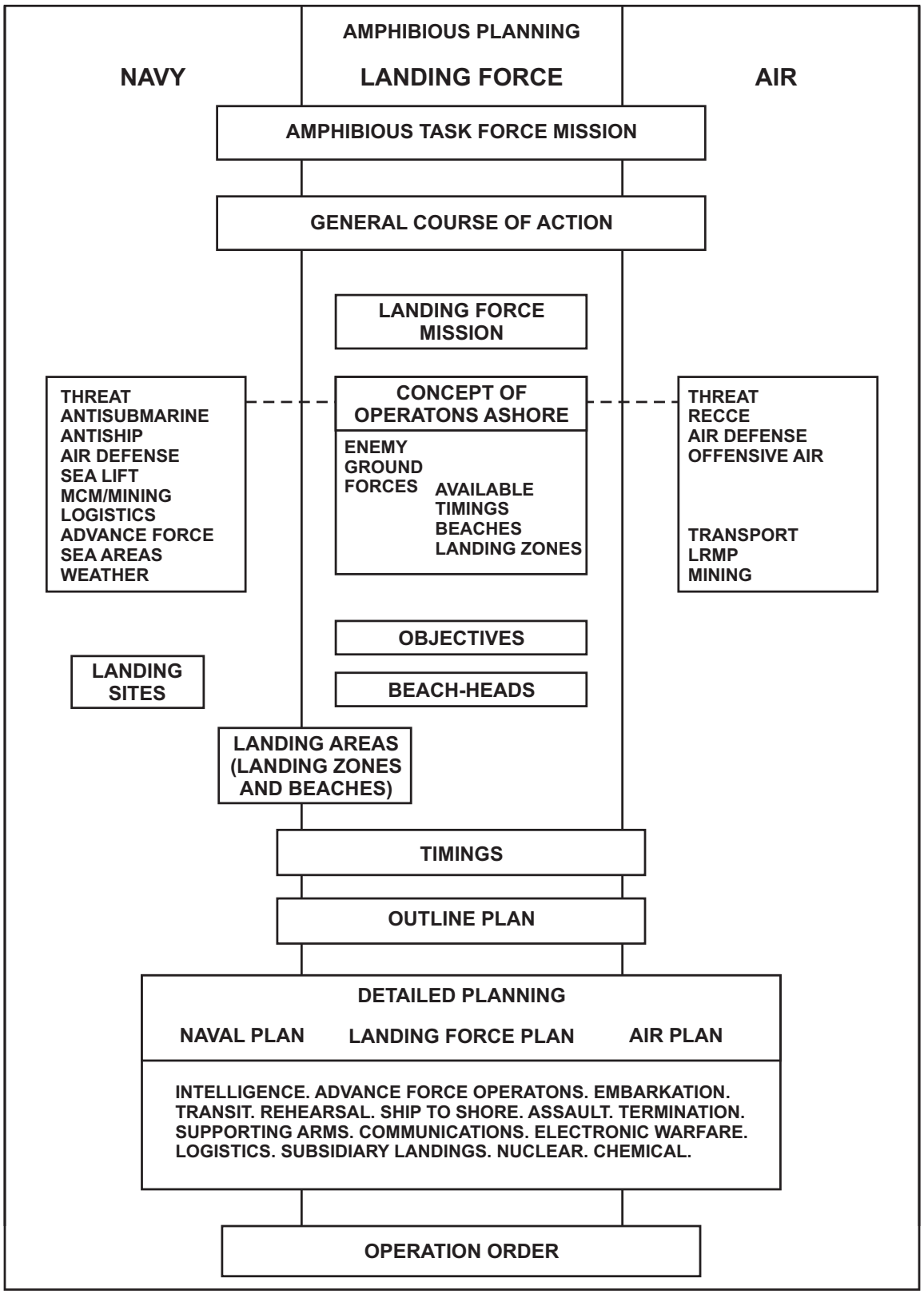


Figure 11-1. Planning Sequence for Amphibious Operations

- When decision boxes fall into two or more Service columns, then that decision must be made jointly.

- The concept of operations ashore is central to the planning process but must include allowances for naval and air factors.

11017 DETAILED PLANNING

At this stage the outline plan is taken and each aspect is then planned in great detail. This results in the amphibious operations order, promulgated by CATF, which must contain annexes on, at least, the subjects listed below:

a. Intelligence.

b. Pre-D-day operations.

c. Embarkation.

d. Transit.

e. Rehearsals.

f. Ship-to-Shore movement.

g. Termination.

h. Supporting arms.

i. Communications.

j. Air defense and airspace control.

k. Electronic warfare.

l. Logistics.

11018 JOINT SERVICE COOPERATION

Not only must amphibious operations be planned in great detail but, equally important, they must be planned by joint Service teams at all levels.

SECTION III — COMMAND RELATIONSHIPS

11020 DESIGNATION OF COMMANDERS

Regardless of the composition of the amphibious task force, CATF will be a naval officer as designated in the Initiating Directive. The commander of all troop components within the amphibious task force is CLF and is so designated in the Initiating Directive. Commanders of subordinate task groups within the amphibious task force, if they have not been named in the Initiating Directive, are designated by CATF or CLF as appropriate. Should air forces be assigned, their commander, an air force officer, will be designated in the Initiating Directive.

11021 RELATIONSHIP DURING PLANNING

a. Direction by Higher Authority. As directed by higher authority, component commanders of the amphibious task force, at the beginning of the planning phase, report for planning purposes to CATF, who is responsible for the preparation of the overall plan for the amphibious operation. CATF serves as the coordinating authority for the conduct of planning.

b. Responsibility for Conduct of Landing Ashore. Since immediate responsibility for the conduct of the landing force operating ashore is vested in CLF, the planning and execution of the landing and assault are primarily his concern. Participation of other components in the assault consists generally of providing support for the landing force. This involves the analysis of landing force proposals to determine their feasibility from the standpoint of the remainder of the amphibious task force. The capability of providing the necessary support is a primary factor in evaluating and agreeing proposed landing force plans and concepts.

11022 COMMAND DURING OPERATIONS

a. Commencement of the Operation. Upon the commencement of the operation, CATF assumes responsibility for the entire force and for the operation, and is vested with the commensurate authority to ensure success of the operation.

(R) **b. AOA.** The AOA is the command and control area necessary to achieve the amphibious task force mission and to conduct the defense of the task force. It is delineated in the initiating directive in terms of sea, land, and airspace, and must be of sufficient size to contain the necessary sea, land, and air operations. CATF is responsible for the coordination of all activity within the AOA, including that of friendly forces not part of the amphibious task force. Where such forces are merely transiting the area, CATF will exercise control of them only to the extent of preventing or minimizing mutual interference.

c. Operations Ashore. Subject to the overall authority of CATF, responsibility for the conduct of operations ashore, and for the security of all personnel and installations located in the area of operations ashore, is vested in CLF.

SECTION IV — COMMAND AND CONTROL

11030 CONSULTATION BETWEEN COMMANDERS

In the exercise of his command authority, CATF, to the greatest possible extent, obtains and considers the opinion of appropriate commanders, particularly in cases involving decisions requiring the exercise of their professional judgment in their operational fields. However, this requirement in no way limits the command authority of CATF.

11031 CONSULTATION BETWEEN CORRESPONDING COMMANDERS

No significant decision affecting the plans, disposition, or intentions of corresponding commanders should be made without consultation with the commanders concerned.

11032 NAVAL AUTHORITY OVER LANDING FORCE UNITS

No naval commander, other than CATF, exercises authority over, or assumes responsibility for, the operation of landing force units, except where a naval commander below the amphibious task force level has been designated as commander of a subordinate force composed of naval and landing force units.

11033 AIRSPACE CONTROL DURING OPERATIONS

a. For an amphibious operation, the authority who orders the operation will assign to CATF for airspace control an airspace of defined proportions which will include the AOA.

b. All air operations in the AOA will be under the control of CATF until the amphibious operation is terminated.

c. To ensure unity of effort in overall air operations, CATF will coordinate air operations within the defined airspace as necessary with the commander responsible for airspace control in the surrounding area. At the termination of the amphibious operation, the amphibious task force will be dissolved, the assigned airspace will be disestablished, and the airspace control will normally be exercised in accordance with doctrine for control of airspace (see ATP 40) by the designated airspace control authority.

11034 TRANSFER OF THE CONTROL OF FUNCTIONS

As conditions warrant, and as coordination agencies are established ashore, CATF passes control of gunfire and missile support to CLF. At the discretion of CATF, control of air operations in the AOA is passed to CLF, or to an appropriate commander ashore who has the capability to control such operations.

11035 COMMUNICATIONS

a. An amphibious operation requires a reliable, secure, rapid, and flexible system of communications. Superimposed on the normal communication system of all forces are the additional requirements for the command of the amphibious task force as a whole, for the several special forms of control which must be exercised, and for lateral communications between all elements of the force in the execution of common or coordinated functions.

b. Changes in command relationships, task organization, and disposition of forces require maximum flexibility in communication plans. These plans must not create a requirement for a large number of

non-essential nets. Multiple purpose nets must be utilized, where applicable, in order to assist in the reduction of mutual interference by decreasing frequency requirements.

c. Use of alternative means of communication, other than electrical, such as visual, helicopter, or surface messenger, must be exploited to ensure the most rapid and secure delivery of information between widely dispersed forces within the amphibious task force.

SECTION V — LOGISTIC SUPPORT

NOTE

For the purpose of this section, the term logistic(s) includes combat service support.

11040 GENERAL

The logistic plan must provide continuing and coordinated logistic and administrative support to the landing force during a period in which its logistic system is primarily ship based.

11041 LOGISTIC FUNCTIONS

Logistic planning for an amphibious operation must provide for the following:

a. The orderly assembly and embarkation of personnel and material in a sequence designed to meet the requirements of the landing plan and subsequent shore operations.

b. The establishment and maintenance of a logistic support system in the AOA, which will ensure adequate logistic and administrative support to all elements of the amphibious task force.

c. The initiation of a logistic system for later support of base development and garrison forces.

11042 LOGISTIC PLANNING FACTORS

Consideration must be given to the following factors, all of which exert a marked influence on logistic planning for an amphibious operation:

a. The character, size, and expected duration of the contemplated operation.

b. The target date.

c. The characteristics of the AOA.

d. The enemy capabilities.

e. The strength and composition of the landing force.

f. The capabilities of the landing force to perform combat service support functions.

g. The progressive increase in the level and form of logistic support required by the build-up of forces in the AOA.

h. Support required to provide for prisoners of war.

i. The availability of logistic means.

j. The compatibility, capability, and requirements of logistic support systems.

k. The availability of communications means.

l. Elements of the base defense and garrison plans requiring consideration.

m. Requirements for rehabilitation or construction of aviation installations within, or in supporting distance of, the AOA.

CHAPTER 12

NBC Warfare

12000 HAZARDS FROM NUCLEAR BURSTS

At the outset of warfare, it will be necessary to assume that any attack on a large or important formation may be nuclear, and the possibility of a surprise attack by a nuclear-capable enemy cannot be discounted. The effects of a nuclear burst will vary widely with the type of burst, yield, depth of water, and meteorological situation. Specific geographical information pertaining to the characteristics, effects, plotting, and forecasting of nuclear bursts can be found in ATP 45. The most significant hazards are:

a. Light flash, thermal radiation, and initial nuclear radiation effects, including transient radiation effects on electronics (TREE).

b. Electromagnetic pulse (EMP).

c. Blast and underwater shock.

d. Residual radiation.

12001 TYPES OF BURST

a. Exoatmospheric or High Altitude Bursts. These occur at or above 30 km altitude. They will produce EMP over large areas of the earth's surface and may damage electronic equipment. Magnetohydrodynamic disturbances in the ionosphere may affect long-range communication (HF). Disruption may last up to several hours, pending yield and height of burst.

b. Air burst. This occurs within the atmosphere where the fireball does not touch the surface. Significant fallout will not occur, but blast and thermal effects will be maximized in the area of weapon effects.

c. Surface Burst. This occurs within the atmosphere where the fireball touches the surface, producing a significant amount of fallout.

d. Underwater Burst. This will produce predominantly shock and base surge. The effects will be modified by depth of burst, sea bed reflection, and surface refraction.

12002 FLASH AND INITIAL RADIATION EFFECTS

Light flash, thermal radiation, and initial gamma radiation are of relatively short duration. Gamma radiation damages all living organisms and some material, but material damage by some other weapon effect such as blast is nearly always more significant. Ships must rely on their own protective measures to shield against effects of light flash and thermal radiation and to reduce the effects of gamma radiation. The effects of initial radiation on electronics (i.e., TREE), may be very great, especially on digital systems. Electronics start to be affected at 105 Centigreys/sec and this may well be the only effect that a small nuclear weapon would have on a ship. User checks are the only way of ascertaining whether or not electronic equipment has been affected.

12003 ELECTROMAGNETIC PULSE (EMP)

The EMP produced by high/low air bursts has strong magnetic and electronic fields that exist for only a fraction of a second. These fields can induce large, transient currents that may burn out electronic equipment or produce transient signal overloads and spurious signals on communication nets and computer-driven systems. The EMP hazards depend on burst altitude and yield. For low-altitude bursts, damage from other weapon effects will predominate. For high-altitude bursts, computer and communication system upsets, caused by large transient signals injected into antennas and equipment cables, may occur at ranges where no damage is produced by other nuclear effects. Communication disruption as a result of interference with the ionosphere may last several hours.

12004 BLAST AND UNDERWATER SHOCK

These hazards will have velocities in excess of the velocities of sound in air and water, allowing little time, if any, for maneuvering. They are the most damaging to ships and parked aircraft and so determine the action to be taken prior to and immediately after burst. High-velocity surface winds and high-water waves may be encountered beyond the radius of heavy to moderate blast damage, traveling at velocities well below the speed of sound. Since the severity of these hazards decreases rapidly with distance from ground zero and time after detonation, maneuvers to increase the range from surface zero will greatly reduce damage.

(NR) (NMM) (See Table 12-1.)

12005 BASE SURGE

Surface or subsurface bursts will produce a dense radioactive cloud or mist in the vicinity of ground zero and a pool of highly contaminated water at the ground. This radioactive cloud or mist is called base surge. The area of the base surge expansion must be avoided for at least 30 minutes and, if conditions merit, for 90 minutes, even though it will tend to become invisible after about 4 minutes. The size of the base surge will be governed by many factors, such as the depth of burst and weapon yield. The contaminated pool of water at ground zero will be smaller than the area of the base surge but will present a hazard that can last longer. It may preclude re-entering the ground zero area for as long as 3 hours.

12006 RESIDUAL RADIATION

In surface and some underwater bursts, radioactive material is sucked up into the mushroom cloud; some of this will return to the surface later as local fallout in the sector that is down the effective downwind (EDW) from ground zero. This will cover varying distances up to several hundred miles, depending on wind conditions at various levels, and will broaden as it moves. Maneuvers to avoid this fallout must therefore be based on the EDW. Should it be necessary to pass through fallout, washdown or prewetting systems, if available, should be activated and passage delayed as long as possible. The longer passage is delayed, the less hazardous fallout will be, because of the relatively short half-life of most fission products. There is little danger in steaming through water where fallout has ceased.

12007 (NR) (NMM) RANGE OF EFFECTS

Figure 12-1 shows the range of effects for airburst weapons. This figure is a composite picture displaying the “worst case” situation. Figure 12-2 indicates range of base surge and is also a composite graph displaying the “worst case” situation. Figure 12-3 shows underwater shock ranges from a typical nuclear warhead displayed against water depth.

12008 — 12009 SPARE

Table 12-1. (NU) (NMM) Blast Damage Ranges in Yards From Ground Zero

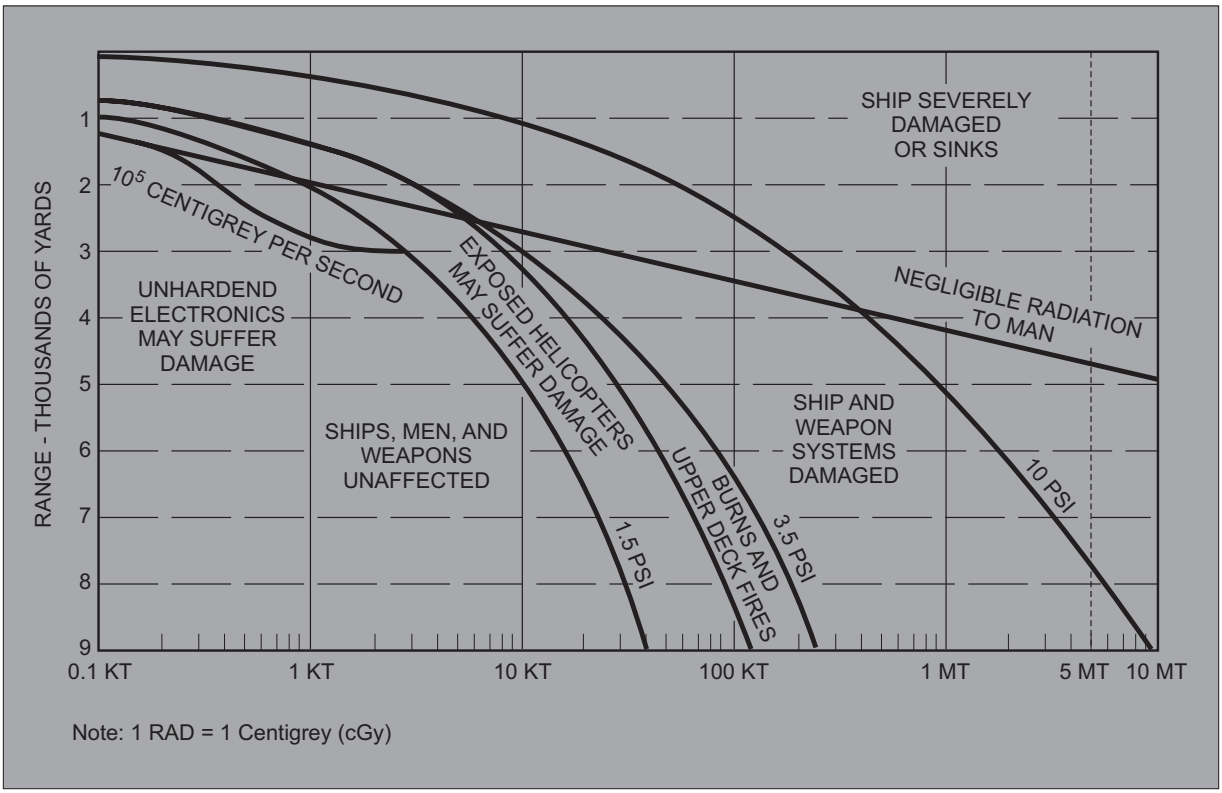
Type of Burst	SEAWORTHINESS				MOBILITY				WEAPON DELIVER			SERVICEABILITY		
	Carriers		Destroyers		Carriers		Destroyers		All Ships			Aircraft		
	90% LOSS	10% LOSS	90% LOSS	10% LOSS	90% LOSS	10% LOSS	90% LOSS	10% LOSS	90% LOSS		10% LOSS			
Overpressure (psi)	40		25	12	15	8	12	8	8	3.5	1	2	1.5	1
Air Burst*														
10 KT	405		560	975	860	1,220	975	1,220	1,220	2,150	5,000	3,000	3,700	5,000
100 KT	900		1,200	2,100	1,860	2,630	2,100	2,630	2,630	4,650	11,000	6,500	8,000	11,000
5 MT	3,200		4,450	7,725	6,840	9,700	7,725	9,700	9,700	17,100	40,000	24,000	30,000	40,000
Surface Burst														
10 KT	375		465	680	590	790	680	790	790	1,300	2,650	1,850	2,200	2,650
100 KT	810		1,000	1,470	1,270	1,700	1,470	1,700	1,700	2,800	5,700	4,000	4,800	5,700
5 MT	2,970		3,700	5,385	4,680	6,270	5,385	6,270	6,270	10,400	21,000	15,000	17,700	21,000
Subsurface Burst**														
10 KT/70M	450		450		610		610		675					
10 KT/130M	675		675		935		935		1,040					
10 KT/300M	750		750		1,275		1,275		1,430					

* Air burst at optimum height of burst.

** Damage ranges based on the following damage criteria:

90% LOSS Seaworthiness	90% LOSS Mobility	90% LOSS Weapon Delivery
150 ft. lb/in^2 Shock Wave Energy	5 ft/sec Peak Translational Velocity	4 ft./sec Peak Translational Velocity

(NATO-CONFIDENTIAL) (NMM)



(NATO-CONFIDENTIAL) (NMM)

Figure 12-1. (NU) (NMM) Above Water Burst Effects

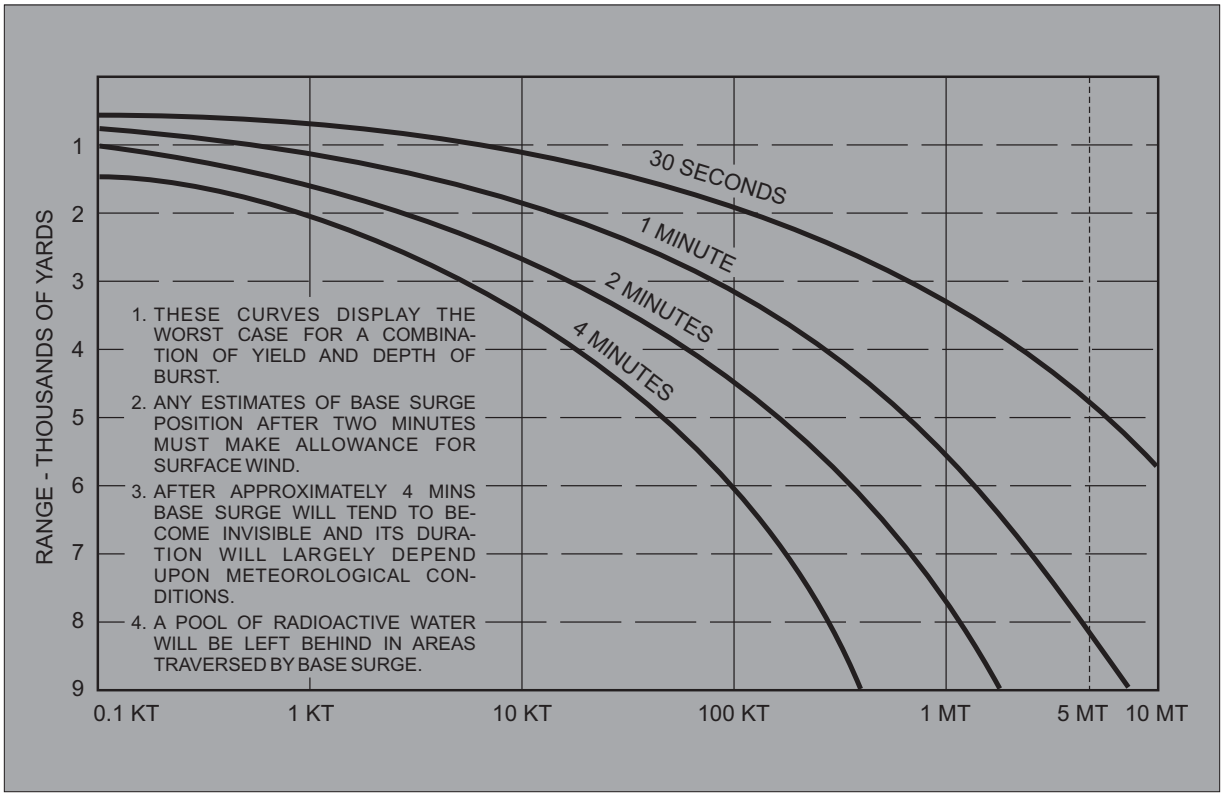
12010 BASIC CONCEPT OF DEFENSE

Evasive maneuvering is an essential element of nuclear warfare defense. Ships, whether acting independently or in formation, must take such individual and collective action as may be required to avoid, to the maximum practicable degree, the immediate and residual hazards resulting from a nuclear detonation. Basic predictions for defense against fallout are contained in ATP 45. Table 12-2 provides an aide-memoir to the command of a ship for the correct reaction to a nuclear attack. The warning time for such an attack, especially from a submarine, may be under 2 minutes. This would give time to cancel relaxation to the gastight and watertight conditions of the ship, but may not allow a change in the manning or material state to be made. Due consideration must be given to this before ordering a higher degree of readiness.

12011 GENERAL TACTICAL CONSIDERATIONS

In a nuclear war, the most suitable nuclear defense disposition would be one where not more than one ship would suffer sinking or severe damage from a single burst. Maintaining such a disposition may not be tactically feasible considering the many factors involved, such as primary mission, geographic area, weather, forces assigned, and relative importance of other potential threats. The OTC should select a force disposition that effects the best compromise of all factors involved in a particular situation. When the probability of nuclear attack exists there are a number of principles that should be considered.

(NR) (NMM) Figures 12-1, 12-2, and 12-3 will give the OTC a broad indication of the penalties that may have to be incurred with any particular selected nuclear spacing.



(NATO-CONFIDENTIAL) (NMM)

Figure 12-2. (NU) (NMM) Range of Effects of Base Surge (Underwater Burst)

12012 (NR) (NMM) PRINCIPLES AFFECTING ALL DISPOSITIONS AND FORMATIONS

a. Spacing between ships should be such that not more than one heavy ship would be sunk or severely damaged by a single nuclear burst. (In the absence of intelligence, a 1 MT threat should be assumed.)

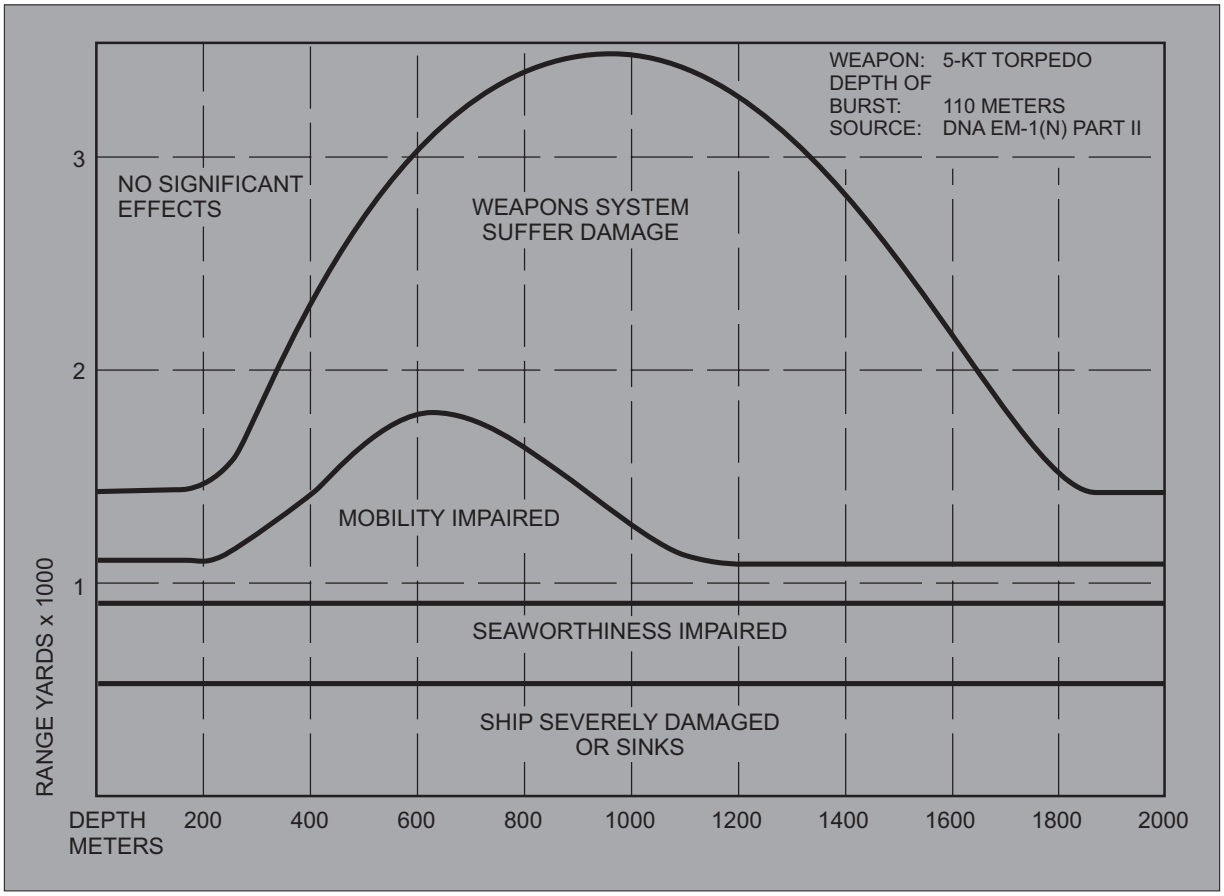
b. Maximum ASW protection should be afforded major units as practicable.

c. The speed of major units and their screen, if provided, should normally be as high as possible. Speed in excess of optimum sonar speed is an OTC's decision.

d. Units should be stationed within the disposition or formation to provide the maximum attainable degree of all-round air, surface, and subsurface surveillance.

e. Should the spacing selected for major units be greater than effective UHF/VHF range, it will be necessary either to accept the limited capability of UHF/VHF links or to break HF silence.

f. Special considerations will apply in the case of operations involving underway replenishment, minesweeping, amphibious warfare groups, and in all operations in restricted waters. The general considerations above should be followed as far as practicable.



(NATO-CONFIDENTIAL) (NMM)

Figure 12-3. (NU) (NMM) Underwater Burst Effect Graph

12013 (NR) (NMM) PRINCIPLES AFFECTING CARRIER GROUP FORMATIONS

a. Random stationing of units within the disposition and random courses and/or speeds should be used to confuse search and attack aircraft and submarines and make more difficult the pinpointing of high value units.

b. Units should be disposed in the direction of the expected air threat so as best to provide defense in depth.

c. AAW coordinators should occupy stations in the direction of the air threat.

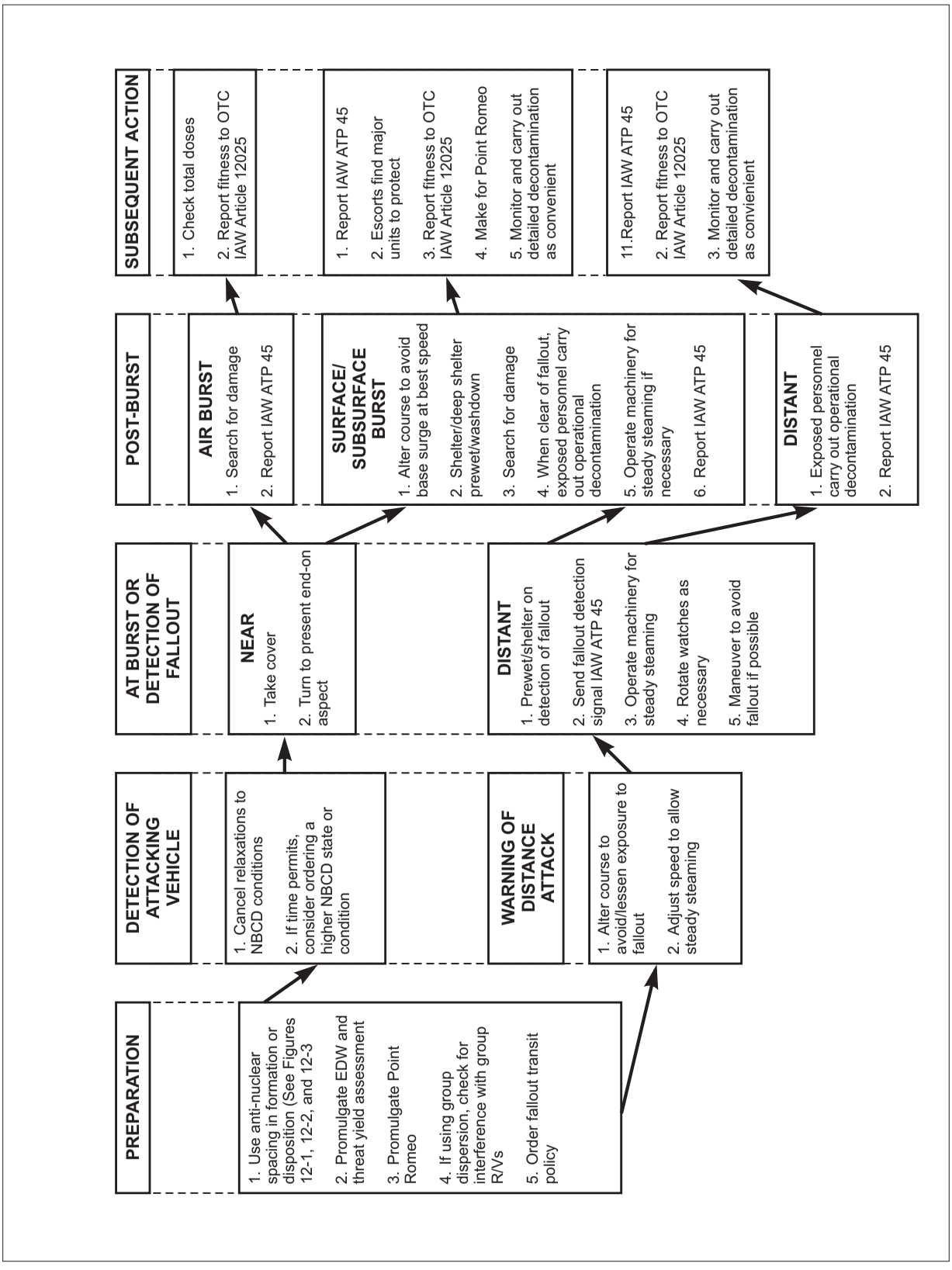
d. Carriers should not occupy stations on the boundaries of the disposition.

e. When carriers are operated singly and when it is not possible to provide an ASW screen, at least one SAM unit should be assigned a station adjacent to each carrier with secondary duties as plane guard, as required.

f. Radar pickets should be stationed at appropriate distances from disposition center, compatible with radar and communication capabilities, rather than in randomly selected positions.

g. Maximum spacing between major units is desirable.

Table 12-2. NBC Aide-Memoire (Nuclear)



h. Use of single ship or multiple ship stations will depend on the forces available and the detection and deception equipment available.

i. In situations in which the air threat is relatively small compared to that of the subsurface threat and the use of nuclear warheads is expected, it may be desirable to use a screen within which multiple carrier operations could be conducted at high speeds while screen destroyers patrol at speeds both economical and favorable to sonar detection.

12014 PRINCIPLES AFFECTING CONVOY FORMATIONS

Ships in convoy should have simple and concise instructions concerning action to be taken in the event of a nuclear attack. It is important that orders and instructions to ships in convoy should be issued and understood before the convoy forms up. This is best done at the convoy conference. The size of the convoy and other factors permitting, wide spacing of columns and ships in column is recommended. If possible, the spacing of ships in columns and between columns should not be reduced below 1 mile. Random formations should be considered in order to prevent easy recognition by the enemy.

(NR) (NMM) Merchant ship captains should be familiar with the merchant ship supplement to ATP 3.

12015 ACTION PRIOR TO NUCLEAR ATTACK

a. Establishment of Formation Rendezvous (Point Romeo). OTCs of formations are to promulgate a formation rendezvous at which ships can re-form following dispersal. OTCs of dispositions are to be kept informed of the position of the formation rendezvous. If no Naval Effective Downwind Message (NAVEDM) is issued, a signal from ATP 1, Vol. II, may be used.

b. Promulgation of Fallout Information. In the absence of reports from shore authorities, the OTC will promulgate information to the formation in the form of a NAVEDM, expanded to include information on Point Romeo. Details are in ATP 45.

c. Operational Readiness for Fallout Transit. The OTC should state well in advance the required operational readiness for his units should a fallout transit become inevitable. The OTC should specify AAW, ASW, and ASUW degrees of readiness and the degree of readiness for engineering, stating the maximum speed required for fallout transit. The OTC should also nominate guard ships (e.g., radar, sonar, and EW guards), as many ships will be limited in operational performance during the transit. In general, the OTC should re-examine the principles of readiness in Chapter 1 to match the problem associated with fallout transit.

12016 TACTICS FOLLOWING A NUCLEAR ATTACK

Tactics to be employed and considerations are in Table 12-2.

12017 — 12019 SPARE

12020 SELECTION OF FORMATION RENDEZVOUS

Point Romeo should be established relative to the formation center, and the course and speed of the rendezvous must be indicated. When a disposition incorporates more than one formation, each formation should promulgate its own Point Romeo. Whenever possible, Point Romeo should be up the effective downwind (EDW) from the formation center and at a distance equal to the area of immediate contamination plus the diameter of the formation. In determining the position of Point Romeo, the OTC must consider the following factors:

a. Direction and strength of EDW.

b. Expected yield of the weapon.

c. Threat.

d. Expected time for the force to re-form.

e. Direction in which the force is required to steam.

f. Dose rate and total doses that are acceptable.

g. Navigational restrictions.

h. Positions of other formations.

12021 (NC) (NMM) EMERGENCY RENDEZVOUS

When no Point Romeo has been promulgated, the standard emergency rendezvous will be 10 miles up the EDW from the formation perimeter.

12022 — 12024 SPARE

12025 REPORT ON OPERATIONAL EFFICIENCY

After an attack all ships are to report their operational efficiency to the OTC. All ships must report their capacity to:

a. Complete immediate operations.

b. Undertake a subsequent operation without delay (i.e., without rest, hospitalization, or decontamination). (Table 12-3 may prove useful.)

12026 — 12029 SPARE

12030 (NR) (NMM) EMPLOYMENT OF OWN NUCLEAR WEAPONS

The OTC should promulgate necessary information to all units likely to be involved when own nuclear weapons are to be employed.

12040 BIOLOGICAL HAZARDS

By their very nature, biological agents lend themselves to covert delivery methods. Lack of any detection/warning equipment makes identification of the type and source of attack impossible and its occurrence will probably pass unnoticed. Agents can be delivered by emission from aircraft, ships, submarines, missiles, or land-based sources. Under favorable meteorological conditions, a robust agent can remain effective after traveling hundreds of miles downwind and covering very large areas. Because of this large area coverage capability, biological operations could, for example, be effective against reinforcement shipping. The use of biological agents in the sabotage role also presents a hazard to ships in harbor or anchorage. The aim of biological operations is to produce disease or sickness (not necessarily lethal) by the inhalation or ingestion of agents.

12041 SURVIVAL OF AGENTS

Factors which affect the ability of micro-organisms to exist are:

Table 12-3. Commander's Guide on Radiation Exposure State, Dose Levels, Probable Tactical Effects, and Risk of Exposure Criteria

Total Cumulative Dose (Centigrey)	RES Category	Probable Initial Tactical Effects After Exposure	Single Exposure Criteria
No Exposure — 0	R 0	None	Negligible Risk — 50 Centigreys Moderate Risk — 70 Centigreys Emergency Risk — 150 Centigreys
Greater Than 0 But Not Greater Than 70	R 1	None to slight decrease in combat effectiveness in up to 5 percent of group.	The dose that, when added to the group dose, will not exceed the appropriate R 0 risk criteria.
Greater Than 70 But Not Greater Than 150	R 2	Decrease in combat effectiveness in up to 25 percent of group. Up to 5 percent of group expected to become combat ineffective. (See Note 1.)	Any further exposure is considered to exceed a negligible or moderate risk. Emergency Risk — The dose that, when added to the group dose, will not exceed the R 0 Emergency Risk criteria.
Greater Than 150	R 3	Group probably not able to perform complex tasks; sustained effort hampered; more than 5 percent of group expected to become combat ineffective, increasing with increased dose. (See Note 1.)	All further exposure will exceed the Emergency Risk.

NOTES:

1. Combat ineffectiveness is taken to be the onset of severe radiation sickness.
2. Radiation exposure state (RES) categories may be useful in making the report required by Article 12025.

a. Light. All light, especially sunlight, giving ultraviolet rays, shortens the life of most organisms.

b. Humidity. Organisms vary in their response to humidity.

c. Temperature. Low temperature generally enhances the survival of micro-organisms; the effective life of some micro-organisms diminishes with rising temperature. Temperature gradients will also contribute to how quickly clouds of agents disperse.

12042 WIND

The speed and direction of the wind in relation to the target will be used to determine the release point for an attack. Adverse wind conditions may cause postponement of an attack beyond acceptable tactical limits.

12043 DETECTION METHODS

There is, at present, no means of detecting a biological attack. It is most important that medical personnel are made aware of the threat so that they may adopt a suspicious outlook toward any signs that an attack might have been made (e.g., a sudden widespread onset of an epidemic, rather than a slow build-up).

12044 PROTECTION

In the absence of any means of detection, protective measures must be based on meeting any possible attack fully prepared. When intelligence indicates the existence of a biological warfare threat, respiratory protection should be adopted by collective or individual means. It is recommended that all ships should close down to the maximum extent, in the same way as for a chemical or nuclear threat, and that respirators should be worn continuously by all exposed personnel.

12045 HYGIENE

While the primary aim of biological attack is to infect target personnel individually, infections caused by some biological warfare agents can be transmitted from person to person. Therefore, the maintenance of high standards of personal and communal hygiene is important. When it is suspected that an attack has occurred, strict personal hygiene should be observed, only well-cooked or canned food should be eaten, and only properly packaged medical supplies used. (See AMedP 6 and STANAG 2500.)

12046 DECONTAMINATION

Overall decontamination will not be required after an actual or suggested attack although the use of intermittent prewetting washdown is recommended. Contaminated clothing and spaces should be dealt with in accordance with national instructions. If decontamination has to be undertaken on spaces such as the sick bay, cleansing station, and galley, formalin and hypochlorite are effective wide-spectrum germicides. Personnel cleansing is similar to that used for any other kind of contamination.

12047 GENERAL TACTICAL CONSIDERATIONS

In planning biological warfare defense measures, the following should be taken into account:

a. The reduction in effectiveness of biological warfare agents caused by heat and light means that the most likely time of attack will be during night hours when wind conditions are favorable. When it is addressed that there is a threat of biological warfare attack, OTCs should endeavor to ensure that personnel are protected particularly during the hours of darkness.

b. There is no developed biological warfare defense doctrine, therefore procedures for defense against chemical warfare agents should be utilized.

12050 CHEMICAL WARFARE

a. From the outset of conventional warfare, it must be assumed that chemical weapons could be used against NATO naval forces. They could be used simultaneously with conventional weapons. The possibility of covert chemical attack prior to commencement of general hostilities cannot be discounted. The effects of chemical attack will vary widely depending on the agent used, its method of delivery, and meteorological conditions.

b. Chemical weapons are most effective against unprotected personnel.

c. One of the advantages of chemical weapons is that they cause the defender to wear protective clothing, thereby increasing his stress factor and reducing his efficiency. These effects can also be caused by the mere threat of attack unless the defender has adequate and reliable protective devices. Therefore, it is imperative that collective protection be used to full effect to allow maximum possible relaxation of NBC personnel under threat conditions and after an attack.

12051 DELIVERY OF CHEMICAL AGENTS

Chemical attack against ships may be delivered as:

a. The warhead of a weapon aimed to hit the target and breach the citadel.

b. A vapor cloud released upwind of the target or through which ships may have to transit.

c. A spray released above the target by aircraft, bombs, shells, or missiles.

12052 NATURE OF CHEMICAL AGENTS

The group of nerve agents is odorless, colorless, tasteless, and, for all practical purposes, invisible. Blister agents, blood agents, and choking agents may also be invisible, but each has a characteristic odor. Even with chemical detectors, the first indication of attack may be the onset of symptoms in personnel. With washdown systems operating, some chemical agents may still be absorbed into paintwork, and the subsequent vapor hazard could last for several days.

12053 ENVIRONMENTAL EFFECTS

a. The travel of toxic clouds and the persistence of chemical agents are influenced by meteorological conditions as follows:

(1) Wind. Air stability, wind speed, and turbulence are the major factors governing agent concentration, while wind direction determines the downwind hazard. Optimum wind speed for toxic clouds is between 5 and 8 knots. Vapor concentration and persistency of liquid agents decrease as wind speed increases.

(2) Temperature. At high air temperatures, liquid agents evaporate faster, and the dosage received could be larger and more quickly absorbed.

b. Some types of chemical agent are fully effective under arctic conditions.

c. Agents delivered in the warhead of a weapon aimed to hit the target are relatively unaffected by meteorological conditions.

12054 THREAT TO NAVAL FORCES

a. General Single Spray Attacks. These attacks against one or more fully protected naval ships on open sea are not likely; chemical clouds (aerosols) in maritime areas, however, are apt to drift around for hours at levels where they pose no danger to ships but where they are a serious and unexpected threat to unprotected naval aircrews during low-level operations. In general, chemical attacks against shipping will be executed supplementary to conventional weapons attacks.

b. Coastal Operations. Concentrating ships in harbor and inshore waters where their maneuverability is restricted increases their susceptibility to chemical attack and the likelihood of enemy success. The embarkation and disembarkation phases of amphibious operations are particularly susceptible to chemical attack, since the ships will be at least in a relaxed state of close-down condition.

c. Open-Ocean Operations. A well-protected and well-trained naval force should be capable of prolonged operations in a toxic environment. The threat of, or an attack by, chemical agents could reduce the effectiveness of such a force. The success of a chemical attack, which will be most likely from weapons aimed to breach the citadel, will depend on the preparedness of individual units, protection devices, and the formation chosen.

12055 GENERAL TACTICAL CONSIDERATIONS

In spite of threatened or actual chemical attack, the force must continue its mission with its disposition being dictated by the most serious threat present in a multithreat situation.

12056 OTC'S CONSIDERATIONS

When a chemical threat exists, the OTC should:

a. Order an appropriate degree of readiness and establish a washdown policy.

b. Consider possible changes to the disposition in view of prevailing and forecast wind direction and speed.

c. Consider the desirability of stationing a ship or ships with automatic detection equipment upwind of the force.

d. Station ships to avoid multiship contamination.

e. Establish a helicopter haven and fixed-wing aircraft diversion airfields.

f. Consider the desirability of continuing aircraft and flight deck operations.

g. Determine the necessity for scheduling underway replenishment operations in view of the need to protect personnel and the risk of contamination if upper deck loads must be struck below.

12057 CHEMICAL ATTACK

a. If a chemical threat is deemed to exist, a chemical attack must be assumed when:

(1) A ship comes under fire.

(2) Hostile or unidentified low-flying aircraft are sighted.

(3) Suspicious mist, smoke, droplets, splashes, or odors are noticed.

(4) Personnel suffer any of the symptoms of chemical agent poisoning.

(5) Any chemical detection system or device indicates the occurrences of chemical attack.

b. A unit observing any of the above is to broadcast the alarm to the force. The OTC shall maneuver the force or order ships to maneuver independently to avoid further contamination, depending on searoom and the tactical situation. Guidance to individual ships is given in Table 12-4. Reports are to be made in accordance with ATP 45.

12058 AIRCRAFT OPERATIONS

The operation of aircraft under a chemical threat warrants careful consideration. The employment policy is the OTC's decision and will depend on the threat situation. Reaction and turn-around times are likely to be increased by the need for aircrews and flight deck personnel to wear protective clothing and requirements for washdown.

Table 12-4. NBC-Aide-Memoire (Chemical)

Preparation	Detection of Attacking Vehicle	Detection of Chemical Attack	Post-attack	Subsequent Action
1. Consider effect of wind speed and direction on disposition and, if possible, avoid multiple ship contamination. 2. Decide pre-wet policy and crash shutting down of ventilation. 3. OTC establish helicopter haven and/or fixed-wing aircraft diversion airfield and realistic alert states, turn around, and re-arm times in light of threat. 4. Personnel outside the citadel wear full protective clothing, keeping respirator and gloves within reach, and carry personal issue of drug therapy. NOTE: To conserve stocks, protective suits should not be worn unless a strong probability of liquid chemical attack exists. 5. Order taking of nerve agent pretreatment labels. 6. Order material measures. 7. Minimize aircraft and stores on deck. Cover where possible with a chemical agent resistant material.	1. Cancel relaxations. Assume first degrees of NBCD readiness. 2. Respirators and gloves to be within reach inside citadel and worn outside. 3. Launch or strike down aircraft on deck. 4. All pre-wetting ON until Threat Warning RED, then OFF during attack to allow use of CIWS. 5. Reduce ship's ventilation to minimum required to reduce chance of possible spread of contamination.	VAPOR OR LIQUID 1. Get clear at best speed if searoom permits. 2. All pre-wetting ON if CIWS not required. Maneuver to make pre-wetting effective. 3. All personnel put on respirators. 4. Make attack report in accordance with ATP 45. CITADEL BREACH 1. All personnel put on respirators and gloves. 2. Control damage. 3. Restrict movement of men and spread of contamination. 4. Make attack report in accordance with ATP 45.	1. Report fitness to OTC. 2. Monitor citadel boundaries internally. 3. Washdown for 20 minutes. 4. Maneuver/ forced roll to ensure efficient coverage, then change detector papers and decontaminate; reset chemical alarm and detector units. NOTE: The removal of respirators is a command decision.	1. Complete operational decontamination 2. Order relaxations, 3. Report to OTC.

12059 CONTAMINATION OF AIRCRAFT

a. Aircraft should only be on deck when necessary for operational reasons. Although external contamination of aircraft is unlikely to affect their ability to fly, it will result in many contamination control problems that will reduce the speed and efficiency of their operations. If the operational situation permits, steps to avoid contamination should be taken. When chemical attack is imminent or has taken place, the following actions should be taken as appropriate:

(1) Stow aircraft in hangars with doors shut and lift raised.

(2) Cover all openings and intakes on aircraft, paying particular attention to the internal atmosphere of the aircraft.

(3) Launch aircraft to a helicopter haven or fixed-wing aircraft diversion airfield outside the likely area of contamination (e.g., take aircraft under cover).

b. Commanding officers must thoroughly weigh recommended precautions and protective measures under chemical threat against the required operational availability of own ship's aircraft.

12060 GRADUATED LEVELS OF NBC THREAT AND MINIMUM INDIVIDUAL PROTECTION

Table 12-5 gives commanders a method of promulgating the NBC threat level and gives guidance to ships on the minimum protective measures. These minimum measures may be exceeded as required by an individual command.

Table 12-5. Graduated Levels of NBC Threat and Minimum Individual Protection

Serial	NBC Threat	NBC Threat Level (1)	Normal Protection Required		
			CHEM/BIO (Individual)	NUCLEAR (Individual)	NBC (Collective)
(a)	(b)	(c)	(d)	(e)	(f)
1	The enemy has an offensive NBC capability but there is no indication of its use in the immediate future.	LOW	All personnel carry their personal equipment or have it readily available.		Make regular checks that all collective protection components are complete and serviceable.
2	Nuclear weapons or chemical/biological weapons have been used in another area of operations and/or there are strong indications that the enemy will use these weapons in the immediate future.	MEDIUM	Body protection, worn, less overboots and gloves; respirators carried (2a and b).	Low level applies.	Test static collective protection systems. Mobile units earmark locations for the installation of collective protection shelters and erect them if the tactical situation permits. Personnel and equipment to be kept under cover as much as possible to protect them from liquid contamination radioactive fallout.
3	Nuclear attack or chemical/biological attack is imminent.	HIGH	Increase protection level as necessary to achieve full body protection (2a).	Low level applies. Eye protection as required and appropriate.	Put collective systems into state of readiness, including those of combat vehicles, and wherever possible, collective protection shelters belonging to mobile units.

NOTES:

1. The threat level to a particular area will be decided by the appropriate commander in accordance with NATO or national instructions.
2. These normal levels of individual protection may be:
   a. Reduced if warranted by special conditions (i.e., personnel inside collective protection and/or commanders assess the risk of chemical or biological casualties is outweighed by benefits of reduced individual protective equipment).
   b. Increased if local conditions demand a higher degree of protection.

CHAPTER 13

Mine Warfare

13000 INTRODUCTION

a. Mine warfare includes the whole field of designing, producing, and laying mines and the parallel effort of designing, producing, and operating all forms of mine countermeasures to combat the enemy's mining campaign. This chapter provides background knowledge and instructions to commands and personnel not normally involved in Mine warfare.

b. **(NR) (NMM)** For more detailed information, refer to ATP 2, ATP 6, ATP 24, and AHP.

13001 MINING

The aim of minelaying operations is to assist in the dislocation of the enemy war effort to the maximum possible extent and to contribute to the security of our sea communications by the destruction or threat of destruction of the enemy's merchant and naval units.

13002 MINEABLE WATERS

a. Mineable waters are waters in which mines may be effectively used against submarines or surface ships. The depth of the water may dictate the use of either moored or ground mines. Drifting mines can be encountered in any depth of water.

(1) **(NC) (NMM)** Moored mines can normally be encountered in waters with depths up to 1,000 meters, although this is not necessarily the technical depth limitation. Mines used in antisubmarine minefields may be laid in depths down to the case-crushing depth.

(2) **(NC) (NMM)** Ground mines can normally be encountered in waters with depths up to 90 meters. Ground mines used in antishipping minefields are unlikely to be laid in depths of more than 55 meters, except where these mines are laid against surface targets whose draft exceeds 9 meters.

b. During the initial stages of a mining campaign, offensive operations are likely to be confined to ports, harbours, and focal points where traffic concentrations can be foreseen.
(NC) (NMM) Only waters of 10 nm or less in width that cannot be readily avoided by traffic should be considered during the initial stages.

13003 TYPES OF MINES

a. Mines are explosive devices laid in the water by aircraft, submarines, or surface ships. They can be divided into two main categories:

(1) Controlled mines are controlled by the user and enable him to deny the use of certain areas to the enemy while retaining freedom of movement for his own forces.

(2) Independent mines are not controlled by the user after laying and create the same danger to own and enemy shipping. Types of settings used with these mines include:

(a) Ship counts, which allow a certain number of ships to pass the mine before it detonates.

(b) Arming or rising delays, which prevent the mine from becoming active before a preset time.

(c) Sterilizing time, which renders the mine inoperative after a preset time.

b. The mines described above may be either mines that are fired by remote control, contact mines, or influence mines. Contact mines will normally be moored mines, although drifting mines can be used in this context. Influence mines can be either moored or bottom mines.

13004 THE NATURE OF A MINEFIELD

As all minelaying operations will have a lasting effect on enemy as well as own operations, all sources of intelligence should be used by officers concerned with the planning of such an operation. Where independent mines have been laid, the minefield presents the same danger to own forces as to enemy forces. Operational advantages can be achieved by the use of arming or rising delays and sterilizers that will activate and deactivate the minefield at preset times. If sterilizers are not used, the minefield must be expected to create a danger for years.

13005 TYPES OF MINING

a. Mines. Mines can be used strategically or tactically.

(1) Strategic Mining would be conducted with the broad long-term aim of denying the enemy free access to or use of sea areas and sea lines of communications considered vital to the defense of NATO territories and to the support of the war effort of the Alliance.

(2) Tactical Mining may be conducted in support of a limited military objective, generally in a specified area of immediate tactical interest.

b. Minefields. Mines can be used to lay defensive protective fields or offensive fields.

(1) Defensive and Protective Mining is normally conducted in coastal or territorial waters or in international waters and straits that normally are under the control of a NATO nation or the Alliance.

(2) Offensive Mining may be conducted in harbours or approaches thereto, straits, and territorial waters that normally are under the control of the enemy, although under certain circumstances, it may be conducted in neutral or international waters.

13006 JETTISONING MINES

The safety of the minelayer sometimes requires that the mines aboard be jettisoned. It is emphasized that jettisoned mines may become a serious hazard to friendly ships unless suitable precautions are taken. The optimum, but often unavailable, places for jettisoning mines in armed condition are enemy shipping routes and other areas regularly used by enemy ships that will not be needed by friendly ships before the mines are sterilized. If the mines cannot be laid against enemy ships, they usually should be either dropped in water so deep that the mines will be crushed and destroyed by the pressure or dropped in safe condition.

13007 URGENT MINING

Urgent mining is the laying of active mines with correct spacing but not in the ordered or planned positions. The mines may be laid inside or outside the planned area in such positions that they will hamper the movements of the enemy more than those of own forces.

13008 — 13009 SPARE

13010 MINELAYING OPERATIONS

a. Normally the subarea commander issues orders for the operation. These consist of directives, preparatory orders, and final operation orders. Minelaying intentions and plans must be coordinated with subordinate commanders to ensure that mining operations will not conflict with submarine and surface force operations. Details of ordering minelaying operations are given in ATP 24.

13011 INFORMATION TO FRIENDLY FORCES

a. Although the distribution of orders should be confined to units that are concerned directly, the position, nature, and extent of a new minefield, or an addition to an existing minefield, must be communicated to all other units that may transit the area. For this purpose AWNIS (Allied Warning Navigation Information System) has been introduced.

b. **(NR) (NMM)** For details, see AHP 1.

13012 (NR) (NMM) PROCEDURES FOR AND METHODS OF SURFACE MINING

The procedure of mining is the principle according to which mines are spread throughout the area to be mined. The procedure to be used is determined by the minelaying order. There are two mining procedures: pattern mining and random mining. The minelaying method is the system according to which the procedure of mining is implemented. The method to be used is to be determined by the OTC of the minelaying force.

a. Pattern Mining. This mining procedure involves laying a minefield in the form of geographically predetermined mine lines.

b. Random Mining. This mining procedure involves laying a minefield of practically uniform density but with no recognizable pattern of mine distribution in a geographically predetermined area. Random laying of mines hinders mine hunting and clearance.

13013 — 13019 SPARE

13020 (NC) (NMM) SUPPORT OF SURFACE MINELAYING OPERATIONS

a. Approach Phase. The OTC of the covering force will normally act in command relationship situation C. The OTC of the minelaying force must ensure that there is a clear understanding between the different forces involved as to their relative movements, communications, tactical limitations, etc. During the transit to the minelaying area, the OTC of the minelaying force will try to avoid contact with the enemy. The OTC of the covering force will operate in the direction of the threat. The primary aim of the covering force is to prevent the enemy from detecting and attacking the minelaying force. This may be achieved best by diverting the enemy away from the area to be mined.

b. Minelaying Phase. Direct communication between the OTCs is of paramount importance during the execution of a minelaying operation. To facilitate communication, code words for the operation should be provided to the OTC of the covering force prior to the start of the operation. All communications directly concerned with minelaying (e.g., enemy contact reports, ship-air) should be handled by the covering force. The OTC of the minelaying force will usually indicate, 15 minutes before the event, his intention to start or complete minelaying. He must also keep the OTC of the covering force informed on the progress of the lay, including:

(1) Start of minelaying.

(2) Any interruptions or breakdown.

(3) Completion.

(4) Jettisoning of mines or urgent mining.

13030 MINE COUNTERMEASURES (MCM)

The aim of mine countermeasures is to permit Allied warships and merchant vessels to use the seas and enter and leave ports, as necessary, to further the war effort and support the population, without sustaining unacceptable damage or losses from enemy mines. This aim can be achieved by offensive and defensive MCM.

a. Offensive MCM is intended to prevent the enemy from successfully laying mines. Included under this heading are:

(1) Strategic bomb/missile attacks.

(2) Attacks on enemy minelayers.

(3) Laying own offensive/defensive minefields.

b. Defensive MCM is designed to reduce the threat from mines after they have been laid. They include:

(1) Passive countermeasures.

(2) Active countermeasures.

c. **(NC) (NMM)** Given the political will, the prevention of mining is always the preferable option; this means utilization of offensive MCM techniques to prevent mining. In the absence of this, the most productive surveillance assets available should be brought to bear on the enemy, followed by minewatching, in order that the success of defensive MCM techniques might be more readily achieved once commenced.

13031 PASSIVE MINE COUNTERMEASURES

a. Localizing the Threat. The threat can be localized, mine clearing forces concentrated, and shipping more effectively controlled by the establishment of a system of routing ships when passing through mineable waters. Movement of shipping by convoy and an adequate navigational warning system are also desirable.

b. Locating the Minefield. The laying of a minefield may be reported by mine watchers or other intelligence sources. Knowledge pertaining to a minefield is of maximum importance to maritime authorities. Units gaining intelligence of minelaying operations are to report it to the appropriate commanders.

c. Reducing the Risk. Risk may be reduced by:

(1) Altering Navigation Aids. Lighthouses may be extinguished or have their lights dimmed; buoys may be reduced to the minimum required for safe navigation of Allied shipping. Radio-locating systems should be operated with caution as it is possible for an enemy minelayer to use them for fixing position.

(2) Self-Protective Measures. See Article 13032.

(3) Seabed Surveys. These surveys are conducted in time of peace or war to determine environmental suitability to various alternative mine countermeasures.

13032 SELF-PROTECTIVE MEASURES

Self-protective measures are part of defensive MCM; they are those passive measures taken by any vehicle to reduce the risk to the vehicle from mines. Self-protective measures are achieved by tactical measures or material means.

a. (NR) (NMM) Tactical Measures. By routing ships in deep water and at a slow speed, the chances of detonating a mine can be lessened. It can be taken that for surface vessels, the deeper the water under the keel, the safer the vessel is likely to be.

(1) (NR) (NMM) Tide. Sailing at high water increases the distance between hull and mine. This way enables a ship to sail over a buoyant moored contact mine or reduce the influence detected by an influence mine.

(2) (NR) (NMM) Current. Stream will cause a moored mine to dip and will have the same effect as tide. In good conditions, speed made good over the ground may be increased without change of the speed through the water, and so, risk from acoustic or pressure mines may be reduced.

(3) (NR) (NMM) Safe Depth. As a result of the attenuation of the magnetic field of a ship with increasing depth, the probability of actuating a given magnetic ground mine decreases as the water deepens, until a safe depth is reached. At this depth, the field of the ship becomes insufficient to actuate the mine-firing mechanism. The safe depth will vary with the characteristics of the mine, the speed of the ship, and the magnetic signature of the ship. In the absence of more specific information, for degaussed ships, the following figures for magnetic safe depth against ground mines may be used.

TYPE	Magnetic Safe Depth (100 nT mine)
Aircraft Carrier	90 m
Cruiser	55 m
Destroyer or large (surfaced) submarine	42 m
2,000-ton cargo vessel	46 m

(NATO-RESTRICTED) (NMM)

(4) (NR) (NMM) Safe Speed. Reducing speed reduces the pressure signature of a ship and generally her acoustic signature also, and so will decrease the probability of actuating mines using these influences.

b. (NR) (NMM) Material Means include the use of various equipment which conduct to decrease or alter the influence signatures of a ship, which may give a capability of detection of certain mines (sonar), or which also conduct to the actuation of a mine outside the limit of the dangerous area of the ship. They are:

(1) (NR) (NMM) Degaussing equipment or other means, such as flashing, wiping, or deperming, used for reducing or changing the magnetic signature.

(2) (NR) (NMM) Acoustic Measures. Reduce speed or practice of safe depth (indicated by sound range report). Use of noisemakers or acoustic decoys that are capable of producing a rapid

increase in sound level; the use of this equipment must be approved by the OTC of the MCM forces working in the vicinity.

(3) (NR) (NMM) Sonar. Ships fitted with a suitable sonar can use it to detect moored mines in sufficient time to avoid passing through a moored minefield or possibly to dodge individual mines. To avoid interference, the use of sonar must be approved by the OTC of the MCM forces working in the vicinity .

(4) (NR) (NMM) Shock Hardening.

(5) (NR) (NMM) Damage Control and Protection.

13033 (NC) (NMM) CONDUCT OF SURFACE SHIPS IN MINED AREAS.

a. Ship at Sea. Turn off cathodic protection 24 hours prior to entering the suspected mined area or as soon as possible.

FIRSTLY: Measures to be taken by naval surface ships where moored contact mines are present. They can be divided into general precautions, equipment and personnel protective measures, and tactical measures.

(1) General Precautions.

(a) In areas where the presence of mines is suspected, do not proceed outside routes and channels controlled by own mine warfare forces. Follow any instructions on navigation in controlled channels issued by the Area Commander or the mine warfare tasking authority.

(b) If there are no guidelines or controlled channels, avoid areas with high traffic density, narrow passages, and choke points near isolated navigational marks (e.g., buoys, beacons, lighthouses, light ships, etc.) that enable the minelayer to fix his minelay accurately. Mine lines across the general traffic should be expected. However, the ready availability of satellite navigation systems (e.g., NAVSTAR or GPS) mean that it is possible to lay mines accurately even in areas where no navigational marks are available.

(c) Use the deepest water available, preferably over 200 meters.

(d) Do not throw anything overboard. Many objects that float may be mistaken by lookouts for floating mines. Cans and drums of any sort clutter the bottom and slow down the MCM effort. Even garbage put over the side in perforated garbage bags may contain metallic cans or other debris that can generate minelike echoes on a minehunters sonar.

(e) Be alert and observe the behaviour of other ships and aircraft in the vicinity. Any type of ship, however small, may be used to lay mines (e.g., fishing vessels, yachts, dhows, hovercraft, cargo ships, supply ships, etc.), as can helicopters and some aircraft. Watch should be kept for any unusual or suspicious activity, such as the releasing of objects into the sea that might indicate mining activity. Aircraft may release mines with or without parachutes.

(2) Equipment Protective Measures.

(a) Ensure that the maximum degree of watertight integrity is maintained below the main deck.

(b) Ensure that all equipment and stores are correctly stowed and secured.

(c) Maintain a high degree of NBCD readiness, with particular emphasis on damage control equipment required to control leaks.

(d) When the degree of risk is high, secure all equipment in galleys and serve only cold meals.

(3) Personnel Protective Measures.

(a) All personnel are to wear coverall suits or action dress.

(b) Arrange accommodations to avoid having all men of the same specialty in the same mess space. Consider evacuating the forward mess spaces (most probable zone of impact with a surface or submerged mine).

(c) Reduce the number of personnel remaining below the main deck or in compartments below the waterline to the absolute minimum.

(d) If a mine is sighted nearby:

i. Evacuate all personnel from compartments below the main deck and from below the waterline.

ii. Order all personnel to put on safety helmets (hard hats) and life jackets.

iii. Order all personnel who can do so to lie down on their bunks.

iv. Order all personnel evacuated under i above to lie down if possible.

v. Order personnel on watch and personnel not lying down to take up the safety posture. This position is standing with knees bent, heels off the deck, facing athwartships and taking a firm grip, with arms bent, on a solidly mounted fixture. The head, neck, and back should be kept in a vertical straight line to absorb the effects of shock from the deck. This position can only be held for a limited time and should only be ordered when danger is imminent.

(e) Personnel on the upper deck should stand clear of stays, antennas, and overhanging parts of the superstructure.

(4) Tactical Measures.

(a) When in an area where moored mines are known to be present, ships should be stopped or at anchor during the hours of darkness. A helicopter should be kept at readiness for reconnaissance duties.

i. If there are many drifting mines, ships should remain stopped.

ii. If the minefield density is high but there are no drifting mines, or if it is considered that they present a lesser danger, then ships should anchor.

iii. Whenever possible, a helicopter reconnaissance should be carried out up-wind and up-current of the anchorage.

iv. While at anchor, ships should have a boat available to divert drifting mines. (Use of a diver to secure a rope to the lower part of a mine is recommended, as this method allows a mine to be towed safely clear of the ship).

(b) *If moving during the hours of darkness.* If ships have to move in mined waters during the hours of darkness, they should take the following precautions:

i. Set up the navigation radar to short range and maintain a surface search. Floating mines can be detected in sea state 1 or less (Beaufort Scale).

ii. Carry out a helicopter reconnaissance ahead of the ship just before sunset and at dawn. If the helicopter has a night capability, operate it in the role of forward lookout (see paragraph (4)(f) below).

iii. If operational circumstances allow, follow in the wake of a large merchant ship. If in company with other warships, follow directly over the same ground as the ship ahead at a distance of about 500 meters. (This precaution is also valid during the day).

iv. If no other means is available, use a searchlight close to the stem to provide lighting ahead of the ship. This can be worthwhile when proceeding slowly in a smooth sea.

(c) Proceed at slow speed, so that if mines are detected the way may be checked to avoid entering the minefield.

(d) Maintain an effective visual watch. Floating mines, however, only show about 30 centimeters of their shape above water and are difficult to see. Indeed, their color may have been chosen for camouflage. It is recommended, therefore, that ships:

i. Reinforce the visual watch organization and place it under the direct control of an officer. All lookouts should have direct communication with the controlling officer.

ii. Post a lookout equipped with binoculars as high in the ship as possible.

iii. Equip all lookouts with polarized sunglasses.

iv. Use stabilized binoculars if available. Search distance should be chosen according to visibility and sea state (from tens to hundreds of meters).

v. Relieve lookouts at frequent intervals to prevent eyestrain and maintain alertness.

vi. From dusk to dawn, use any available night vision equipment.

— Light amplification binoculars can achieve good results on a clear night (with sufficient moonlight) in sea state 2 or less. In such conditions, it is possible to see a drifting mine at a range between 300 to 600 meters. However, in worse conditions, detection ranges decrease rapidly.

— The performance of infrared cameras is very dependent on sea state, relative humidity, the type of camera, and the speed of the ship (because of the effects of vibration on camera mountings). In good conditions (sea state 2, relative humidity of 60 to 70 percent, visibility of 5 nm, and using a good quality camera), a drifting mine can be detected at a range between 300 and 600 meters. Beyond sea state 3, sighting probability decreases rapidly.

(e) Utilization of sonar.

i. Ships fitted with a mine avoidance sonar should operate it.

ii. Ships fitted with a low-frequency ASW sonar will gain no benefit from its use, as trials have shown that, even with alerted operators and a known mine position, these sets are unable to detect a moored mine in the water volume. The same holds true for most ASW helicopter sonars.

iii. Ships still fitted with a high-frequency ASW attack sonar (above 20 kHz) should operate it in the ahead sector with a low depression angle. Echoes will be detected allowing avoidance maneuvers to be taken. However, no further information on the nature of the detected object (mine or not) will be obtained after completion of the avoidance maneuver.

(f) Utilization of helicopters.

i. The helicopter is able to sight mines on or near the surface and is, therefore, the primary means of mine surveillance.

ii. In any minefield there is likely to be a percentage of moored mines that fail to take up their correct depth and that float on the surface or watch at low tide. Also, even correctly laid mines may be sighted at low water. Mines that have been laid for a long time may be visible because of their rusty colour or the build up of marine growth. In favourable conditions of weather and sea, submerged moored mines may be seen (down to 10 meters or more). However, the use of camouflage paint (e.g., grey, grey-green, or a mix of different colours) could greatly reduce the change of detection.

iii. Conditions for visual mine-hunting from a helicopter that favor detection are:

- Clear water, in which the mine will contrast well with the background water volume.

- Clear sky.

- Calm sea (sea state 1 or less).

- Altitude of helicopter between 150 and 180 meters (360 meters in case of minefield delimitation).

- Scan angle, from the vertical to 40 from the vertical in all directions.

- The sun behind the observer and 40 to 70 above the horizon.

- Speed adjusted in accordance with the prevailing environmental conditions.

iv. The efficiency of visual mine-hunting can be summarized as follows:

- The swept path is narrow, being limited to a few tens of meters either side of the helicopter track.

- Unless all the conditions in iii above are met, the search is likely to be inefficient.

- The level of confidence that no mines are present after a helicopter search without a sighting is poor.

(g) Ships should arrange to arrive at the entrance to ports or approach routes at high tide.

(h) Helicopter airborne radars can detect floating mines in sea state 0 if the mines are not covered with marine growth. Effective use of light amplification binoculars or infrared cameras in helicopters is, as for surface ships (see paragraph (4)(f)), very dependent on sea state and environmental conditions.

SECONDLY: Measures to be taken if one or more mines are sighted on the surface. When a mine is sighted visually, it may be either a drifting mine or part of a mine line (i.e., a minefield). To decide which is the case, the following indications can be taken into account.

(1) If several mines are sighted, this indicates the presence of a minefield that has partly taken up the wrong depth.

(2) If there is only one mine on the surface it should not be approached, as it may have been laid shallow intentionally to attract ships into the center of a pattern of properly laid mines. Way should be taken off the ship, which should then withdraw, if possible, by retracing the path through the same water.

(3) Order the personnel protective measures given in paragraphs (3)(d) and (3)(e).

(4) Launch the helicopter as soon as possible to obtain an assessment of the situation.

(5) Withdraw, using helicopter surveillance to establish a safe route.

(6) Dispatch a team of clearance divers if one is embarked, when the ship is clear of the mine(s) (at least 1,000 meters away). Dispatch them in a suitable boat to note the external features of the mine(s) and make an identification if possible.

(7) Report the presence of the mine(s) to higher authority and to other ships in the vicinity. The main information to be reported is as follows:

(a) Whether the mine is drifting or is still attached to its sinker; and whether fully floating, just watching, or still submerged; and if the latter, the approximate depth.

NOTE

If the mine is still attached to its sinker, this indicates that a minefield has been laid in the area. This is also the case if one or more mines are sighted in the water volume.

(b) The estimated diameter of the mine case and the proportion that is visible above the water.

(c) Any identifying features, such as the presence or absence of horns and their number, the presence of snaglines, and any identifying marks on the case. The state of the case should also be reported (e.g., very rusty, heavy marine fouling).

(d) The position of the mine, together with the accuracy of this position and the datum of the chart concerned (e.g., WGS 84, EUROP 50, WGS 72).

(e) If possible, take detailed photographs of the mine(s) to accompany the follow-up report.

(8) Disposal of the mine(s). The following options are available:

(9) If MCMVs are present in the vicinity, request that they join, mark the mine(s), then hand over and leave the area.

(b) If a clearance diving team is embarked, task them to carry out a mine destruction operation.

(c) As a last resort, destroy the mine(s) by machinegun (preferably 12.7 mm) or small arms during daylight when sea state permits. The recommended firing distance is 200 to 300 meters; this may be reduced to 150 meters if the ship has the mine line in the bow.

NOTE

If the mine leaves the surface and is no longer visible, this does not mean that it has reached the seabed. It may be partially buoyant and adrift just below the surface. In this condition, it is more dangerous to surface ships than when it was floating on the surface.

THIRDLY: Measures to be taken where influence ground mines are present.

(1) In areas where the presence of mines is suspected, do not proceed outside the routes and channels controlled by own mine warfare forces. Follow any instructions on navigation in the controlled channels issued by the Area Commander or the mine warfare tasking authority.

(2) If possible, remain in waters where the depth exceeds 80 meters.

(3) Reduce speed in order to limit:

(a) Acoustic signature, in the frequency range of 0 to 2000 Hz, and in the 20 to 30 kHz band (which is required for some firing systems).

(b) Pressure signature, particularly in shallow water.

(4) Avoid violent maneuvers that generate noise.

(5) Switch on degaussing equipment and keep it on.

(6) Switch off cathodic protection.

(7) Take equipment and personnel protective measures as for the presence of moored contact mines (see paragraphs (1)(b) and (1)(c)). With ground mines, however, the affects of an explosion are more intense, as compared to an impact with the explosive charge. A close underwater explosion propagates an intense shock wave in a broad spectrum and with very high acceleration over a very short period (>1000g for a few microseconds). This causes severe whipping of the hull, which is the major cause of damage. Whipping is most violent at the bow and stern; accordingly personnel should be kept clear of the ships extremities.

FOURTHLY: Measures to be taken in the presence of mobile mines.

Although the threat to surface ships from this modern type of mine is not widespread, it should not be discounted. One possible countermeasure is to select the route to pass over areas where the bottom gradients are steep (e.g., margin of the continental shelf).

b. Ship at Anchor or Alongside.

(1) Reduce movement and noise (e.g., use only essential auxiliaries, avoid working anchor, prevent sloshing/beating of fuel and potable water tanks, etc.).

(2) Sharp lookout for aircraft or surface vessels laying mines.

(3) Degaussing is operated as follows:

(a) Normally energized.

(b) If mines, bombs, or any other unidentified objects are dropped close to the ship:

i. The degaussing must remain unchanged, either ON or OFF, or energized step by step if the ship is ordered to move.

ii. The ship must not be moved until competent authority has given permission.

(4) Use of weapons may increase the danger of actuating acoustic mines.

(5) In case of mining of a safe anchorage, the local commander/OTC should issue orders concerning evacuation of the mined areas.

13034 ACTIVE MINE COUNTERMEASURES

a. Active mine countermeasures are any measures taken to attack a mine in its environment after it has been laid. They are accomplished by laying out a pattern of tracks and towing or carrying equipment designed to:

(1) Cut the wire of a moored mine by mechanical sweeping, special devices used by mine hunters, ordnance used by clearance divers.

(2) Detonate mines by influence sweeping (acoustic, magnetic and/or pressure).

(3) Detect mines by minehunting with sonar, magnetic, optical means, or clearance diving.

b. These countermeasures aim at the destruction, neutralization, removing, or recovering of the mines.

c. **(NC) (NMM)** The efficiency of active mine countermeasures depends on numerous factors described in ATP 6 and ATP 24; it is increased by use of a very accurate location system, good environmental conditions, high effectiveness of the equipment, and knowledge about the mines.

d. **(NC) (NMM)** Statistical methods are used for evaluation and planning of operations, but employment of active mine countermeasures is generally long and time-consuming for reaching an acceptable low level of risk.

13035 COMMAND RESPONSIBILITIES IN MINE COUNTERMEASURES

a. Self-protective mine countermeasures are the responsibility of the OTC and commanding officer.

b. Active mine countermeasures in amphibious operations usually are the responsibility of the advance force commander.

c. Operational command of active mine countermeasures in ocean areas usually is exercised by NATO commands.

d. Operational command of active mine countermeasures in coastal areas is exercised by national authorities.

e. Because of the special limitations imposed on MCM units by their small size, support of MCM operations must always be considered along with command and control.

f. The requirement for coordinating and reporting MCM operations will vary from place to place according to the local situation. In all circumstances, all commands concerned must be kept informed of the status of the mine danger and/or any employment of MCM gear/equipment.
(NC) (NMM) Especially at a depth greater than 30 meters (98 feet). This is particularly valid for the appropriate SUBOPAUTH.

13036 — 13039 SPARE

13040 MCM OPERATIONS

a. When enemy mining has been located, MCM forces will carry out operations to open channels through mined waters if diversions cannot be established. Sometimes adverse weather, poor environmental conditions, and the use of MCM-defeating devices, affect the clearing of a channel and make it a time-consuming task.

(1) **(NR) (NMM)** Examples of MCM defeating devices are:

(a) arming delays;

(b) ship counters;

(c) mixing of mine types

b. Channels are normally established to coincide with routes, the centerline of the channel being identical to the line connecting the route positions. Channels will usually be marked by offset buoys, as shown in Figure 13-1.

c. **(NR) (NMM)** The details of ordering and executing MCM operations are given in ATP 24, for Q routes see AHP 7).

13050 SUPPORT OF MCM OPERATIONS

An MCM force will often need protection from a covering force. When operating in mined water, MCM forces are limited in their ability to maneuver in channels and avoiding action cannot be taken before the gear has been recovered. This makes the MCM force vulnerable to enemy attack. The covering force should be able to provide close antiair warfare protection for the MCM force and at the same time deny the approach of enemy surface forces. Warning should be issued in due time in order to enable the MCM force to take avoiding action. The OTC of the covering force will normally act in command relationship situation C.

The OTCs must ensure that there is a clear understanding between the two forces as to their relative movements, communications, tactical limitations, etc.

13060 TRANSIT OF SHIPS THROUGH MINED AREA

a. General Considerations. This article provides convoy commodores, OTCs, and individual units with instructions for maneuvering through mined waters.

(1) The responsibility for the safety of merchant shipping rests with the appropriate Operational Controlling Authority (OCA). The OCA of transiting units must decide whether merchant shipping will, or will not, transit mined areas. The decision to pass naval units through mined waters rests with their OTC. Convoy-commodores and OTCs of naval units must ensure that their masters/captains are informed about lead through procedures. The senior OTC of the naval forces afloat assigns tactical control to MCM forces in order to conduct the lead through phase. In the case of convoy independents, tactical control of the lead through operation is to be assigned to MCM- forces by the OCA. MCM authorities provide information related to the transit.

(2) It is important that the MCM tasking authority and the OCA of transiting units establish clear, reliable communications between themselves and their subordinate units at sea. Figure 13-2 shows the sources and responsibilities for the flow of information in situations that may arise when units transit mined areas.

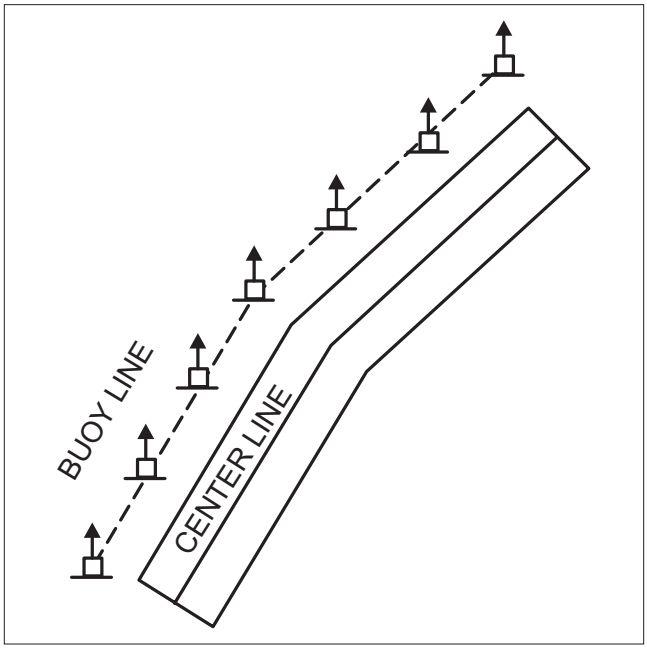


Figure 13-1. Normal Channel With Offset Buoys

(3) Units transiting a swept/hunted channel should keep station by true bearing from the lead unit, or navigate by radio direction finding (if available) or radar (if permitted by EMCON policy), in order to proceed on the centerline or on another track as ordered. Depending on sea state, visibility, method of navigation, maneuverability, and other characteristics of transiting units, one MCMV can lead up to four units.

(4) Orders are given by MCMVs, preferable by use of flaghoist or signal lamp; ships that follow acknowledge by the same means. Electronic emissions should be reduced to the absolute minimum as required by the tactical situation.

(5) MCMVs may be used to lead, but this should not preclude the use of other units that have suitably qualified personnel, such as pilots, or special radio direction finding equipment.

(6) It should be kept in mind that the shorter the distance between the ships in column, the less the danger from influence mines with regard to the mines intercount dormant period.

(7) In some MCM operations, units may have to transit the channel at specified intervals. In this case they will be warned in advance by the OTC of the MCM force.

b. Safety Measures and Preparations.

(NR) (NMM) Take action in accordance with paragraph 13033a.

(1) When a convoy is approaching:

(a) The Convoy Commodore must form his convoy into a single column formation. Intership spacing should be in accordance with paragraph 13060a(4), depending on sizes of the ships and the navigational facilities. As a general rule, intership spacing should not exceed 1,000 yards, depending on the sizes of the ships and the navigational facilities.

NOTES:

1. **MCM data will include:**
   - **(a) Channel position relative to Q route**
   - **(b) Channel width**
   - **(c) MCM tactical frequencies**
   - **(d) MCM units on task**
   - **(e) Amplifying information**
2. **TRANSITING UNITS' data must include:**
   - **(a) Number of units**
   - **(b) Names of units**
   - **(c) Approximate size**
   - **(d) Any maneuvering limitations**
   - **(e) Maximum draft**
   - **(f) ETA**
3. **ETA CHANGES will be required if transiting units are off their sailing schedule.**
4. **MCM tasking authority and OTC MCM may be united.**

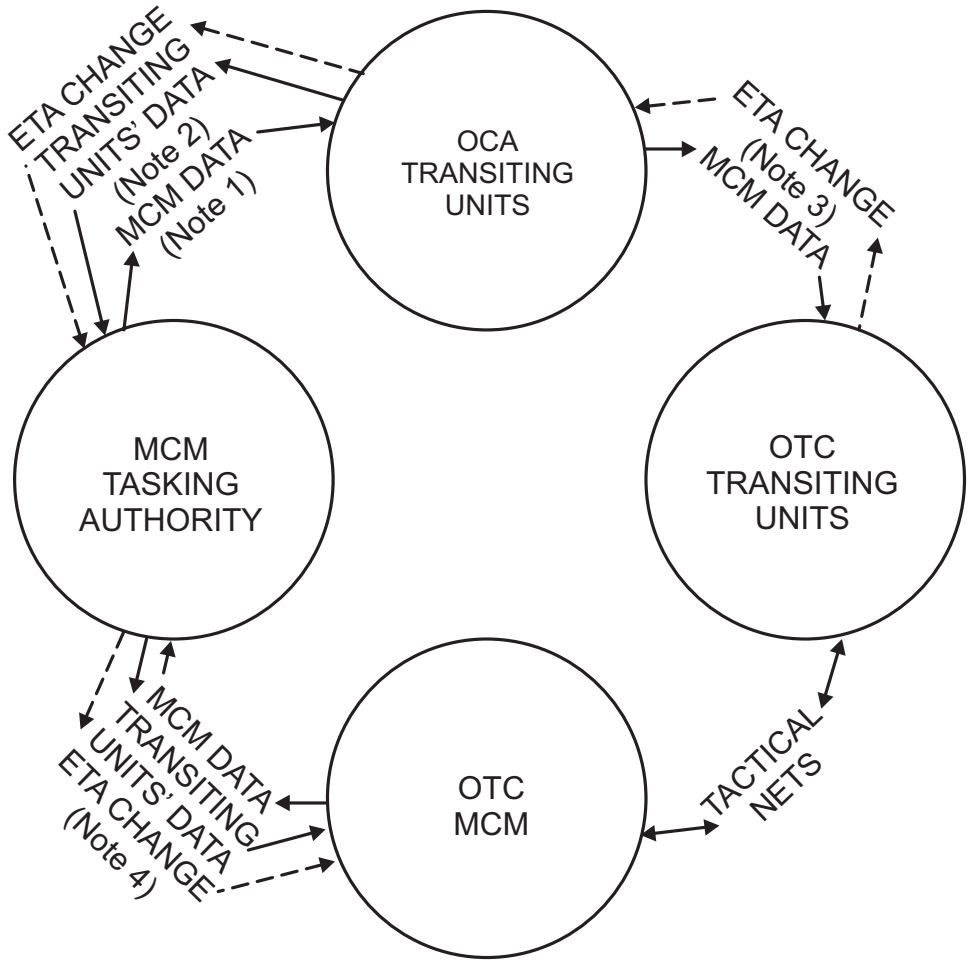


Figure 13-2. Information Flow for Transits of Mined Waters

(b) A naval force should pass in a single column formation at standard distance or less if possible.

NOTE

Other distances may be indicated by the OTC of the MCM force.

(2) If an entry/departure screen has to be established by escort forces, patrol sectors must be at least 500 yards off the mine danger area.

(3) If rendezvous with an LTV/MCM force is expected during darkness, the first unit to be led of the column is to show three white lights displaced vertically at her bow for identification purposes. The LTV will point the rendezvous position, showing a white light over red. If more than one LTV is employed, only the first LTV will show the lights mentioned. Other LTVs are to proceed to their assigned stations and to show those lights after arrival.

(a) **(NR) (NMM)** The first unit in the column shows three white lights.

(b) **(NR) (NMM)** The lead unit will show a white light over a red light.

(4) Proceed along the centerline (Figure 13-1) or along another indicated track, each unit navigating independently.

(5) The LTV only is to adjust speed to maintain the signaled distance (see paragraph 13060a(4)).

(6) The speed ordered should not be exceeded.

c. Situations. Table 13-1 provides a list of actions for transiting units that applies to situations involving:

(1) Mine danger area known/not known.

(2) Channels established/not established.

(3) MCM forces available/not available.

d. Responsibilities.

(1) Arrival Time. From 36 to 48 hours in advance of arrival, the OCA of the transiting unit shall:

(a) Inform the respective MCM tasking authority about the ETA and composition of a convoy/naval force that has to transit a certain channel.

(b) Inform the OTC of transiting units/Convoy Commodore about MCM data.

(c) **(NR) (NMM)** Using the Lead Through Information format of APP-11, this information should include valid Q-messages and NAVWARNs.

(2) MCM Tasking Authority. The MCM tasking authority shall:

(a) In accordance with the Lead Through Order, give the appropriate order to the OTC of the MCM force to execute the lead through operation.

(b) Provide information as shown by Figure 13-2.

Table 13-1. Actions for Transiting Units in Mine Danger Areas

Situation	LTV/MCM Forces	Transiting Units
ONE Mine danger area known and channel established, promulgated, and marked.	May or may not be available.	UNITS NEED NOT BE LED 1. Conform with instructions in the latest appropriate: (a) Q message (b) Routing/transit instructions (c) Channel information. (d) **(NR) (NMM)** SUBAREA WARN (e) **(NR) (NMM)** MERSHIP WARN 2. Comply with appropriate safety measures.
TWO Mine danger area being established, channel being established, and channel may be marked.	Available	UNITS MUST BE LED 1. BEFORE ARRIVAL at danger area or channel entrance: (a) OTC or Convoy Commodore set watch on MCM tactical frequency (HF/UHF), establish communications 4 to 2 hours before ETA, and pass relevant MCM operations information to units in company. (b) Keep OTC of MCM force informed of first unit's ETA. (c) Prepare to comply with appropriate safety measures. 2. AFTER ARRIVAL at channel entrance: (a) Comply with instructions from OTC of MCM force and LTV. (b) Maintain signaled distance on channel centerline or ordered track. (c) Comply with appropriate safety measures.
THREE Mine danger area not established and channel not established.	Available	SAME AS FOR SITUATION TWO
	Not available	TRANSITING UNITS NOT YET IN A MINED AREA 1. Consider diversion if permissible. 2. Comply with appropriate safety measures. 3. Inform the OCA. TRANSITING UNITS IN A MINE DANGER AREA 1. Continue transit. 2. Comply with appropriate safety measures. 3. Inform the OCA, if appropriate.
FOUR (NC) (NMM) Navigational assistance for submarines.	Available	SUBMARINE MUST BE LED Comply with paragraph 13061.

(3) **OTC of MCM Forces.** The OTC of MCM forces shall provide information in accordance with paragraph 13060.f, 4 hours (2 hours for coastal convoys) in advance. He may delegate this task to the LTV or MCMV that has been ordered to execute the leadthrough.

(4) The Lead Through Vessel (LTV). The lead LTV shall:

(a) Conduct the leadthrough operation.

(b) Ensure that ordered distances are maintained.

(c) Ensure that Vessels Transiting the Minefield (VTMs) maintain the ordered track or centerline.

e. Units Damaged by Mines. Units damaged by mine detonation and unable to proceed at the ordered speed should attempt to maneuver clear of the channel's centerline. In narrow and shallow channels, such as harbor entrances, heavily damaged or sinking units should be grounded outside the main channel.

f. Transit Instructions. A naval force, convoy, or independent unit about to be led through, or transiting a channel without a LTV, will be passed relevant instructions using the Leadthrough Transit Instructions format of APP-11; merchant vessels will use ATP 2, Vol. II.

13061 (NC) (NMM) TRANSIT OF SUBMARINES THROUGH MINED AREAS

a. General Remarks.

(1) Purpose. The purpose of this article is to provide the commanding officer of a submarine with instructions for maneuvering in mine danger areas. The prescribed procedure can also be applied for a submarine passage between minefields, through an established channel in an enemy minefield or a gap in a friendly minefield, or in waters difficult to navigate.

(2) If a Leadthrough Operation is Ordered. The OTC of the MCM force is required in accordance with paragraph 13060 to send the Transit Instructions message to the SUBOPAUTH, who in due time will promulgate the message. The format must be amplified by the SUBOPAUTH/OTC of the MCM force by a new paragraph, as follows:

F. ADDITIONAL INSTRUCTIONS FOR SUBMARINES
1. Rendezvous area
2. Rendezvous period/alternate rendezvous period
3. Danrunner will be unit indicated
4. Distance between danrunner and LTV, in yards
5. Communication instructions (frequencies; UWT available/not available).

(3) The Principle for a Leadthrough Operation. This should be to conceal the initial rendezvous between submarine and LTV from the enemy. All measures that would disclose the operation must be avoided. Only units equipped with underwater telephone (UWT) are suitable as LTVs/danrunners for submerged submarines.

(4) Channel. The channel has to be established in accordance with the appropriate mine warfare publications. All positions in the channel at which a change of course is required must be marked by either a navigational buoy or a danbuoy.

NOTE

A typical MCM channel is shown in Figure 13-1.

(5) Responsibility for Submarine Safety. This rests with the commanding officer of the submarine. The decisions whether to pass or not/whether to pass surfaced or submerged is also up to the commanding officer of the submarine. It is of paramount importance that submarine and LTV act in agreement and that mutual information does not create any doubts about the actions to be taken. Tactical control, from the rendezvous until the end of the passage, is assigned to the OTC of the MCM forces/commanding officer of the LTV.

(6) Identification of Lead Through Vessels (LTVs). As long as the approaching submarine has not positively identified its LTV, it remains absolutely covert. After identification, the submarine has to establish communications with the LTV by appropriate means, taking into account the secrecy of the leadthrough. The LTV has to act in accordance with paragraph b.(2)(a) below, up to the moment when the submarine starts to communicate. The danrunner should mark the channel entrance in a position very close to the first datum/danbuoy, and subsequently proceed on the datum line, taking up position abeam of the LTV.

b. The Lead Through.

(1) Initial Rendezvous/Rendezvous Area. A geographical rendezvous area (ideally circular with a radius of 2 nm) should be established well offset from the channel/gap entrance. The actual location and shape of the rendezvous area depend on various factors, such as time available, tactical situations, topography, and environmental conditions. Any information in addition to that exchanged prior to the leadthrough. listed in the Transit Instructions message should be

(2) Establishing Rendezvous.

(a) Action to be taken by LTV.

i. Be in rendezvous area during rendezvous period/alternate rendezvous period.

ii. Keep watch on UWT, UHF, and VHF every 15 minutes.

iii. Cavitate for 3 to 5 minutes in rendezvous period.

iv. If necessary, after communications are established, pass to the submarine additional information/orders, and any alterations to the original plan, with reference to the Transit Instructions message.

v. When the submarine reports In station, proceed at speed previously ordered.

NOTE

The LTV should endeavor by all suitable means to assist the submarine during the difficult identification phase.

(b) Action to be taken by the submarine.

i. Approach rendezvous area.

ii. Identify LTV by appropriate means.

iii. Establish communication with the LTV on UWT/UHF using authentication.

iv. Take station astern of the LTV.

v. Inform the LTV whether it will transit submerged, at periscope depth, or surfaced.

vi. Comply with transit instructions received.

vii. Report when In station.

viii. Action to be taken on failure to rendezvous. OTC of MCM forces to report to OPCON/ SUBOPAUTH.

(3) Responsibilities During Transit.

(a) Responsibilities of LTV.

i. Provide the submarine with up-to-date information:

- When it enters/leaves the swept

- On altering course and/or speed.

- If there is any change to previous instructions.

- Action to be taken in the event of attack.

ii. Provide the submarine with an up-to-date position:

- When it leaves the channel/gap/safety lane.

- When it is released.

iii. Assist the submarine in maintaining station, using all suitable means, such as:

- Showing a dimmed stern light and top light at night.

- Using a danrunner (Situation ONE/TWO) as UWT relay station in order to assist the submarine in measuring the distance to the LTV, if the latter is unable to keep distance.

iv. Report accomplishment of mission to SUBOPAUTH by OPCON.

(b) Responsibilities of the Submarine.

i. Maintain station ordered.

ii. Inform the LTV whether its intention is to transit surfaced, at periscope depth, or submerged during the passage, if different from previous intentions.

c. Independent Transit. The tactical situation or the non-availability of LTVs may force a submarine to transit a well-marked channel or a mine free gap (Situation ONE) without a LTV. The SUBOPAUTH will order such independent transits of a submarine.

(1) Responsibilities of the SUBOPAUTH.

(a) Transmit Transit Instructions message to submarine in due time.

(b) Ensure own forces are informed about submarine movement.

(2) Responsibilities of Submarine.

(a) Act in accordance with safety measures and procedures prescribed in this chapter.

(b) Request activation of navigational lights in accordance with AHP 3, if feasible.

(c) Report ETA channel/gap entrance if possible.

d. Submarine Capabilities in Lead Through Operations.

(1) Submerged State.

(a) The submarine is capable of:

i. Taking a bearing on the LTV:

- By hydrophone array.

- By mine detection sonar.

ii. Measuring the distance of the LTV:

- By angle measuring using hydrophone array. The distance between the submarine and the LTV is calculated by measuring the angle between danrunner and LTV; e.g., if the distance ordered is 300 yards, this angle is to be 70 at a distance of 900 yards between danrunner and LTV. (See Figure 13-3.)

- By mine detection sonar.

(2) Periscope Depth. The submarine can:

(a) Take a bearing on the LTV by:

i. Hydrophone array.

ii. Mine detection sonar.

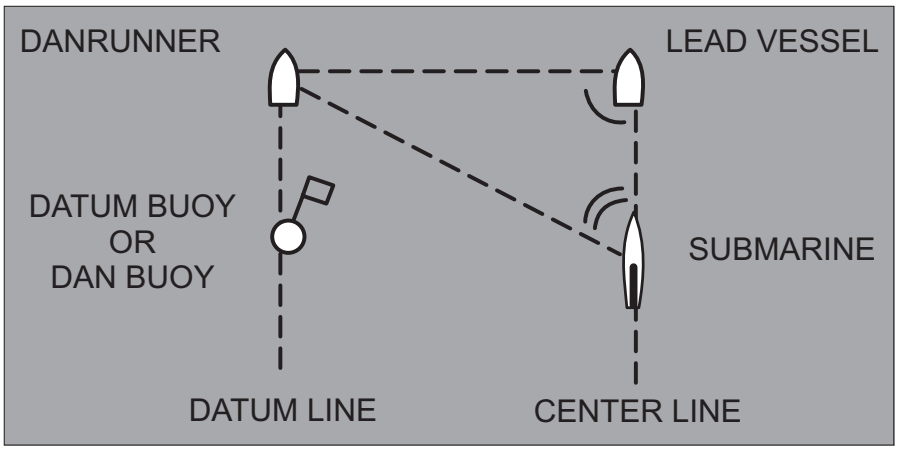
iii. Radar.

iv. Periscope.

(b) Measure the distance of the LTV by:

i. Angle measuring by hydrophone array as shown above.

ii. Mine detection sonar.



(NATO-CONFIDENTIAL) (NMM)

Figure 13-3. (NU) (NMM) Measuring the Distance of the Lead Vessel

iii. Radar.

iv. Periscope.

(3) Surfaced State. The submarine can:

(a) Take a bearing on the LTV by:

i. Hydrophone array.

ii. Radar.

iii. Visual means.

(b) Measure the distance of the LTV by:

i. Angle measuring by hydrophone array as shown above.

ii. Radar.

iii. Visual means.

(4) Communications.

(a) The submarine will use:

i. UWT as the primary communication system.

ii. UHF as ordered.

(b) In case of interference with UWT traffic by the wake of the LTV, the danrunner has to be used as relay station. If this is not possible, switch to UHF frequency.

13062 EVACUATION OF ANCHORAGES

a. Passive and Active Mine Countermeasures. The passive and active mine countermeasures to protect merchant and naval ships from the danger of mines in anchorages, and measures to move those units to safe waters, are covered by the term, evacuation.

b. Passive Mine Countermeasures. Ships caught in an anchorage by an enemy surprise mining campaign should remain there until further orders, initiating passive mine countermeasures immediately.

c. Anchorage Standing Orders. All units will receive Anchorage Standing Orders (in accordance with Chapter 4 of ATP 6, Vol. I), for information about procedures in a mined area.

d. OPCON Authority. The OPCON authority will detach MCMVs, if available, to conduct active mine countermeasures, preferably:

(1) Clearance diving in the vicinity of ships at anchor.

(2) Minehunting in link routes, exit channels, and close to ships at anchor.

(3) Minesweeping in channels where they are not endangering units at anchor.

e. No MCM Vessels Available. If no MCMVs are available, the OPCON authority will signal further intentions.

13063 REPORTING MINE EXPLOSIONS/DETECTIONS

Every ship detonating a mine or detecting a moored mine or a drifting mine case, whether damaged or not, shall make a mine detection report (MW signal, (see ATP 1, Vol. II) to the OPCON authority informing the OTC of the MCM force if in contact with that force. If doubt exists as to which unit activated a particular mine, the nearest ship is to report. The report does not substitute for any other report requested.

(NR) (NMM) A structured mine detection report (MINEDETREP message format) can be found in APP-11.

CHAPTER 14

Force Protection in Harbor

14000 INTRODUCTION

In times of tension, as well as in war, ships at anchor or at berths are liable to clandestine attack. Such attack may take various forms (e.g., car bombs, improvised explosive devices (EOD), underwater swimmers or floating mines). It is important that provision be made within a force, as well as in individual ships, for an organization to coordinate defense and establish degrees of readiness against this threat. Command responsibilities are in Chapter 1. All operations involving divers, including bottom search operations, must be conducted in accordance with ADivP-1, Allied Guide to Diving Operations.

14010 (NR) (NMM) RESPONSIBILITY

The commanding officer of a ship (the OTC in the case of a group of ships) is responsible for making all necessary arrangements to ensure the safety of the ship(s) while at anchor or in harbour. He should liaise closely with the local (military) authorities.

14011 SECURITY ALERT STATES

a. The OTC or the operational commander ashore may order the following security alert states **(NR) (NMM)** (IAW AJP-2.2).

(1) Alert state ALPHA.

(NR) (NMM) There is a general threat of possible terrorist activity against military installations and personnel, the nature and extent of which are unpredictable, but the circumstances do not justify the full implementation of the measures of Alert State BRAVO. The measures in this alert state must be capable of being maintained indefinitely.

(2) Alert State BRAVO.

(NR) (NMM) There is an increased and more predictable threat of terrorist activity. It must be possible to maintain this state for a period of weeks without causing undue hardship, without affecting operational capability, and without aggravating relations with local authorities.

(3) Alert State CHARLIE.

(NR) (NMM) This applies when an incident occurs or when intelligence is received which indicates that some form of terrorist action against military installations and personnel is an imminent possibility. The implementation of this measure for more than a short period will probably create hardship and will affect the peacetime activities of the unit and its personnel.

(4) Alert State DELTA.

(NR) (NMM) This applies in the immediate area where a terrorist attack has taken place or when intelligence has been received that terrorist action against a specific location or person is likely. Normally this alert state is issued as a localised warning.

b. The security alert states and/or selected security measures may be ordered by the appropriate signals from ATP-1, Vol. II.

14012 — 14019 SPARE

14020 DEFENSE AGAINST ATTACK BY UNDERWATER SWIMMERS

14021 (NR) (NMM) COUNTERMEASURES

The following countermeasures should be taken whenever a threat of attack by underwater swimmers is deemed to exist:

a. Sentries. Armed sentries (equipped with directional lanterns at night) should be at the bow, amidships, and at the stern of each ship. They should be briefed to keep a good lookout near the ship's side, particularly in the vulnerable area around the propellers and rudders, for swimmers or any suspicious or unusual activity (e.g., bubbles, flotsam, or local boats passing close).

b. Illumination. Illumination policy should be:

(1) Ships darkened.

(2) Ships anchored clear of shore lights to avoid silhouetting.

(3) Directional lanterns only to be used to investigate suspicious activity.

(4) Underwater illumination only to be used in vulnerable area during a defensive search or when it is known that an attack is in progress.

(5) Diver-borne lights to be used without restriction during underwater searches.

c. Radar. Radars should be employed and the sea area around the ship should be kept clear of floating material to minimize false alerts. Tracks should be maintained of all contacts, including friendly boats patroling the area.

d. Sonar. High-power active sonars should be employed to deter swimmers from closing the ship. Passive sonars and underwater telephone (UWT) may give warning of approaching swimmers and small craft.

e. Boat Patrols. Boats equipped with portable radio sets and carrying a supply of explosive scare charges should be used to patrol the area around the ships. Boats should also be fitted with towed obstructors (e.g., barbed wire, grapnels) to increase the danger to swimmers.

f. Scare Charges. Charges of approximately 1-pound weight should be dropped from boats and thrown well clear of the side of ship(s) at irregular intervals. The rate of exploding charges will vary, depending on degree of threat and size of ship (e.g., destroyer at AWKWARD State 1 approximately 30 charges per hour).

g. Ship's Propellers. Propellers should be turned ahead or astern at random intervals to hamper the operations of enemy swimmers.

h. Helicopters. Helicopters are a most effective unit for use in AWKWARD. The OTC should provide a flight program to cover the three AWKWARD states.

14022 ORGANIZATION

The commanding officer of a ship (the OTC in the case of a group of ships) shall contact the operational commander ashore (or the local (military) authorities) to obtain the following material and information if not already held:

a. Chart showing fixed targets and facilities in the base (nets and booms, dry docks, and so forth) and their identification symbols.

b. Chart showing the defense arrangements and the location of seaward defense weapons and facilities.

c. Chart showing berths and anchor berths assigned to each ship.

d. Charts showing suitable positions for beaching ships.

e. Chart showing the track of permanent or occasional patrols by local boats.

f. Chart showing the location and sectors assigned to the local lookout stations.

g. **(NC) (NMM)** Rules governing the use of anti-swimmer charges.

h. **(NC) (NMM)** Local communication plan.

i. **(NC) (NMM)** A flight program for available helicopters.

j. Countermeasures to be adopted.
(NC) (NMM) In particular:

(1) The use of radar, sonar, and hydrophone by ships.

(2) The times at which scare charges are to be dropped and the number of charges.

(3) The intentions for silent routine.

(4) Search of ship's bottom and adjacent sea bed by shipborne divers, times of search, and number of divers employed by each ship. Searches should be conducted at random intervals.

(5) The numbers of boats to be provided by ships for the surveillance of the waters surrounding them.

(6) The location of ships's lookout stations and assigned sectors to integrate with the sectors covered by the local stations.

(7) The channels available for quick communications with the local operational commander ashore, or the local military authorities.

(8) Area lighting conditions and recommendations.

14023 STATES OF READINESS

States of readiness which may be ordered either by the OTC of an anchorage or by the operational commander ashore are shown below:

(These states are used by Operation AWKWARD)

State	When Ordered
1	1. Actual evidence of an attack has been obtained (e.g., sighting of swimmers or their bubble tracks). 2. Intelligence reports attack imminent.
2	1. In ports known to contain hostile elements. 2. Intelligence reports attack probable at some unspecified time (e.g., not imminent).
3	On all occasions when ships may be subjected to clandestine attack but which are not covered by States 1 or 2.

14024 (NC) (NMM) ACTION TO BE TAKEN BY INDIVIDUAL SHIPS WHEN OPERATION AWKWARD IS ORDERED

a. State 3.

(1) Have scare charges readily available.

(2) Assume appropriate degree of damage control readiness.

(3) Retain on board one watch of divers sufficient to carry out a ship's bottom search.

(4) Rig bottom lines.

(5) Post sentries as required.

(6) Maintain normal harbor communications.

(7) Darken ship.

(8) Prepare diving safety boat if available.

b. State 2.

(1) Each ship drop scare charges at irregular intervals. (Not more than 10 charges should be dropped each hour.)

(2) Assume second or third degree of damage control readiness as appropriate.

(3) Retain on board sufficient divers to carry out a ship's bottom search.

(4) Come to 1 hour's notice.

(5) Post further sentries.

(6) Rig bottom lines if not already rigged. (Bottom lines are lines passing from one side of the ship to the other, beneath the hull, for the assistance of divers.)

(7) Send away one boat to carry out irregular patrols in the vicinity of the ship.

(8) Set watch on the main harbor intercommunications net and/or appropriate local communications net as laid down in local orders. Set visual signaling (V/S) watch.

(9) Darken ship.

(10) Helicopter, if available, airborne to carry out:

(a) Visual search of coastline and breakwaters.

(b) Visual search for swimmers.

(c) Identification of boats.

NOTE

Where underwater illuminations are required by local orders and are known to be effective, they should be rigged at this stage.

c. State 1.

(1) Commence dropping scare charges, irregularly spaced and at random intervals.

(2) Darken ship.

(3) Assume first degree of damage control readiness.

(4) Send boats on irregular patrols in vicinity of the ship.

(5) Come to immediate notice.

(6) Ships move propellers slow astern (or ahead if mooring prevents moving astern).

(7) In ships equipped with high-powered sonar, all-around transmissions should be carried out and, in sets so fitted, range scale and/or pulse length should be changed at random as frequently as possible.

(8) Be ready to commence search of ship's hull within 5 minutes.

(9) Set watch on main harbor intercommunications net and/or appropriate local communications net as laid down in local orders. Set visual signaling (V/S) watch.

(10) If there are definite indications of attack on own ship:

(a) Inform all ships.

(b) Stop firing scare charges and cease sonar emissions from own ship prior to divers entering the water.

(c) Warn all ships to stop firing scare charges within 200 yards of ship being searched and to stop sonar emissions which may prove dangerous to own divers.

(d) Divers commence bottom search schemes as appropriate.

(e) Request assistance of explosive ordnance disposal team (EODT) or underwater demolition team (UDT).

NOTE

Charges of explosive weight greater than 1 pound should not be fired within 400 yards of ships operating divers.

(11) Helicopter, if available, airborne to carry out:

(a) Visual search of coastline and breakwaters.

(b) Visual search for swimmers.

(c) Identification of boats.

14025 — 14029 SPARE

14030 ACTION AFTER ATTACK

In warships, the search for limpet mines is the responsibility of the ships' own divers. Any limpets found are to be dealt with by an officer qualified in rendering mines safe if such an officer is available. If no such officer is available, one of the ship's officers must undertake this task in accordance with instructions based on available knowledge of enemy limpet mines. Clearing limpets from the hulls of merchant ships is the responsibility of EODTs. In either case, speed is essential; every effort is to be made to find and remove or render safe a limpet mine after it is discovered on any part of the ship as soon as possible. Ships are to take all appropriate measures to minimize the effect of an explosion should such occur before a limpet can be removed or rendered safe.

ANNEX A

List of Acronyms

A

AAR. Air-to-air refueling

AAW (C&R). Combined AAW coordination and reporting voice circuit

AC. Air coordinator

ACM. Acoustic countermeasures

ACU. Air control unit

AEW. Airborne early warning

AOO. Area of operations

APM. Acoustic protective measures

ARCN. Air reporting and control net

AREC. Air resource element coordinator

ARM. Antiradiation missile

AS. Associated support

ASAG. Air surface action group

ASMD. Antiship missile defense

ASSM. Antisurface ship missile

ASW. Antisubmarine warfare

ASWC. Antisubmarine warfare commander

ASWFA. ASW free area

AW. Acoustic warfare

AWNIS. Allied Worldwide Navigation Information System

AWSM. Acoustic warfare support measures

C

C2. Command and control

CAP. Combat air patrol

CATAS. Critical angle towed array system

CCOI. Critical contacts of interest

CEO. Convoy escort oiler

CHOP. Change of operational control

CMA. Contact motion analysis

COI. Contacts of interest

COMINT. Communications intelligence

COMPLAN. Communication plan

COMSEC. Communications security

CONOPS. Concept of operations

COP. Common operating picture

CPA. Closest point of approach.

CRG. Communications reporting gate

CRO. Crisis response operations

CRS. Crisis response shipping

CWC. Composite warfare commander

D

DF. Direction finding

DLA. Data link address.

DLI. Deck-launched interceptor.

DLRP. Data link reference point

DME. Distance measuring equipment

DPC. Defence Planning Committee

DS. Direct support

DTAS. Depressed towed array system

E

EAW. Electronic and acoustic warfare

ECM. Electronic countermeasures

ELINT. Electronic intelligence

EMC. Electromagnetic compatibility

EMCON. Emission control

EMI. Electromagnetic interference

EMSEC. Emission security

EOB. Electronic order of battle

EP. Emission policy

EPM. Electronic protective measures

ER. Extended range

ESM. Electronic warfare support measures

ESOR. Emergency standoff range

ETA. Estimated time of arrival

ETD. Estimated time of departure

EW. Electronic warfare

EWC. Electronic warfare coordinator

EWCC. Electronic warfare coordination cell

F

FEZ. Fighter engagement zone

FL. Flight level

FLRP. Fighter link reference point

FNCS. Full naval control of shipping

FTC - A. Force track coordinator (air)

FTC - S. Force track coordinator (surface)

FTC - SS. Force track coordinator (subsurface)

FW. Fixed wing

H

HAG. Helicopter action group

HEC. Helicopter element coordinator

HOJ. Home-on jam

HRP. Helicopter reference point

HVU. High value unit

I

ICAO. International Civil Aeronautical Organization

IFM. Instantaneous frequency measurements

IFR. Instrument flight rules

IMC. Instrument meteorological conditions

INS. Inertial navigation system

IR. Infrared

ISR. Identification safety range

J

JAAWSC. Joint AAW support and coordination

JTAA. Joint action area

L

LFAS. Low frequency active sonar

LPI. Low probability of intercept

LRI. Limited range intercept

LTO. Leadthrough operation

LTV. Leadthrough vessel

M

MACA. Maritime air control authority

MAD. Magnetic anomaly detector

MADVEC. MAD verification run

MATELO. Maritime Air Communications Organization

MCC. Maritime component commander

MCM. Mine countermeasures

MEZ. Missile engagement zone

MHN. Moving haven

MHQ. Maritime headquarters

MIJI. Meaconing, intrusion, jamming and interference

MIO. Maritime interdiction operations

MIOC. Maritime interdiction operations commander

MLA. Mean line of advance

MPA. Maritime patrol aircraft

MRR. Minimum risk route

MTMS. Maritime Tactical Message System

MWC. Mine warfare coordinator

N

NAC. North Atlantic Council

NCAGS. Naval co-operation and guidance for shipping

NCAGS CDR. Naval co-operation and guidance for shipping commander

NCAGS LO. Naval co-operation and guidance for shipping liaison officer

NCAGSORG. Naval co-operation and guidance for shipping organization

NCS. Naval control of shipping; net control station

NCSO. Naval control of shipping officer

NCSORG. Naval control of shipping organization

NCSRC. Naval control of shipping region commander

NEDB. NATO Emitter Data Base

nm. nautical miles

NSA. National shipping authority

NSC. NATO Shipping Centre

NSCC. NATO Surveillance Coordination Center

O

OCA. Operational control authority

OPCON. Operational control

OPLAN. Operation plan

OSOR. Operational standoff range

OSSC. On-scene surveillance coordinator

OTHT. Over-the-horizon targeting

OTSR. Optimum track ship routing

P

PIM. Position and intended movement

POB. Persons on board

PRF. Pulse repetition frequency

PRI. Prevention of interference

R

RAS. Replenishment at sea

RMP. Recognized maritime picture

RNCS. Regional naval control of shipping

ROE. Rules of Engagement

RSI. Radiation status indicator

RTC. Reduced tactical COMPLAN

RTF. Return to force

RW. Rotary wing

S

SAA. Submarine action area

SAAWC. Sector antiair warfare commander

SAC. Scene-of-action commander

SAG. Surface action group

SAM. Surface-to-air missile

SAR. Search and rescue

SAT. Submarine advisory team

SATCOM. Satellite communication

SAU. Search and attack unit

SC. Screen commander; strategic commander

SCP. Shipping co-operation point

SEAC. Submarine Exercise Area Coordinator

SEC. Submarine element coordinator

SGSA. Submarine-generated search area

SIGINT. Signals intelligence

SLOC. Sea line of communications

SLOT. Submarine launched one-way tactical (buoy)

SMAA. Submarine Movement Advisory Authority

SO NCAGS. Staff officer, naval co-operation and guidance for shipping

SOA. Speed of advance

SOCA. Submarine operations coordinating authority

SOG. Speed made good over ground

SPA. Submarine patrol area

SRA. Shipping risk area

SSL. Submarine safety lane

STW. Speed made good over water

SUBOPAUTH. Submarine operating authority

SURTAS. Surveillance towed array system

SUS. Suspect vessels

T

TACOM. Tactical command.

TACON. Tactical control

TACTAS. Tactical towed array system

TDA. Torpedo danger area

TDS. Tactical display system

TDZ. Torpedo danger zone

TEM. Target engagement message

TF. Task force

TG. Task group

TGSA. Task Group Submarine Area

V

VDS. Variable depth sonar

VECTAC. Vectored attack

VERTREP. Vertical replenishment

VFR. Visual flight rules

VMC. Visual meteorological conditions

V/S. Visual signaling

VSW MCM. Very shallow water mine countermeasures

VTM. Vessel transiting the minefield

W

WSM. Water space management

GLOSSARY

Definitions or portions thereof that appear in AAP 6 are indicated by italics.

A

abeam replenishment. *The transfer at sea of personnel and/or supplies by rigs between two or more ships proceeding side by side.*

acknowledgment. *A message from the addressee informing the originator that his communication has been received and understood.*

acoustic countermeasures (ACM). That division of AW involving actions taken to prevent or reduce an enemy's effective use of the underwater acoustic spectrum. ACM involve intentional underwater acoustic emissions for deception or jamming.

acoustic protective measures (APM). That division of AW involving actions taken to ensure friendly effective use of the underwater acoustic spectrum, despite the enemy's use of acoustic energy. APM involve anti-AWSM and anti-ACM, and may not involve underwater acoustic emissions.

acoustic warfare (AW). Military action to use the underwater acoustic spectrum to the advantage of friendly forces by exploiting enemy emissions and controlling friendly emissions.

acoustic warfare support measures (AWSM). That division of AW involving actions to search for, intercept, and identify radiated underwater acoustic energy for the purpose of exploiting such radiations. The use of AWSM involves no intentional underwater acoustic emissions and is generally not detectable by the enemy.

action. The employment of one or more weapon systems to counter a threat.

active EPM. *Detectable measures, such as altering transmitter parameters as necessary, to ensure effective friendly use of the electromagnetic spectrum.*

active mine countermeasures. Countermeasures directed toward the destruction of mines after they have been laid — including minesweeping, mine hunting, and explosive ordnance disposal (EOD) operations.

advance. The distance gained by a ship in the direction of the original course while turning.

airborne alert. *A state of aircraft readiness wherein combat-equipped aircraft are airborne and ready for immediate reaction.*

airborne early warning (AEW). Air surveillance provided by AEW aircraft equipped with search and height-finding radar and communications equipment.

air controller. *An individual especially trained for and assigned the duty of the control (by use of radio, radar, and other means) of such aircraft as may be allotted to him for operation within his area.*

air corridor. *Restricted air routes of travel specified for use by friendly aircraft and established for the purpose of preventing friendly aircraft from being fired on by friendly forces.*

aircraft control unit. *A unit with facilities and personnel, including controllers, for conducting aircraft control and which exercises tactical control of aircraft or a unit(s).*

aircraft section. The basic air tactical unit consisting of two aircraft of the same type.

aircraft squadron. An administrative or tactical organization normally but not necessarily composed of aircraft of the same type.

air picket. *An early warning aircraft positioned primarily to detect, report, and track approaching enemy aircraft or missiles and to control intercepts*.

air resource element coordinator (AREC). The officer who is assigned responsibility for coordinating the employment of organic air assets other than those assigned to the helicopter element coordinator.

air surface action group (ASAG). A unit comprised of two or more aircraft of the same type assigned to counter a particular surface threat (when only helicopters are used, it is known as a HAG).

air surface zone. *A restricted area established for the purpose of preventing friendly surface vessels and aircraft from being fired upon by friendly forces and for permitting antisubmarine operations, unrestricted by the operation of friendly submarines*.

air-to-air refueling (AAR) towline. The line along which a tanker aircraft will be stationed for the purpose of refueling combat aircraft.

airway. *A control area or portion thereof established in the form of a corridor marked with radio navigational aids*.

alert state. The maximum time in minutes required to bring an aircraft or weapons system (or part of it) to immediate availability.

alongside replenishment. (See abeam replenishment.)

altitude. *The vertical distance of a level, a point, or an object considered as a point, measured from mean sea level*.

antiair warfare area. An area prescribed by the OTC which is kept under constant surveillance and within which any air threat is opposed.

antiair warfare axis. A reference line extending from force center (ZZ) in the direction of a probable air threat (or North, when the direction of the threat is indeterminate).

antisubmarine action. *An operation by one or more antisubmarine ships, submarines or aircraft, or a combination thereof, against a particular enemy submarine.*

antisubmarine patrol. *The systematic and continuing investigation of an area or along a line to detect or hamper submarines, used when the direction of submarine movement can be established*.

antisubmarine search. *The systematic investigation of a particular area for the purpose of locating a submarine known or suspected to be somewhere in the area*.

antisubmarine warfare commander (ASWC). The officer delegated some or all of the OTC's detailed responsibilities for antisubmarine warfare, and granted the tactical control authority to accomplish the associated missions and tasked to carry out those responsibilities. In ASW operations with SSN(DS) in the direct support role, the ASWC is that officer who has tactical control of the ASW assets, including the SSN(DS).

antisubmarine warfare free area. *In naval warfare, a waterspace management area in which no friendly submarines are operating and in which there are no restrictions on the use of antisubmarine weapons.*

antisurface ship missile (ASSM). Any missile (ASM, SASS, SSM, USM) used in the role of attacking surface units.

approach corridor. A safety corridor established for direct return of friendly aircraft through the vital area, including missile engagement zones if necessary.

approach sector. A safety sector more flexible than an approach corridor established for direct return of friendly aircraft through the vital area, including missile engagement zones if necessary, and normally designated in conjunction with the stationing in the sector of a tacan-equipped approach control picket.

area operations. *In maritime usage, operations conducted in a geographical area, not related to the protection of a specific force.*

armed mine. *A mine from which all safety devices have been withdrawn and, after laying, all automatic safety features and/or arming delay devices have been operated. Such a mine is ready to be actuated after receipt of a target signal, influence or contact*.

associated support. *In naval usage, operations in which a designated unit operates independently of a specified task force or group, but is tasked to provide contact information to, receive intelligence from, and, if authorized, to cooperate and coordinate operations with the supported force. Tactical control of the unit remains with the assigning authority who coordinates tasking and movement of the unit in response to the requirements of the supported force commander.*

attack carrier air wing. Two or more aircraft squadrons formed under one command for administration and tactical control of operations from a carrier.

authentication. *A security measure designed to protect a communication system against fraudulent transmissions*.

authority. The person vested with the power to make decisions and issue orders; also, the individual power to make decisions and issue relative orders imposing those decisions — such power may be limited in scope, time, and location. Authority automatically confers the responsibility to carry out assigned tasks and report results to the assigning authority.

axis. A reference line originating at formation or disposition center used for stationing units or formations respectively.

azimuth angle. *An angle measured clockwise in the horizontal plane between a reference direction and any other line*.

B

barrier combat air patrol. A patrol of fighter aircraft employed between a force and an objective area as a barrier across the probable direction of enemy attack. Used as far from the force as control conditions permit, to give added protection against raids along the most direct approach routes.

barrier line. The line formed by a series of static devices or mobile units arranged for the purpose of detecting, denying passage to, or destroying enemy submarines.

base course. A reference course or direction desired to be made good when evasive steering is being carried out.

base speed. The speed resulting along the base course when evasive steering is being carried out.

bearing. *The horizontal angle measured clockwise from a reference direction to a specified direction*.

blind bombing zone. *A restricted area (air, land, or sea) established for the purpose of permitting air operations unrestricted by the operations or possible attack of friendly forces.*

bomb lines. Lines designated over land areas by ground forces which can be identified easily by terrain features in order to delimit attacks by friendly aircraft.

brevity code. *A code which provides no security but which has as its sole purpose the shortening of messages rather than the concealment of content*.

BULLPEN (NC) (NMM). Code word for a submarine-generated search area (SGSA). See definition for SGSA.

C

cardinal points. The directions North, South, East, and West.

carrier air group. *A group of aircraft squadrons placed under a single command for administrative and tactical control of operations from an aircraft carrier*.

cavitation speed. The speed for an individual ship at which propeller blade cavitation is the predominant factor in the ship's acoustic signature.

CCG. The grid (Cartesian coordinate) used for rapid reporting of position in a form compatible with ADP systems (see Chapter 2 for detailed description).

chaff. *Strips of frequency-cut metal foil, wire, or metallized glass fibre used to reflect electromagnetic energy, usually dropped from aircraft or expelled from shells or rockets as a radar countermeasure.*

chain of command. *The succession of commanding officers from a superior to a subordinate through which command is exercised*. The chain of command establishes the interdependencies which exist at various levels between the superior and his subordinates. Command functions may be exercised at any one of these levels. The organization (task or type) adopted for the forces employed automatically defines the chain of command.

chainsaw. A two-phase AAW tactic designed to provide threat detection and engagement at extended ranges from the Battle Group.

change of operational control (CHOP). *The date and time (Greenwich Mean Time/Greenwich Civil Time) at which the responsibility for operational control of a force or unit passes from one operational control authority to another*.

check point (aircraft). *A geographical location on land or water above which the position of an aircraft in flight may be determined by observation or by electronic means*.

check-sum digits. The summation of the numbers in positions, courses, speeds, and times to avoid confusion caused by errors in transmission of RATT signals.

circular disposition. A tactical arrangement of two or more formations stationed on concentric circles and oriented clockwise from a disposition axis.

circular formation. A tactical arrangement of units stationed on concentric circles and oriented clockwise from a formation axis to provide flexibility of maneuver while at the same time retaining protection from air and subsurface threats.

close ASW action (NC) (NMM). An action in which one or more ASW units attempt to engage an enemy submarine within 8,000 yards.

code word. *A word which has been assigned a classification and a classified meaning to safeguard intentions and information regarding a classified plan or operation*.

column. A line in which ships form directly ahead or astern of the line guide.

combat air patrol (CAP). *An aircraft patrol provided over an objective area, the force protected, the critical area of a combat zone, or in an air defence area, for the purpose of intercepting and destroying hostile aircraft before they reach their targets*.

command. *The authority vested in an individual of the armed forces for the direction, coordination, and control of military forces*.

command system. The command system is formed by the chain of command and includes the means necessary to distribute orders and collect, evaluate, and disseminate information.

communications intelligence (COMINT). *Intelligence derived from electromagnetic communications and communications systems by other than intended recipients or users.*

composite warfare commander (CWC). That officer to whom the officer in tactical command has assigned some or all of his authority and responsibilities for the overall direction and control of the defense of his force.

confusion. Measures taken to make an enemy's target identification and selection more difficult.

consolidation. The transfer of all types of cargo between replenishment ships to enable some of them to be emptied so that they can return to base or reload.

contact lost. *A target tracking term used to signify that a target believed to be still within sensor coverage is temporarily lost but the termination of track plotting is not warranted*.

contact mine. *A mine detonated by physical contact*.

contact report. *A report indicating any detection of the enemy.*

control. *That authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, which encompasses the responsibility for implementing orders or directives. All or part of this authority may be transferred or delegated.*

control point (aircraft). A position usually marked by an identifiable object which is given a name or number and used as an aid to navigation or control of aircraft.

control ship. The ship in a replenishment unit that controls the operation.

convergence zone. The annular zone, which occurs in the deep ocean, where spread sound rays refracted from the depths arrive concentrated near the surface. The repeated occurrence of these zones as concentric annuli to several hundred miles from the sound source depends on the refraction of sound rays at depth and the reflection of these rays at the surface.

convoy. *A number of merchant ships or naval auxiliaries, or both, usually escorted by warships and/or aircraft, or a single merchant ship or naval auxiliary under surface escort, assembled and organized for the purpose of passage together*.

convoy escort. *A naval ship(s) or aircraft in company with a convoy and responsible for its protection.*

convoy route. *The specific route assigned to each convoy by the appropriate routing authority*.

coordination. The establishment in operations, according to a changing situation, of an orderly correlation in time and place of planned actions in order to achieve the best overall result. In the maritime environment, the term coordination may include certain specified control functions.

course made good over the ground (COG). The direction in which a ship has proceeded, measured between two geographic positions.

course made good through the water (CTW). The direction in which the ship is proceeding, resulting from the effect of weather but not the effect of current or tidal stream on the signaled or base course.

critical angle towed-array system (CATAS). A towed-array system whose depth is dependent upon towing ship speed and the length and weight of the towing cable only.

cross-over zone. The airspace between a MEZ and a FEZ to separate the two for AAW and air coordination purposes.

customer ship. *The ship in a replenishment unit that receives the transferred personnel and/or supplies.*

D

damage control. *In naval usage, measures necessary aboard ship to preserve and reestablish watertight integrity, stability, maneuverability, and offensive power; to control list and trim; to effect rapid repairs of materiel; to limit the spread of, and provide adequate protection from, fire; to limit the spread of, remove the contamination by, and provide adequate protection from, toxic agents; and to provide for care of wounded personnel*.

data link. A communication link suitable for transmission of data.

data link reference point (DLRP). A geographic reference position representing the origin of a Cartesian coordinate system in which track positions are reported within a force.

datum. The last known position of a submarine or suspected submarine after contact has been lost.

datum designator. The alphanumeric or four-figure octal group assigned to a datum for identification purposes.

datum error. An estimate of the degree of accuracy in the reported position of datum.

datum time. The time when contact with a submarine or suspected submarine was lost.

deception. *Those measures designed to mislead the enemy by manipulation, distortion, or falsification of evidence to induce him to react in a manner prejudicial to his interests*.

deck alert. An aircraft alert state expressing the time in minutes required for a specified number and type of aircraft to become airborne after the order to launch has been given.

defense in depth. The stationing of mutually supporting units or formations designed to absorb and progressively weaken an attack, prevent initial observations of the whole formation or disposition by the enemy, and allow the OTC to maneuver to oppose the threat.

degree of readiness. The amount of operational capability of a unit which is currently available.

delegation of authority. *An action by which a commander assigns to a subordinate commander a clearly stated part of his authority*.

deliberate attack. In ASW, an attack delivered with maximum accuracy against an enemy submarine when the tactical situation allows time to obtain accurate attack data.

delivering ship. *In replenishment at sea, the ship that delivers the rig(s).*

departure point (aircraft). *A navigational check point used by aircraft as a marker for setting course.*

depressed towed array system (DTAS). A towed-array system which is taken to desired depth by a towed body or depressor.

detaching. The forming temporarily of a unit from the units of a force for a specific purpose, or the separation of a unit from the main body for duty elsewhere.

detection. The discovery of the presence of a contact or contact-related data.

direction. The process of planning, decision making, establishing priorities, formulating policies, and imposing decisions.

direct support. The support provided by a unit or formation not attached or under the tactical command of the supported unit or formation, but required to give priority to the support operations required by that unit or formation. A direct support unit operates under the tactical control (TACON) of a supported force commander. Operational control and tactical command remain with the assigning authority.

disarmed mine. A *previously armed mine which has been returned to a safe state*.

dispersion. The spreading of units of a force to reduce vulnerability to enemy action.

disposition. An ordered arrangement of the stations of two or more formations proceeding together for any purpose, such as cruising, antiair warfare, or replenishment.

disposition axis. A reference line for stationing two or more formations in relation to each other.

dissemination. The timely distribution of information and/or intelligence in the most suitable form to those who need it.

distance. The space in yards between ships in a line.

distraction. Measures taken to offer alternative targets to a weapons control or missile homing system so that a false target is selected.

diversion. *A change made in a prescribed route for operational or tactical reasons. Except in the case of aircraft, a diversion order will not constitute a change of destination.*

division. An administrative or tactical organization of two or more ships, which for tactical purposes, may be further divided into subdivisions.

drifting mine. *A buoyant or neutrally buoyant mine free to move under the influence of waves, wind, current, or tide.*

E

easting. *Eastward (that is from left to right) reading of grid values on a map.*

echo sweep. An active mode sonar search.

electromagnetic spectrum. The entire and orderly distribution of electromagnetic waves according to their frequency or wave length. The electromagnetic spectrum includes radio waves, microwaves, heat radiation, visible light, ultra-violet radiation, x-rays, electromagnetic cosmic rays and gamma rays.

electronic countermeasures (ECM). *That division of electronic warfare involving actions taken to prevent or reduce an enemy's effective use of the electromagnetic spectrum through the use of electromagnetic energy. There are three subdivisions of electronic countermeasures: electronic jamming, electronic deception, and electronic neutralization.*

electronic deception. *In electronic countermeasures, the deliberate radiation, re-radiation, alteration, absorption or reflection of electromagnetic energy in a manner intended to confuse, distract, or seduce an enemy or his electronic systems.*

electronic intelligence (ELINT). Technical material and intelligence information derived from electromagnetic noncommunications transmission (e.g., radar, navigation aids, jamming transmissions) by other than intended recipients.

electronic jamming. *The deliberate radiation, re-radiation, or reflection of electromagnetic energy with the object of impairing the effectiveness of hostile electronic devices, equipment or systems.*

electronic neutralization. *In electronic countermeasures, the deliberate use of electromagnetic energy to either temporarily or permanently damage enemy devices which rely exclusively on the electromagnetic spectrum.*

electronic order of battle (EOB). The EOB is a list of emitters relative to a force or scenario with specific information on electromagnetic characteristics, parameters, and platforms.

electronic protective measures (EPM). *That division of electronic warfare involving actions taken to ensure effective friendly use of the electromagnetic spectrum despite the enemy's use of electromagnetic energy. There are two subdivisions of electronic protective measures: active electronic protective measures and passive electronic protective measures.*

electronic warfare (EW). *Military action to exploit the electromagnetic spectrum encompassing the search for, interception and identification of electromagnetic emissions, the employment of electromagnetic energy, including directed energy, to reduce or prevent hostile use of the electromagnetic spectrum, and actions to ensure its effective use by friendly forces.*

electronic warfare support measures (ESM). *That division of electronic warfare involving actions taken to search for, intercept, and identify electromagnetic emissions and locate their sources for the purpose of immediate threat recognition. It provides a source of information required for immediate decisions involving electronic countermeasures, electronic protective measures, and other tactical actions.*

EMCON plan. The plan ordered by an OTC to effect his emission policy and implement emission control.

emergency signals. A means of promulgating a threat requiring an expeditious or immediate action as a result of either a subjective tactical decision or an automatic response, thereby sacrificing some measure of evaluation.

emission control (EMCON). Selective control of emitted electromagnetic or acoustic energy. The aim can be two-fold: (a) To minimize the enemy's detection of emissions and exploitation of the information so gained; or (b) To reduce electromagnetic interference, thereby improving sensor performance.

emission policy (EP). The policy which states what electromagnetic and acoustic emissions may be allowed.

endurance. *The time an aircraft can continue flying or a ship can continue operating under specified conditions; e.g., without refueling.*

endurance distance. *Total distance that a ship can be self-propelled at any specified endurance speed.*

endurance speed. *The nautical miles per hour a ship will travel through the water under average conditions of hull, sea in temperate weather, and wartime readiness. Endurance speeds in each case will correspond with specific engine speeds.*

escape course. Ships steer 90° away from fallout axis at maximum speed in order to leave the fallout hazard area before fallout arrival.

escort. *A combatant unit or units assigned to accompany and protect another force; aircraft assigned to protect another aircraft during a mission.*

estimated time of arrival (ETA). The time of arrival at the entrance to the harbor (passing breakwaters), or, when point X is established, the time of arrival at point X. For aircraft, it is the time of arrival from an airfield, target, CAP station, and so forth.

estimated time of departure (ETD). The time of passing the entrance to the harbor (passing breakwaters), or, when point A is established, the time of passing point A. For aircraft, it is the time of departure from an airfield, target, CPA station, and so forth.

evaluation. The appraisal of threat information to determine the type and degree of threat.

evasion. A change in the planned route or speed (but not the destination) of a force, convoy, or independent, usually ordered by the OTC for tactical reasons.

evasion course. When a ship is too close to the actual area of deposition and escape course is not always the safest solution.

1. Ship's speed is greater than effective downwind speed, ship steers away from fallout axis, and maintains actual distance to area of fallout deposition; therefore, the relative course of the ship should be 90º away from fallout axis.
2. Ship's speed is less than effective downwind speed, ship steers to be as far away as possible from fallout axis, whenever the outer (forward) limit of fallout deposition arrives at the ship's position.

extended maneuvering interval. The standard maneuvering interval, plus 500 yards, unless otherwise ordered, to allow for station-keeping errors.

F

fighter engagement zone (FEZ). The airspace beyond the cross-over zone out to limits as defined by the OTC, taking into account the fighter's combat radius and effective weapon range.

final diameter. The diameter of the circle that would ultimately be described by a ship turning through 360º with a constant rudder angle.

fleet. An organization of ships, aircraft, Marine forces, and shore-based activities all under the command of a commander or a commander-in-chief who may exercise operational as well as administrative control.

fleet air wing. An administrative or tactical organization consisting of two or more squadrons of aircraft.

flex deck. CV operation where unscheduled, continuous launch and recovery of aircraft is made possible.

flight. Any number of aircraft, regardless of type (fixed-wing or helicopter), proceeding in company on a common mission or to the same destination.

flight levels. *Surfaces of constant atmospheric pressure which are related to a specific pressure datum, 1013.2 mb (29.92 in), and are separated by specific pressure intervals. (Flight levels are expressed in three digits that represent hundreds of feet; e.g., flight level 250 represents a barometric altimeter indication of 25,000 feet and flight level 255 is an indication of 25,500 feet.)*

flight operations course and speed. The course and speed used by a ship when launching or recovering aircraft.

flotilla. An administrative or tactical organization consisting of two or more squadrons together with such additional ships as may be assigned as flagships or tenders.

force. A general term for the ships and aircraft under the orders of an OTC, including friendly direct support submarines.

force combat air patrol. A patrol of fighter aircraft maintained over the task force to destroy hostile aircraft or missiles which threaten the force.

formation. *An ordered arrangement of two or more ships, units, or aircraft proceeding together under a commander.*

formation axis. A reference line for stationing ships of a formation, or the axis of the main body or convoy, in a formation consisting of a main body or convoy and escorts.

formation center. A position designated by the OTC as the center of a formation, normally the geometric center; station zero in a circular formation; also, the point of origin of a formation axis.

formation guide. A ship in a formation on which the units in the formation take and keep station.

forward bomb (safe) lines. Bomb lines prescribed by a troop commander beyond which he considers that bombing need not be coordinated with his own forces.

full command. *The military authority and responsibility of a commander is to issue orders to subordinates. It covers every aspect of military operations and administration and exists only within national services. Note: the term "command" as used internationally, implies a lesser degree of authority than when it is used in a purely national sense. No NATO or coalition commander has full command over the forces assigned to him since, in assigning force to NATO, nations will delegate only operational command or operational control.*

Full naval control of shipping (FNCS). *Mandatory worldwide naval control of shipping for all Allied merchant shipping or specified categories thereof.*

furthest-on-circle. An expanding circle centered on a datum or search center of which the radius at any one time is a command estimate of maximum submarine travel from datum plus datum error.

G

GRASSHOPPER. A procedure to allow a transiting surface force, at short notice, the maximum freedom for the use of ASW weapons.

grid. Two sets of parallel lines intersecting at right angles and forming squares which are applied to maps or charts to permit identification of surface locations with respect to other locations and computation of direction and distance between points.

grid lock. The procedure in the CCG system that is employed to reduce errors in reporting caused by errors in the estimated position of the reporting unit.

grid origin. The center of the grid in the CCG system from which X and Y coordinates originate; it is based on a geographic reference position.

grid shift. The procedure in the CCG system that is employed to relocate the grid origin to another geographic reference position.

guardship. *A ship detailed for a specific duty for the purpose of enabling other ships in company to assume a lower degree of readiness.*

Guide. A ship on which other ships take station when forming up or keep station when formed; usually, the ship on which all units of a formation (or all formation guides of a disposition) take and keep station. Also see ATP 1, Vol. II, for further details.

H

handover (aircraft). The process of transferring control of aircraft from one controlling authority to another.

hard kill. In ASMD hard-kill measures are those which directly damage a missile by impact.

height. *The vertical distance of a level, a point, or an object considered as a point, measured from a specific datum*.

helicopter action group (HAG). A unit comprised of two or more helicopters which are assigned to counter a particular surface threat.

helicopter element coordinator (HEC). The officer who is assigned responsibility for the coordination of employment of organic helicopters other than those retained by the AREC.

helicopter windline screen. A helicopter screen provided for a carrier temporarily during flight operations, relative to the carrier's track into the wind.

high probability intercept equipment. An intercept receiver which will detect any transmission which illuminates its antenna, within the wide frequency band it is designed to cover, as soon as that transmission is made within a certain limiting range.

HOVERTAC. An attack conducted by a dipping helicopter on its own target while maintaining sonar contact.

I

identification. The assignment of one of the six standard identities, based upon available data and the determined identification criteria.

identification criteria. Criteria laid down by the OTC or delegated authority to determine which standard identity can be assigned to a detected contact based on the available localization and recognition data.

identification/recognition. The determination by any means of the friendly or enemy character or of the individuality of another, or of objects such as aircraft and ships, or of phenomena such as communications-electronics patterns.

identification safety range (ISR). The minimum range to which an aircraft may close an assumed friendly force without having been positively identified to ensure that the force does not mistake the aircraft for enemy.

identify. The process of determining identity by either recognition or identification/recognition.

identity. The friendly or hostile character or individuality of a contact.

independent. *A merchant ship under naval control sailed singly and unescorted by a warship.*

influence mine. *A mine actuated by the effect of a target or some physical condition in the vicinity of the mine or on radiations emanating from the mine*.

initial point. *A well-defined point, easily distinguishable visually and/or electronically, used as a starting point for the run to the target; a pre-selected point on the surface of the earth which is used as a reference*.

inner defense zone (IDZ). A circle around each CV used to coordinate fighter and missile engagements.

inner defense zone coordinator (IDZC). The TDS tasked to coordinate fighter and missile engagements within the IDZ.

Integrated operations. Operations under which a designated unit is attached to a specific Task Force/Group under Tactical Command (TACOM) and Tactical Control (TACON) of the OTC of the specified Task Force/Group. Upon receiving TACOM, the OTC assumes the responsibility for all operations and safety of the assigned unit. Operational Control (OPCON) remains with the assigning authority.

intercepting search. *A type of search designed to intercept an enemy whose previous position is known and the limits of whose subsequent course and speed can be assumed.*

J

joining (aircraft). The procedure whereby an aircraft commander transfers tactical control of his aircraft to the OTC.

joining (ships). A ship or group of ships which have sailed independently and subsequently rendezvous with a main body or convoy.

joint action area (JTAA) (NC) (NMM). An area in which a single friendly submarine is operating in coordination with air and/or surface forces. Air and surface ASW weapon employment is prohibited throughout the JTAA unless a NOTACK area or a submarine-generated search area (SGSA) has been established.

Joint Restricted Frequency List (JRFL). A listing of frequencies which map the use of the EM spectrum within the area of responsibility. The JRL is composed of Taboo, Protected, and Guarded Frequencies.

joint zone. An air and sea area in which friendly air, surface, and subsurface forces operate simultaneously.

L

lame duck. An aircraft in a minor state of emergency resulting from ordnance or radio failure, oxygen leak, or other cause.

large ship. *A ship over 450 feet (or 137 meters) in length*.

leaver. A section of the main convoy or an independent ship which breaks off to proceed separately to its own prearranged terminal port.

line. A formation in which ships are formed along a straight line extending in any direction from the line guide but not directly ahead or astern.

line abreast. A line in which ships form directly abeam of the line guide.

line guide. When ships are formed in a multiple line formation, the line guide is the ship occupying the station in her own line that corresponds to that of the Guide in the Guide's line, or, within any line in which no ship occupies the corresponding station, the ship designated by the OTC.

line of bearing. A line in which ships form in a straight line on a line guide in any direction except ahead, astern, or abeam.

link (communications). *A general term used to indicate the existence of communications facilities between two points*.

localization. The determination of positional information and the movements of a contact.

loose line abreast. A formation in which ships stay within 15º of the Guide or ship indicated relative to the base course.

loose line of bearing. A line of bearing assumed on the basis of either a true or relative line of bearing in which ships stay within 15º of the bearing or its reciprocal.

loose line of column. An approximate line of bearing within 15º of column in which distance may be increased to reduce yawing.

low-probability intercept equipment. An intercept receiver which employs directional antennas and/or variable frequency and which will not detect a transmission unless frequency, direction, and polarization are in correct coincidence with the victim at the instant of transmission.

M

magnetic anomaly detector (MAD). A device which detects the presence of magnetic materials by recording the distortions they produce in the normal magnetic field of the earth.

MAD verification run (MADVEC) (NC) (NMM). A procedure in which aircraft are vectored by information on radar methods to carry out MAD verification of a contact to assist in classification.

main body. Any group of warships and naval auxiliaries, or a single ship escorted by warships and/or aircraft, and not designated a convoy.

maneuvering interval. When similar ships are formed in a multiple line formation, maneuvering interval is the sum of the standard distances in the longest line, plus one standard distance; with dissimilar ships, it is the sum of the standard distances in the longest line, plus the longest standard distance in any line, including the only ship in a line if the standard distance for that ship is larger than that of any other ship present.

material torpedo countermeasures. Noise reduction methods, decoys, noisemakers, jammers, degaussing equipment, and so forth, designed to reduce the effectiveness of torpedoes once they have been fired.

maximum effective range. *The maximum distance at which a weapon may be expected to be accurate and achieve the desired result.*

maximum sonar speed. The maximum speed at which an individual ship can proceed without unacceptably degrading its sonar performance.

maximum speed. The highest speed at which a ship is capable of proceeding when using full power.

MEADOW. A static submarine haven effective only during the period, and in the area, that Operation GRASSHOPPER is in effect.

mercantile convoy. A convoy consisting of merchant ships controlled by the Naval Control of Shipping Organization (NCSO).

military convoy. *A maritime convoy that is controlled and reported as a military unit. A maritime convoy can consist of any combination of merchant ships, auxiliaries or other military units.*

mine hunting. Techniques for countering mines by mine hunters, based on determining the positions of individual mines and concentrating countermeasures on those positions (includes mine location and disposal).

minesweeping. *The technique of searching for, or clearing mines using mechanical or explosion gear, which physically removes or destroys the mine, or produces, in the area, the influence fields necessary to actuate it.*

missile danger zone. The area which the submarine must enter in order to be within maximum effective firing range of its missiles.

missile engagement zone (MEZ). The airspace around a SAM ship in which missiles may be given freedom of operation.

moving haven (MHN). A moving area of specified dimensions established about a submarine or surface ship, extending about the ordered position along the track, and which is designated for use in transit by the unit to prevent attack by friendly forces in wartime and to prevent or minimize submerged interference among friendly forces in peacetime.

N

net (communications). *An organization of stations capable of direct communication on a common channel or frequency*.

normal speed. The speed at which ships are to proceed if a signaled speed has not been ordered.

northing. *Northward, that is, from bottom to top, reading of grid values on a map*.

NOTACK area (NC) (NMM). A small area established by the submarine within the JTAA to allow friendly forces to prosecute a submarine contact within the remainder of the JTAA while continuing to provide protection to the submarine.

notice. The alert state in hours for a ship's propulsion system.

O

officer in tactical command (OTC). *The senior officer present eligible to assume command or the officer to whom he has delegated tactical command*. When a task organization is established, the senior commander present of that organization becomes OTC unless otherwise ordered. When a task organization has not been established and the higher authority has not selected the OTC, the senior officer present eligible to command will act as OTC.

oiler. *A naval or merchant tanker specially equipped and rigged for replenishing other ships at sea*.

operational command. *The authority granted to a commander to assign missions or tasks to subordinate commanders, to deploy units, to reassign forces, and to retain or delegate operational and/or tactical control as may be deemed necessary. It does not, of itself, include responsibility for administration or logistics. May also be used to denote the forces assigned to a commander*.

operational control (OPCON). *The authority delegated to a commander to direct forces assigned so that the commander may accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned, and to retain or assign tactical control of those units. It does not include the authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative or logistic control.*

operational control authority (naval) (OCA). *The naval commander responsible within a specified geographical area for the naval control of all merchant shipping under Allied naval control.*

operational speed. The highest speed at which ships will be required to proceed during a particular operation or during a stated period.

operation order. *A directive, usually formal, issued by a commander to subordinate commanders for the purpose of effecting the coordinated execution of an operation.*

optimum sonar speed. The speed for an individual surface ship at which, over a period, it can achieve a maximum swept area with its sonar in the prevailing environmental conditions.

order. *A communication, written, or oral, or by signal, which conveys instructions from a superior to a subordinate.*

outer defense zone (ODZ). An area encompassing the AAW surveillance area outside the IDZ to a range equivalent to the maximum sensor range of assets stationed outside the IDZ.

outer defense zone coordinator (ODZC). Unit tasked to coordinate the outer air battle and all CAP entering the ODZ. The ODZC is normally an AEW aircraft.

overlay. A printing or drawing on a transparent or semi-transparent medium at the same scale as a map or chart, etc., to show details not appearing or requiring special emphasis on the original.

P

passive EPM. *Undetectable measures, such as those in operating procedures and technical features of equipment, to ensure effective friendly use of the electromagnetic spectrum.*

passive mine countermeasures. Measures intended to localize the threat, locate the minefield, and reduce the risk to shipping. These measures are not concerned with the physical destruction of mines.

patrol. A detachment of units sent out for the purpose of gathering information or the systematic and continuing investigation along a line to detect or hamper enemy movements.

picket. A unit operating outside the outer limits of screen sectors and under the tactical control of the OTC (or screen coordinator if delegated); it is stationed in a designated position with reference to the appropriate axis, or in a geographic position for a specific purpose, such as air warning.

picture compilation. All actions and activities aimed at compiling a plot.

pivot column. The wing column toward which the wheel is being made.

pivot ship. The wing ship in the line on the side toward which a wheel is being made.

point A (NC) (NMM). A reference point near the harbor mouth at the inshore end of a swept channel.

point O (NC) (NMM). A reference point to seaward of point X at which the cruising formation forms or breaks up.

point X (NC) (NMM). A reference point at the seaward end of a swept channel, or when there is no swept channel, at a point selected by the local authority.

point Y (NC) (NMM). A location to seaward of point O (seaward of a swept channel), along the voyage course, at which large dispositions can form or break up when there is insufficient area at point O.

position and intended movement (PIM). A reference position established by the OTC at a given time and a forecast of the course(s) and speed(s) expected to be made good over the ground.

precedence. *A designation assigned a message by the originator to indicate to communication personnel the relative order of handling and to the addressee the order in which the message is to be noted.*

prevention of mutual interference.

1. Procedures to prevent interferences between active or between active and passive electromagnetic or acoustic sensors of friendly forces.

2. In submarine operations, a system of procedures to prevent, on the one hand, submerged collisions between friendly submarines, between submerged submarines and friendly ship towed bodies or between submerged submarines and any other underwater object, and, on the other hand, interferences with any underwater event.

probe. Any aircraft which carries out the visual identification of a specific target which has previously been located by another means.

prudent limit of endurance. *The time during which an aircraft can remain airborne and still retain a given safety margin of fuel.*

Q

QQ. The standard position in the force for the center of the front of the main body or convoy when not in circular formation.

R

radar. Radio detection and ranging equipment that determines the distance and usually the direction of objects by transmission and return of electromagnetic energy.

radar coverage. *The limits within which objects can be detected by one or more radar stations.*

radar picket. *Any ship or aircraft stationed at a distance from the force protected, for the purpose of increasing the radar detection range.*

radar silence. *An imposed discipline prohibiting the transmission by radar of electromagnetic signals on some or all frequencies.*

radio silence. *A period during which all or certain radio equipment capable of radiation is kept inoperative.*

range. *The distance between any given point and an object or target.*

receiving ship. *In replenishment at sea, the ship that receives the rig(s).*

recognition. The determination of certain characteristics of a contact. (See also identification/recognition.)

recognition confidence level. The degree of probability with which the recognition level is established.

recognition level. The level to which a contact must be recognized as to platform type, class, or individuality.

recognized picture. A compiled plot which satisfies the established criteria: the result of the picture compilation process.

reconnaissance. *A mission undertaken to obtain, by visual observation or by other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area.*

reference position. The OTC's promulgated estimate of his navigational position at a given time.

Regional Naval Control of Shipping (RNCS). *Naval control of shipping measures introduced within a limited area.*

release criteria. Criteria laid down by the OTC or delegated authority to be satisfied before weapon employment is authorized.

rendezvous. *A pre-arranged meeting at a given time and location from which to begin an action or phase of an operation, or to which to return after an operation*.

replenishment at sea (RAS). *Those operations required to make a transfer of personnel and/or supplies when at sea.*

replenishment course and speed. The course and speed ordered by the OTC for the replenishment unit's guide.

replenishment ships. Ships loaded with or supplying certain supplies and services to warships at sea.

replenishment unit. A group of ships consisting of one or more delivering ships with one or more receiving ships replenishing and ships in waiting and/or lifeguard stations.

rescue combat air patrol. Combat air patrol which provides cover for a search and rescue operation.

restricted area. An area or airspace of defined dimensions in which there are special restrictive measures to prevent or minimize interference between friendly forces.

rhumb line. A line on the surface of the earth transecting all meridians at the same angle.

route. *The prescribed course to be traveled from a specific point of origin to a specific destination.*

S

safety lanes. *Specified sea lanes designated for use in transit by submarines and surface ships in order to prevent attack by friendly forces*.

safety sector. An airspace in the AAW area in which aircraft are safe from attack by friendly fighters, missiles, or self-defense weapons.

safety zone. *An area (land, sea, or air) reserved for noncombat operations of friendly aircraft, surface ships, submarines, or ground forces*.

scene of action commander (SAC). The officer who assumes tactical control of assigned units in a limited area, operating against a specific contact or datum. (Until such time as a SAU is formally detached, the first unit reporting contact by any means (sonar, radar, visual, or ESM) shall be deemed to be the scene of action commander.)

screen. *An arrangement of ships, aircraft, and/or submarines to protect a main body or convoy*.

screen center. The point on which screen units are stationed, normally QQ or ZZ.

screen unit. A surface ship, fixed-wing aircraft, helicopter, or submarine employed in a screen.

search. A systematic investigation of a particular area to establish the presence or the absence of (a) specific contact(s).

search attack unit (SAU). The designation given to a unit separately organized or dispatched from a formation to search for and attack submarines.

search axis. The reference bearing on which an ASW search is oriented.

search center. The origin or reference point of an ASW search when established at a point other than datum.

sector. *An area designated by boundaries within which a unit operates, and for which it is responsible*.

sector method. The method of stationing units by designating sectors defined by boundaries and depth limits from screen center.

sector screen. A screen in which individual units are assigned particular sectors of responsibility according to their sensors and capabilities.

seduction. Measures taken to break or move an enemy weapon control or missile homing system away from its selected target.

self-identification. The indication by any act or means of your own friendly character or individuality.

self-protection mine countermeasures. All countermeasures, active or passive, taken by ships underway for their self-protection.

SELFTAC. An attack conducted by a dipping helicopter on its own target after the helicopter has broken dip.

sensor. *An equipment which detects, and may indicate, and/or record objects and activities by means of energy or particles emitted, reflected, or modified by objects.*

separation zone. *An area between two adjacent horizontal or vertical areas into which units are not to proceed unless certain safety measures can be fulfilled.*

sequence number. The number allocated to a ship by a unit commander to indicate its position in the line.

shadowing. The observation of an enemy unit or force, usually as a sequel to surveillance or reconnaissance, for the purpose of reporting its composition, location, movement, and any other relevant information.

shore bombardment lines. *Ground lines established to delimit bombardment by friendly surface ships*.

signaled course. The true course which is being or which is to be steered.

signaled speed. The speed in knots at which the Guide has been ordered to proceed.

signals intelligence (SIGINT). *The generic term used to describe communications intelligence and electronic intelligence when there is no requirement to differentiate between these two types of intelligence, or to represent fusion of the two.*

signature. The characteristic pattern of the target displayed by detection and identification equipment.

significant track. *In air defence, tracks of aircraft or missiles which behave in an unusual manner which warrants attention and could pose a threat to a defended area*.

Silent SAM. An AAW tactic that places a long-range SAM ship in a silent posture. The tactical picture is provided by an AEW aircraft via Link. When directed or when preplanned responses dictate, the Silent SAM ship engages the raid under attack based on Link data.

situation report. *A report giving the situation in the area of a reporting unit or formation*.

skeleton screen. A screen in which individual units are assigned stations or patrol lines relative to the corners or sides of a rectangular main body or convoy.

small ship. *A ship of 450 feet (or 137 meters) or less in length*.

soft kill. In ASMD soft-kill measures use devices such as ECM, chaff, or decoys to neutralize the missile.

sonar. An acoustic device used primarily for the detection and location of underwater objects.

sonobuoy. *An acoustic device, used mainly for the detection of submarines which, when activated, transmits information by radio.*

speed made good over the ground (SOG). The average speed at which a ship has covered the distance between two geographic positions.

speed made good over the water (STW). The result of the effect of weather but not the effect of current or tidal stream on the signaled or base speed.

speed of advance (SOA). *In naval usage, the speed expected to be made good over the ground.*

splash point. The point where a single weapon or the first weapon fired of a pattern should enter the water to have the highest probability of destroying the target; its location depends on target course, speed, and depth, and the characteristics of the weapon after it has entered the water.

spreading. The maneuver of moving ships from a compact formation to stations on a search or patrol line.

squadron. An administrative or tactical organization consisting of two or more divisions of ships, plus such additional ships as may be assigned as flagships or tenders.

standard distance. Unless otherwise ordered, 500 yards between small ships in a line and 1,000 yards between a large ship and any other ship, large or small, in a line.

standoff ASW action (NC) (NMM). An action in which one or more ASW units attempt to engage a submarine outside 8,000 yards.

static havens. Specified sea areas for noncombat operations, including ship and submarine sanctuaries announced by theater, fleet, or equivalent commanders and exercise areas reserved for submarine operations and training in noncombat zones.

station. The position ordered by the OTC for a unit of a force when in formation or for a formation that is part of a disposition.

stationing speed. A speed slower than operational speed, specified for reasons of fuel economy.

steerageway. The slowest speed at which a ship can steer.

straggler. *A ship separated from its convoy by more than 5 nautical miles, through inability to keep up, and unable to rejoin before dark, or over 10 nautical miles from its convoy whether or not it can rejoin before dark.*

STRIKECAP. CAP launched to conduct an attack against an enemy at extended ranges to confuse the enemy and/or change his attack plans.

subdivision. A tactical organization of ships within a division.

submarine action area (SAA). *In naval warfare, a waterspace management area that contains one or more friendly submarines which are the only units that may use antisubmarine weapons within that area.*

submarine exercise area coordinator. *An authority who publishes permanently established national submarine exercise areas and lanes which have been agreed by the nations concerned.*

submarine-generated search area (NC) (NMM). A stationary, geographically defined area within a JTAA in which a submarine will operate for a specified period of time. It is established by the submarine commanding officer based upon the mission requirements of both the submarine and the units with which it is operating. Once established, a commander or unit designated as the SGSA coordinating authority may authorize attacks in the portions of the JTAA that lie outside the SGSA. Within the SGSA, NOTACK rules apply.

submarine movement advisory authority. *The authority who monitors movements of submarines and ships operating variable depth sonar or towed arrays within his area of responsibility and advises the submarine operating authorities and, if necessary, units concerned, of possible mutual interference.*

submarine notice. *A message report originated by a submarine operating authority providing operational and movement instructions for submarines in peace and war, including transit and patrol area information.*

submarine operating authority. *The naval commander exercising operational control of submarines.*

submarine operations coordinating authority (SOCA) (NC) (NMM). The warfare commander who is assigned responsibility for the coordination and employment of support submarines.

submarine patrol area (SPA). *A stationary area established to allow submarine operations unimpeded by submerged mutual inetrference.*

submarine safety lanes. Specified sea lanes used exclusively for submarines in transit to and from assigned patrol zones.

supplying ship. *The ship in a replenishment unit that provides the personnel and/or supplies to be transferred.*

support. *The action of a force, or portion thereof, which aids, protects, complements, or sustains any other force*.

support force. A force tasked by a higher authority to aid, protect, complement, or sustain another force.

surface action group (SAG). A unit comprised of surface ships, which may be supported by fixed-wing aircraft or helicopters, formed to counter a surface threat. Unless the OTC has designated a SAG commander, the senior of the commanding officers is the SAG commander.

surveillance. *The systematic observation of aerospace, surface or subsurface areas, places, persons, or things, by visual, aural electronic, photographic, or other means;* specifically, in maritime surveillance, to detect and determine the number, identity or movement of aircraft, missiles, surface or subsurface vehicles.

surveillance combat air patrol. A patrol of fighter or attack aircraft employed over a hostile surface force for the purpose of countering the SSM threat.

surveillance towed array system (SURTAS). A towed-array system primarily designed for use in area ASW operations. It is normally a very long array designed to operate at low speed for low-frequency detection of a submarine's radiated noise.

sweep (aircraft). An offensive mission by fighter aircraft to seek out and destroy enemy aircraft and other targets of opportunity in an allocated area of operations.

T

tactical air support for maritime operations (TASMO). Organization, operational procedures, and communications used in NATO for land- or carrier-based tactical air support of maritime offensive, reconnaissance, and air defense operations. See also ATP 34 for additional guidance.

tactical bomb lines. Bomb lines prescribed by a troop commander beyond which he considers that properly coordinated bombing would not endanger his forces.

tactical command (TACOM). *The authority delegated to a commander to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority*.

tactical control (TACON). *The detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned.*

tactical diameter. The distance along the perpendicular between the path of a ship on the original course and the path of the same ship when steadied on an opposite course after turning through 180º with a constant rudder angle.

tactical doctrine. The fundamental principles guiding the application of tactics.

tactical instructions. Directions and orders available for the execution of tactics.

tactical procedures. Prescribed modes (and methods) of implementing tactical instructions.

tactical torpedo countermeasures (NC) (NMM). Maneuvers, such as alterations of course or speed and noise reduction and noise deception methods, designed to degrade a submarine's fire control solution or to avoid torpedoes that have been detected or are assumed to have been fired.

tactical towed array system (TACTAS). A towed-array system primarily designed for use in ASW support operations. Its passive acoustic performance is optimized for submarine detection at higher tow speeds.

target acquisition. *The detection, identification, and location of a target in sufficient detail to permit the effective employment of weapons.*

target combat air patrol. A patrol of fighter aircraft maintained over an enemy target area to destroy hostile aircraft and to cover friendly shipping in the vicinity of the objective area in amphibious operations.

target radar. A radar, the detection of which would indicate the presence of enemy forces or that an attack is probable.

task designator. The number assigned to a task force, task group, or task element.

task element. A component of a task unit organized by the commander of the task unit or higher authority for accomplishing a specific task.

task fleet. A mobile command of ships and aircraft necessary for accomplishing specific major tasks which may be of a continuing nature.

task force. *A component of a fleet organized by the commander of a task fleet or higher authority for the accomplishment of a specific task or tasks.*

task group. A component of a task force organized by the commander of the task force or higher authority for accomplishing specific tasks.

task organization. The organization of forces for operational purposes to provide the necessary flexibility for meeting changing operational requirements while retaining a clear indication of the chain of command.

task unit. A component of a task group organized by the commander of a task group or higher authority for accomplishing specific tasks.

threat and target emitters. A threat emitter is an emitter, normally associated with a weapon system, the detection of which might indicate that an attack on the force is imminent or in progress. A target emitter is an emitter, the detection of which would indicate the presence of enemy forces.

threat radar. A radar, the detection of which would indicate that an attack on the force is imminent or in progress.

threat warning. A means by which a commander can rapidly promulgate the evaluated type and degree of threat and specify the likelihood of attack.

time late of datum. The elapsed time between datum time and the arrival of a unit at datum.

time of attack. Time of arrival of the first weapon in the target area.

TOMCAT. A surface picket or picket group which is responsible for early identification of friendly aircraft returning, and for acting as a reference point for such aircraft when they proceed through the AAW area.

torpedo danger area (TDA) (NC) (NMM). The area extending beyond the furthest-on circle for an arbitrarily assessed distance of 8,000 yards.

torpedo danger zone (TDZ) (NC) (NMM). An area which the submarine must enter in order to be within maximum effective torpedo firing range.

torpedo interference area (DOG BOX). An area within which units may interfere with or be endangered by ASW homing torpedoes.

track. *To display or record the successive positions of a moving object; also to lock on to a point of radiation and obtain guidance therefrom; to keep a gun properly aimed, or to point continuously a target-locating instrument at a moving target; or, the projection on the surface of the earth of the path of a spacecraft, aircraft or ship, the direction of which path at any point is usually expressed in degrees from North (true, magnetic, or grid).*

transfer. The distance gained by a ship at right angles to the original course while turning.

transfer station. A ship's designated area equipped for replenishment at sea.

TT. The standard position in the force for the present position of the originator of the message.

turning circle. The path of a ship with a constant rudder angle.

turn-together. A maneuver in which all ships turn simultaneously, maintaining their true bearings and distances from the Guide.

type organization. The organization of units normally of the same type into flotillas/groups, squadrons, divisions, and subdivisions mainly for administrative and logistic purposes.

U

underway replenishment force. *A task force of fleet auxiliaries (consisting of oilers, ammunition ships, stores issue ships, etc.) adequately protected by escorts furnished by the responsible operational commander. The function of this force is to provide underway logistic support for naval forces.*

unit. A ship, aircraft, or submarine; or a small group of ships and/or aircraft acting as an entity.

unit guide. The ship in a unit that is the guide; the guide in a replenishment unit.

urgent attack. An attack delivered with maximum rapidity against an enemy submarine located in a position such that it is considered an immediate threat.

UTM. The grid used for naval bombardment and similar purposes, especially when ground forces and other forces are jointly engaged.

V

variable depth sonar (VDS). The term is normally used to describe a sonar whose transducer is towed beneath the parent ship with the object of improving sonar detection ranges. Helicopter and submarine sonars, although variable in depth, are not usually included.

vectored attack (VECTAC). *An attack in which a weapon-carrying unit (air, surface, or subsurface) not holding contact on the target is vectored to the weapon delivery point by a unit which holds contact on the target.*

vectoring (aircraft). The directional control of an inflight aircraft through transmissions of azimuth headings.

vertical replenishment (VERTREP). *The use of a helicopter for the transfer of materiel to or from a ship.*

very shallow water mine countermeasures (VSW MCM) Any activity to search, detect, locate, neutralize or dispose of explosive ordnance or obstructions laid in very shallow water. This can be a component of general coastal operations, or amphibious operations.

VICTOR LIMA (VL). A reference point used as an AAW grid origin.

visual call sign. *A call sign provided primarily for visual signaling.*

voice call sign. *A call sign provided primarily for voice communications.*

W

WARM. *War Reserve Modes. Characteristics or operating procedures of equipment or systems which are held in reserve for war or crisis.*

warning. The indication by any tactical information source of the presence of a threat.

WATCHDOG. A surface picket whose main tasks is AAW.

watch zone. A sector in which the assigned ship is responsible, subject to no overriding weapon co-ordination instructions from the AAWC, to ensure that air attacks on the unit or force do not take place unopposed.

waterspace management. *In naval warfare, a system of procedures for the control of antisubmarine weapons to prevent inadvertent engagement of friendly submarines.*

weapon danger area. An area measured in degrees either side of the weapon firing bearing and extending to the maximum safe range and maximum safe trajectory height of the weapon in use. For torpedoes, a specific area based upon weapon entry point.

weapon danger zone. In ASW operations, an area in which friendly units may be endangered by a friendly ASW weapon. The area comprising the weapon danger zone is based upon the type of weapon, method of employment, run pattern of a properly operating weapon, and estimated acquisition range. Upon launch of an ASW torpedo, this area may be designated a DOGBOX.

weapon release point. The point where a single weapon or the first weapon fired on a pattern is released so that it enters the water at the splash point. For aircraft attacks, it allows for the aircraft's direction, speed, and altitude of approach, and the characteristics of the weapon.

weapon(s) system. A weapon and those components required for its operation.

wheel. A maneuver to alter course in such a manner that all ships will be in their former relative positions on completion of the maneuver.

X

XX. The standard position in the force established by the OTC on which a search, enemy reporting, and so forth, is to be based.

Y

YY. The standard position in the force for the present position of the addressee of a message.

Z

zero time. The exact hour immediately preceding the time of execution of a tactical action or maneuver from which time measurement is recorded and reported in minutes. (If the time of execution is exactly an hour, that time will be zero time.)

ZIPPO plan. A plan which provides for preplanned reactions to various maritime warfare threats.

ZZ. The standard position in the force for the center of the force (not to be used in a convoy).

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