CHAPTER 8

CONVOY OPERATIONS

INTRODUCTION

Boat units may transport cargo and personnel from shore to shore in logistical or tactical support operations. The logistical operation may be conducted to provide facilities or to establish alternate facilities where none previously existed. Tactical support may be conducted to support landed (air, airborne, or amphibious) forces. It may be under joint or unilateral command. The length of time or the water distance over which landing craft can safely transport troops ashore restricts the range of personnel movements. Under good conditions, a boat convoy can travel 80 to 100 miles from sunset to dawn.

A designated boat unit may be responsible for convoy command and control, navigation and piloting, and defensive measures afloat. Under suitable conditions, various types of small supply vessels or cargo barges and tugboats may also be attached to the boat units.

TRACK CHART

The boat unit responsible for the convoy issues a track chart or overlay to each subordinate element. The track chart, prepared from a large-scale navigation chart, shows the complete route from the assembly area to the beach objective. Plotting a true course and the distance in nautical miles without deviation shows the route. The route or track is divided into legs at each change of course. Each leg will give true course and nautical miles to the next change of course. At the point of change, a bearing and distance off is shown to some given aid to navigation (either ashore or afloat) for course correction.

The using unit makes compass corrections for all courses, using deviation tables for each boat and the variation shown on the overlay. The unit then determines the speed limit of each boat within its operating capabilities. The speed to be maintained is computed so that the boat arrives at the beach objective at a specific time (H-hour or time of arrival). Time of departure is computed by planning backward from the time of arrival and including a small safety factor allowance. The final time determined is the correct time of departure from the assembly area.

APPROACH CHART

When hazardous approaches to a beach present a particularly difficult problem in navigation, an approach chart or overlay is issued to each subordinate boat element. The chart, prepared on as large a scale as possible, shows —

- Line of departure (for a tactical landing).
- Navigational hazards, including underwater obstacles.
- Courses to avoid. Boats may have to land in small groups or singularly. The approach may require changing course with several shifts in direction between the far shore assembly area and the beach.
- Formations required.
- Hydrographic obstructions, narrow channels, wharfs, and the speed and direction of unusual currents.

Panoramic sketches or oblique aerial photographs of the beach seen from seaward supplement the approach chart. Identifying points are marked on the photographs.

PLANS AND ORDERS

Plans and orders are based on those of the terminal command or other headquarters controlling the operation. They are usually sufficiently detailed so the battalion headquarters will not have to prepare an extensive operation order.

Navigational plans must be carefully studied. Particular attention must be given to accuracy of time and distance calculations.

Orders or instructions issued to subordinate boat units will give detailed information about courses, tides, currents, communications, fuel, food for crews and passengers, assembly points, harbors of refuge, and defense against air or sea attacks.
If the voyage is too short for adequate briefings aboard the craft, troops are briefed just before embarkation.

BOAT CONTROL

While the operation is being planned, the boat navigation officer and a representative of the terminal headquarters (or other unit responsible for far-shore operations) thoroughly study landing conditions. Tentative plans for boat and beach control are agreed on, including the location of landing points for craft.

In a shore-to-shore operation, the boat control officer—

• Controls the movement of all craft between the near and far shore.
• Marks control points to regulate boat movements and other points designated by the higher headquarters.
• Informs the commander of the boat unit of the movement’s progress.

EMBARKATION

Landing craft are kept in dispersal areas on the near shore until they are required to form for embarkation. At that time, they proceed to designated rendezvous areas offshore from the embarkation points. Rendezvous areas are assigned for all boat units.

From the rendezvous area, landing craft are dispatched to the embarkation points. If possible, the arrival of each craft at the shore is synchronized with the arrival of the troops and supplies. (The time required to load troops and supplies must be considered by the unit being transported and the boat unit assigned to the movement.) To avoid undue fatigue, troops are not loaded in landing craft earlier than necessary. Embarkation begins at the latest possible hour that permits the convoy to depart at the designated time.

After being loaded, landing craft are directed via a regulating point to the assembly area location that they will occupy in the convoy. Using the track chart, they then proceed in prescribed formation to the far shore.

The staff of the boat battalion along with the headquarters of the units being transported prepares an assembly chart or an overlay on a small-scale navigation chart. The chart shows true courses and distances in nautical miles from the dispersal areas to the rendezvous areas, from the rendezvous areas to the embarkation points, from the embarkation points to the regulating point, and from the regulating point to a final convoy formation in the assembly area. The assembly chart is prepared similarly to the track chart.

An assembly table may accompany the assembly chart. The table prescribes times of departure from the embarkation points and the regulating point. It also gives the specific times of arrival for boat units or landing teams in the assembly areas.

CONVOY ORGANIZATION

The convoy is formed in waves or elements of six to eight boats, depending on the landing plan. The officer responsible for navigation and/or the commander of the boat unit heads the formation. The commander of troop personnel travels in the same boat as the commander of the boat unit. Control boats are stationed on the flanks. A salvage boat follows in the rear.

FORMATION

The formations used within a convoy vary according to the situation. They depend on such factors as—

• Tactical plan (for a tactical landing).
• Weather.
• Time of day.
• Sea conditions.
• Phase of the operation (whether the convoy is en route to the far shore or approaching the beach for the landing).
• Enemy situation and capabilities (including nuclear).

Generally, landing craft move in a column formation before arriving in the landing area. The distance between boats, stern to bow, varies between 50 and 100 yards, depending on visibility. In poor weather, craft must run as close together as possible. However, to avoid collisions, they should not move closer than one boat length apart.

In a convoy that includes LCUs, the LCUs usually form astern of the last unit in the boat formation. The senior LCU master afloat, instructed via radio from the convoy control vessel, directs LCU formations and speeds.
The closed-V formation provides excellent control. It permits rapid deployment into an open-V formation in case of air attack. The open-V and line-abreast formations are used to approach the beach before landing. However, they are difficult to control. Normally, they are used only for short distances. The line-abreast formation is normally used only in a landing (usually tactical) where all boats must beach at the same time.

During formation, efficient control greatly depends on the alertness of the signalman. When the signalman gives a signal to change or modify the formation for the wave leader, the signalmen in all other craft in the wave must repeat it immediately. Each signalman must make sure that the boat astern of his vessel receives and repeats the correct signal. Each signalman repeats the signal until all boats in the wave have echoed it. After the signal has been repeated, each signalman stops transmitting signals. An assigned crew member must be trained as the signalman.

**COMMAND CONTROL**

The senior commander of the boat formation is responsible for the control of craft, navigation, and local defensive measures. He must–

- Ensure that all landing craft arrive and depart from the embarkation points on time.
- Ensure that craft are in the prescribed formations and depart from assembly areas on time with minimal confusion and delay.
- Provide accurate navigation from the near shore to the landing area so that craft arrive on time and in prescribed formations.
- Patrol the convoy to maintain formation and help craft having difficulties.
- Establish control vessels ahead of the formation to direct the landing.
- Control the movement to the beach and the landing of craft.

If the convoy is engaged in shore-to-shore operations, one officer should be designated to stay on the near shore to coordinate boat activities.

**CONVOY CONTROL**

The distance between craft and poor visibility may complicate the control of boat units in convoy. Visual communication must be highly efficient since radios must be kept free for traffic other than control messages. Voice-amplifying equipment is desirable for all control and salvage boats. Leaders of boat units must ensure that coxswains maintain their positions in the prescribed formation and follow specified speeds.

Night operations are particularly difficult and physically and mentally strain personnel. Strict compliance with regulations concerning authorized lights is essential. A single unauthorized light may cause general confusion in the convoy movement. Bow lights on top of the LCM ramp are turned off because they tend to blind the coxswain. A lookout is posted in the bow to watch for hazards.

Control boats are used to prevent straggling, assist boats in trouble, and aid in navigational control. They patrol the flanks and rear of the formation and communicate with the navigator. Control boats (picketboats) may also serve as messenger boats.

If possible, the formation should proceed to a safe haven before the onset of bad weather. If the control officer believes that further movement would be hazardous, he may order the convoy to move into a predetermined closed formation with the control boat in the center. The craft maintain enough way to keep their positions.

**NAVIGATIONAL CHART**

Since navigation is based on the unit track chart, copies of the chart are furnished to the coxswain of each boat. Instructions are then available if a boat becomes separated from its formation.

Before the movement begins, navigational instruments must be checked carefully. Preparations include–

- Swinging the craft to obtain compass deviations.
- Ensuring that each boat has a current compass-deviation table and that the coxswain knows how to use the table properly.
- Calibrating radio direction finders.
- Testing and calibrating signaling and listening devices and associated equipment.
- Checking timepieces, sextants, and all other instruments.
NAVIGATIONAL METHODS

The navigational methods used to guide a convoy vary with the availability of navigational aids and charts, ocean currents, visibility, and the configuration of the ocean bottom.

In a tactical operation, the position of the leading command and navigation boat must be known accurately to within 100 to 200 yards when within 1 to 3 miles of the enemy shore. This degree of accuracy is difficult to obtain, especially if the movement is at night. Electronic signal devices secretly planted on or near the enemy shore by other agencies are often used to guide the lead boat, which picks up the signals with its radio direction finder. Another method is to place personnel ashore by rubber boat or parachute to show, at a specified time, a shielded light. A beam radio or invisible-light transmitter may be set up to guide the navigational vessel. However, radio silence is jeopardized when wireless transmitting devices are used.

Regardless of the far-shore aids that may be installed, the navigator still must depend largely on conventional methods of navigation. Proper allowance for currents must be made; depth-finder soundings must be plotted on charts.

The effective range of radar equipment in the convoy depends on the type of radar set used and the height of the antenna above the surface of the water. A constant radar plot is maintained both for navigational purposes and to keep a check on the convoy formation.

Two navigation vessels may work together. One vessel, far enough ahead to reconnoiter by depth finder or other means, establishes a buoy to mark a designated location. The second vessel guiding the formation homes in on the buoy. To use this method requires good charts.

If visibility is sufficient, the navigator can take bearings on various land features as the far shore is approached. These objectives must be known in relation to the landing area. This may involve running parallel to the beach until a sufficient number of points are recognized to establish a position and to set a course for the beach.

SECURITY

Fighter aircraft, Army aircraft, Navy vessels, or armed landing craft may protect the convoy. LCMs and LCUs may both be equipped with weapons suitable for antiaircraft and antboat defense. Armament may include .30- and .50-caliber machine guns, recoilless rifles, rocket dischargers, or antiaircraft guns. Upon approval of higher authority, the LCMs are modified locally according to the requirements of the situation and the armament available. Landing craft may also transport tanks; landing vehicles, tracked, armored (LVTAs); or self-propelled guns to provide defensive firepower in support of an assault landing.

Weapons and ammunition in a craft are kept available at all times, and sentinels are always on duty. Each boat is assigned a sector for observation and defense. In case of attack, boats deploy into prearranged open formations. They must avoid becoming so scattered that communication and control are lost. All available weapons are fired against attacking airplanes or boats. In the first hours of the voyage, alert warning systems are tested and rehearsed.

MAINTENANCE

Maintenance personnel, equipment, and repair parts are distributed throughout the convoy. In addition, each company salvage boat is stationed at the rear of its company formation. This position enables observation of any crafts that may need help. The salvage boat also acts as a rescue boat. As the convoy leaves the near shore, the salvage boat assists where needed and does not depart until the last craft is under way.

Each salvage boat carries its own specially trained crew. A prearranged signal indicates when a landing craft needs assistance. The salvage boat assists boats in distress as much as possible. However, under no circumstances does it lose contact with the formation. Salvage boat mechanics make minor engine repairs, supply replacement parts, or give the engineman instructions so he can correct the malfunction and get under way. However, repairs requiring considerable time are refused. The salvage boat serves the entire formation. It cannot leave the formation to service individual boats.

The salvage boat may tow the disabled craft until repairs are made, or a mechanic may be left to make repairs. A control boat may tow the craft or may transfer troops from the disabled craft to another landing craft. If available, empty LCMs are included in the convoy for use in emergencies.
The salvage boat and at least one landing craft in each wave usually carries towlines. The lines should be at least 200 feet long and equipped with bridles and adequate chafing gear. The bridles should be designed so that they may be secured to the mooring bitts of the towed and towing craft.

At the landing area, salvage boats may cruise around the area, alert to assist where needed, or they may anchor at a location to observe all craft.

**APPROACH TO LANDING AREA**

Command and navigation boats and picketboats make up navigational control points and hazards. In a tactical operation, they also mark the rendezvous area and the line of departure. Picketboats may precede the convoy, establishing submerged or floating buoys, invisible-light transmitters, and other devices to mark control points, obstructions, and channels. Aircraft and submarines may also be used for this purpose.

An initial point may be designated about 10 miles offshore to guide the boat formations to the rendezvous area for tactical landings. The position of the initial point depends on the distance between the near and far shores. It should be far enough from the landing area to allow the entire convoy to rearrange time schedules if necessary. The convoy may be delayed at the initial point if it is ahead of schedule or if any rearrangements are needed in the existing formation.

In a tactical landing, when the convoy enters the rendezvous area, the designated control boats move out to their stations and mark the line of departure. The waves assemble and are ordered to the line of departure according to an approach schedule.

**BOAT CONTROL**

Personnel normally assigned to unit headquarters may augment boat control personnel. In a concentrated operation, a designated navigation officer is responsible for the proper functioning of the boat control system. He directs the company control boat sections which are responsible for boat control on an assigned portion of the beach.

Usually, the company boat control officer and the commander of the terminal unit handling shore functions go ashore in one of the first boats scheduled to land. They make a hasty ground reconnaissance of the landing beach, check the actual conditions against their plans, and make any necessary changes or modifications.

Two members of the company control boat section land in separate boats of the first wave near the center of the beach and immediately erect range markers and other landing aids. When the remainder of the control boat section lands, it develops the command post and establishes the necessary radio communications.

The duties of the control boat section on shore include:

- Helping to remove underwater obstacles and other hazards to navigation.
- Marking obstacles that cannot be removed.
- Controlling boat traffic during the approach of craft to the beach, while at the beach, and during departure from the beach.
- Making emergency repairs to boats.
- Helping to salvage vehicles that may become damaged or stalled in the water at the beach.
- Helping to evacuate casualties from the beach according to the medical plan (in a tactical landing).
- Helping to keep the beach clear.

Each control boat section closely inspects the appropriate beach area immediately after landing. Section members determine the type of bottom; the depth of water; the location of rocks, boulders, shoals, bars, sunken wrecks, and other obstacles; the nature of any crosstransients; and other pertinent information. After the salvage boat arrives, it helps to reconnoiter the water approaches and to determine the depth of water offshore.

The control boat section or personnel of the shore party (if the landing is tactical) mark and remove all hazards to navigation. Pennants placed on buoys or stakes mark hazards that cannot be removed. The control boat sections of the appropriate shore party unit must keep the beach clear. Stranded boats, vehicles, supplies, and debris must not be allowed to block landing points.

To control boat traffic, members of the control boat section signal landing craft to the proper landing place. Coxswains get directions concerning proper
angle of approach, speed, beaching lowering of ramp, unloading, and retraction. Since it is often difficult for a coxswain to determine the exact location of a beach landing site, a flagman stands in the center of the site and guides the beaching craft. Guidance is particularly necessary for craft that are transporting vehicles. Range markers help the coxswain approach the beaching site.