UNITED STATES MARINE CORPS
THE BASIC SCHOOL
MARINE CORPS TRAINING COMMAND
CAMP BARRETT, VIRGINIA 22134-5019

AMPHIBIOUS OPERATIONS II W4Q0003XQ STUDENT HANDOUT

Amphibious Operations II

Introduction

During Introduction to Amphibious Operations, you learned about the history of amphibious operations and how the Marine Corps assumed the role of the nation's expeditionary force in readiness. You also learned about some key amphibious doctrinal terms and concepts including the five types of amphibious operations, the four characteristics of amphibious operations, the structure of the Marine Air Ground Task Force (MAGTF), and the composition of the Marine Expeditionary Unit (MEU). In this lesson, you will build on the foundation established in Amphibious Operations I and learn about the phases of amphibious operations, amphibious shipping platforms, and the strengths and limitations of the amphibious force.

Importance

The Marine Corps has the ability to project combat power ashore for a wide range of contingencies. Depending on the nature of the threat, we can field a *task organized* combined arms team, consisting of ground, air, and combat service support elements under a single commander. Ship, aircraft, or a combination of both may deploy these task forces, called Marine air-ground task forces (MAGTFs), as an independent force or as part of a joint task force. The information provided here will help you understand amphibious operations, naval campaigning, fleet organization and the MAGTF as well as understand the junior officer role in the execution of these operations.

In This Lesson

This lesson covers the following topics:

Amphibious Operations

Terminal Learning Objectives

TBS-OFF-2104 Given Marines, an amphibious ship, landing craft, and landing plans, lead a platoon during amphibious operations to accomplish the mission

Enabling Learning Objectives

TBS-OFF-2104b Given an evaluation, identify the classes of U.S. Navy amphibious ships without omission.

TBS-OFF-2104c Given an evaluation, identify the types of landing craft without omission.

TBS-OFF-2104g Given an evaluation, identify the phases of an amphibious operation without omission.

TBS-OFF-2104h Given an evaluation, define landing plan considerations without omission.

TBS-OFF-2104j Given a scenario without the aid of references, identify U.S. Navy shipboard traditions without omission.

Amphibious Operations (Review)

An amphibious operation is a military expeditionary operation launched from the sea by an amphibious force embarked in ships or craft with the primary purpose of introducing a landing force ashore in hostile or potentially hostile area(s) to accomplish an assigned mission. Amphibious operations usually occur in the littoral regions of the world, or those land areas (and their adjacent sea and associated air space) that are predominantly susceptible to engagement and influence from the sea. Amphibious operations apply maneuver principles to expeditionary power projection in joint and multinational operations in order exploit the element of surprise and capitalize on enemy weakness. There are four main purposes for conducting amphibious operations. They are:

- Prosecute further combat operations ashore.
- Obtain a site for an advance naval, land or air base.
- Deny use of an area or facilities to the enemy.
- Fix enemy forces and attention, providing opportunities for other combat operations.

Capabilities and Strengths

Strategic mobility and flexibility. The sea allows for maximum strategic, operational and tactical mobility, and flexibility. Once ashore, units can be sustained through sea-based logistics for extended periods of time.

Ability to strike at a point of our choosing. Vast coastlines make it impossible for a defender to be strong everywhere. Amphibious operations allow the attacker to maximize the initiative and strike at the enemy's weakest point.

Projection of power ashore. The only way to truly project power and influence ashore is to introduce ground combat troops.

Forcible entry. If all else fails, the ability to make a forcible entry from the sea is the most important strength of amphibious operations.

Disadvantages

The salient requirement of an amphibious operation is the necessary swift and uninterrupted build-up of sufficient combat power ashore from an initial zero capability to full striking power as the attack progresses toward its objectives. This requirement is the primary difference between an amphibious operation and sustained land warfare. Other disadvantages include:

Initial vulnerability. The landing force is extremely vulnerable during the assault's early hours. Strength ashore must be built up from zero combat power to a balanced force capable of accomplishing the assigned mission. Once ship-to-shore movement is launched, the assault is relatively inflexible until the necessary strength is established ashore.

Natural hazards. The special effects of weather, surf, and hydrography are potent hazards affecting amphibious operation conduct. These hazards can be overcome through: effective planning (landing sites, times, etc.), the use of helicopters and amphibious assault vehicles (AAVs), and good reconnaissance.

Complexity. The technical, operational, and logistical problems inherent with amphibious operations require

Amphibious Forces Defined

Amphibious Force (AF)

An Amphibious Force (AF) is defined as an amphibious task force (ATF) and a landing force (LF) together with other forces that are trained, organized, and equipped for amphibious operations. Commanded by the **Commander, Amphibious Force (CAF)**, AFs are task-organized based on the mission. The commander, amphibious task force (CATF) and commander, landing force (CLF) are subordinate commanders to the CAF.

Amphibious Task Force (ATF)

The Amphibious Task Force (ATF) is the Navy task-organized force formed to conduct amphibious operations. It is comprised of all Navy surface, air, and submarine units that make up the AF. It includes amphibious ships, aviation search and rescue assets, UAS assets, and Navy logistics support elements. It is usually commanded by a Navy Captain known as **the Commander of the Amphibious Task Force (CATF),** designated in the initiating directive.

Landing Force (LF)

The Landing Force (LF) consists of ground combat units and any of its combat service support units. The LF may be composed of United States Marine Corps and United States Army forces, other US forces, and multinational forces. When Marine Corps forces are employed as the LF, they will be task organized into a Marine Air-Ground Task Force (MAGTF). The LF is commanded by the **Commander of the Landing Force, or CLF**, usually a Marine Colonel who is designated in the initiating directive.

Characteristics of Amphibious Operations

Integration of Navy & Landing Forces

The key characteristic of an amphibious operation is close coordination and cooperation between the ATF, LF, and other designated forces.

Rapid Buildup of Combat Power from the Sea to Shore

The salient requirement of an amphibious assault is the necessity for swift, uninterrupted buildup of sufficient combat power ashore from an initial zero capability to full coordinated striking power as the attack progresses toward amphibious force objectives.

Task Organized Forces

Capable of multiple missions across the full range of military operations to enable joint, allied, and coalition operations, amphibious forces are task-organized based on the mission.

Unity of Effort

The complexity of amphibious operations and the vulnerability of forces engaged in amphibious operations require an exceptional degree of unity of effort and operational coherence.

INITIATING AN AMPHIBIOUS OPERATION

Amphibious operations commence with the **initiating directive**, issued by the commander with establishing authority, to the AF commanders. The initiating directive is an order to subordinate commanders to conduct military operations. It is issued by the unified commander, subunified commander, Service component commander, or JFC delegated overall responsibility for the operation. The initiating directive may come in the form of a warning order, an alert order, a planning order, or an operation order (OPORD). The complete information required to conduct an amphibious operation may come from a combination of these orders (e.g., a warning order followed by an alert order or OPORD). The initiating directive normally provides the following information:

- The establishing authority's mission, intent, and concept of operations (CONOPS).
- Designation of required commanders, establishment of their command relationships, and provision of special instructions (SPINS) as required to support the AF organization and mission. SPINS may include an establishing directive when a support relationship is established among designated commanders of the AF. The establishing directive is discussed in detail in Chapter II, "Command and Control."
- Designation of the AF's assigned, attached, and supporting forces.
- Assignment of an operational area as appropriate.
- Assignment of tasks.
- Assignment of responsibility and provision of necessary coordinating instructions for the conduct of supporting operations.
- Target dates for execution of the operation.
- Additional coordinating instructions, as required.

Phases of Amphibious Operations

Amphibious operations follow a well-defined pattern, sequence of events, or activities. The general sequence is a succession of phases, which may overlap in time, but usually occur in this sequence: PERMA, which stands for planning, embarkation, rehearsal, movement, and action.

Planning

The planning phase normally denotes the period extending from the issuance of an order that directs the operation to take place and ends with the embarkation of landing force. However, planning is continuous throughout the operation. Although planning does not cease with the termination of this phase, it is useful to distinguish between the planning phase and subsequent phases because of the change that

may occur in the relationship between amphibious force commanders at the time the planning phase terminates and the operational phase begins. The planning phase is the only phase in which the Commander, Amphibious Task Force (CATF) and Commander, Landing Force (CLF) are co-equal. The planning phase begins with the Initiating directive — an order from an establishing authority to the CATF to conduct an amphibious operation. The initiating directive provides for the establishment of the Amphibious Task Force (ATF), states the mission, provides forces required, designates the CATF, CLF, and other COs, and defines the amphibious operation area (AOA) in terms of land, air, and sea.

Embarkation

The embarkation phase is the period during which the landing forces, with their equipment and supplies, embark in assigned shipping. The organization for embarkation needs to provide flexibility to support changes to the original plan. The landing plan scheme of maneuver ashore are based on conditions and enemy capabilities existing in the operational area before embarkation of the landing force. A change in conditions of friendly or enemy forces during the movement phase may cause changes in either plan with no opportunity for reconfiguration of the landing force. The extent to which changes in the landing plan can be accomplished may depend on the ability to reconfigure embarked equipment.

Embarkation plans are the plans prepared by the landing force and appropriate subordinate commanders containing instructions and information concerning the organization for embarkation, assignment to shipping, supplies and equipment to be embarked, location and assignment of embarkation of the landing force. The landing plan and scheme of maneuver will drive the embarkation plan and will result in combat loading.

Combat loading is the arrangement of personnel and the stowage of equipment and supplies in a manner designed to conform to the anticipated tactical operation of the organization embarked. Each individual item is stowed so that it can be unloaded at the required time.

Rehearsal

The rehearsal phase is the period during which the prospective operation is rehearsed for the purpose of:

- Testing the adequacy of plans, timing of detailed operations, and combat readiness of participating forces.

	• Ensuring that all echelons are familiar with plans. • Providing an opportunity to reconfigure embarked forces and equipment. • Tests communications. Rehearsal may consist of an actual landing or may be conducted as a command post exercise.
Movement	The movement phase is the period during which various elements of the amphibious force move from points of embarkation or from a forward-deployed position to the operational area. This move may be via rehearsal, staging, or rendezvous areas. The movement phase is completed when the various elements of the amphibious force arrive at their assigned positions in the operational area.
Action	The decisive action phase is the period from the arrival of the amphibious force in the operational area, through the accomplishment of the mission and the termination of the amphibious operation.

Sequence in Projecting Expeditionary Forces

The projection of an expeditionary force generally occurs in the following sequence:

- **Pre-deployment actions.** All military expeditions begin with planning and pre-deployment actions. These actions include the commander's organization of the deployment to ensure that forces arrive in the objective area in a logical sequence, at the right time, and with the correct equipment and sustainment to support the concept of operation.
- **Deployment.** Deployment is the movement of forces, their equipment, and their sustainment to either a theater of operations or an objective area in accordance with the commander's plan. Airlift is normally the quickest way to deploy forces, although it requires the presence of a secure airhead at the destination. The quickest way to introduce significant, sustainable forces is by sealift. Maritime Prepositioning Force (MPF) operations combine the advantages of both airlift and sealift.
- **Entry.** "Entry" refers to the initial introduction of forces onto foreign soil. During this period, expeditionary forces are often at their greatest risk, and for this reason, the introduction of forces is often a complicated military evolution. Entry is normally accomplished by seaborne or airborne movement, although in some cases forces may be introduced by ground movement from an expeditionary base in an adjacent country.
- **Enabling Actions.** Enabling actions refer to those preparatory actions taken by the expeditionary force to facilitate the eventual accomplishment of the mission. Deployment and entry could also be thought of as enabling actions, but because of their importance and particular requirements, we have considered them separately. Enabling actions may include, for example, seizing a port or airfield

to facilitate the secure introduction of follow-on forces. They may include establishing the necessary logistics and other support capabilities.

- **Decisive Actions.** Decisive actions are those actions intended to create the conditions that will accomplish the political objective -- in other words, to accomplish the mission. In disasters, they include relief operations.
- **Redeployment.** Because expeditions are by definition temporary, all expeditionary operations involve redeployment; the departure of the expeditionary force or a transition to a permanent presence of some sort. This is often one of the most difficult aspects of expeditionary operations. Departure is not as simple as the tactical withdrawal of the expeditionary force from the scene. It requires the withdrawal of the forces in a way that maintains the desired political situation as well the security of the forces.

TERMINATING AN AMPHIBIOUS OPERATION

The ability to know how and when to terminate amphibious operations is part of operational design. The termination of the amphibious operation is predicated on the accomplishment of the amphibious mission per the specific conditions contained in the initiating directive. Upon completion of the amphibious operation, the establishing authority will provide direction as required for command arrangements and assignment of AFs**.** Some type of military operation may be required and will normally continue after the conclusion of the amphibious operation. Commanders and their staffs should continually assess the ongoing operation in light of assigned objectives and in consideration of the transition to other operations, anticipated or not.

TOOLS OF AN AMPHIBIOUS OPERATION

Amphibious Squadron (PHIBRON)

The amphibious squadron, or PHIBRON, is a tactical and administrative organization composed of amphibious warfare ships used to transport troops and their equipment for an amphibious operation. The PHIBRON is typically composed of (1) LCC, (1) LHA or LHD, (1) LPD, and (1) LSD.

Amphibious Ready Group (ARG)

Forward-deployed ATFs are normally organized into Amphibious Ready Groups (ARGs) with three amphibious warfare ships (an amphibious assault ship (general purpose) [LHA]/amphibious assault ship (multipurpose) [LHD], amphibious transport dock [LPD], and dock landing ship [LSD]). These ships, each with its flight deck and well deck (with the exception of LHA-6 and LHA-7), can, or will be able to embark, deploy, and land elements of an LF in an assault by tiltrotor aircraft, helicopters, landing craft, amphibious vehicles, and by combinations of these methods.

Expeditionary Strike Group (ESG)

An (Expeditionary Strike Group) ESG may be formed to provide additional amphibious warfare expertise and advocacy in the event of more complex operations. ESGs are prepared to provide a deployable, scalable, flag officer led command element (CE) with task organized naval forces to fulfill CCDR and fleet commander operational requirements up to Marine expeditionary brigade (MEB)-sized amphibious operations. ESGs may be supported by other forces (e.g., antisubmarine warfare [ASW] platforms or SUW platforms) based on mission and CCDR requirements.

Landing Craft

Marines use three main types of amphibious landing craft as ship-to-shore connectors: Landing Craft Utilitys (LCUs), Landing Craft Air Cushions (LCACs), and Amphibious Assault Vehicles (AAVs)

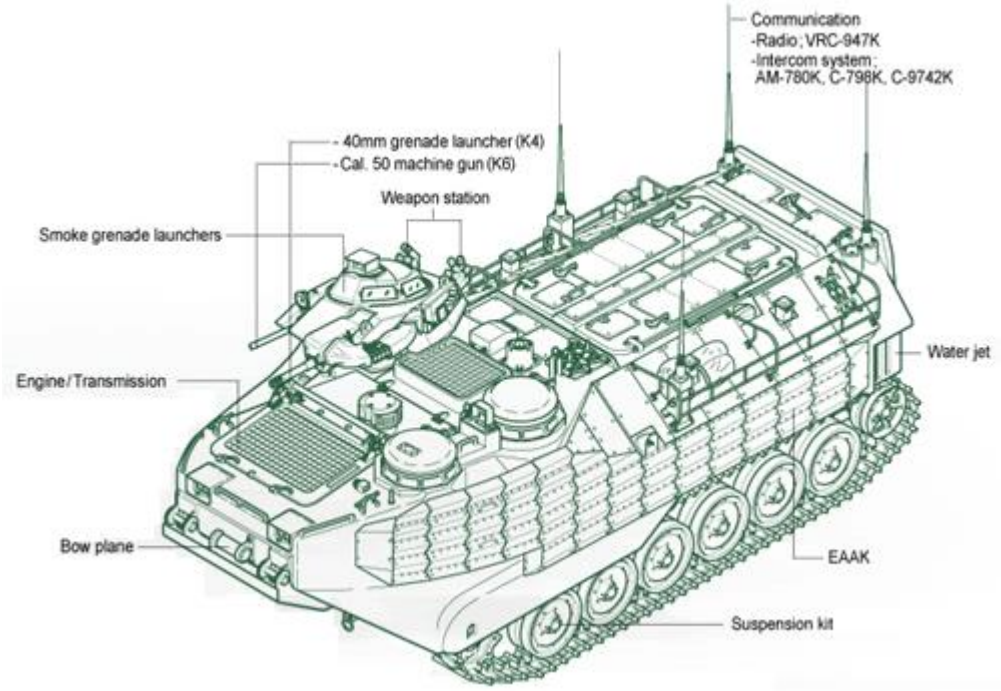
Amphibious Assault Vehicle (AAV)

The AAVP7A1 is an armored assault amphibious full-tracked landing vehicle. The vehicle carries troops from ship to shore, through rough water and surf zone, during amphibious operations. It also carries troops to inland objectives after ashore. The amphibious capability of the AAV makes it unique among all DOD systems. This forcible

entry amphibious capability is the unique capability that sets the Marine Corps apart from the other services.

The primary responsibility of the AAVs during an amphibious operation is to spearhead a beach assault. AAVs disembark from ship and come ashore, carrying infantry and supplies to the area to provide a forced entry into the amphibious assault area for the surface assault element. Once the AAVs have landed, they can take on several different tasks: manning check points, Military Operations in Urban Terrain (MOUT) missions, escorting food convoys or mechanized patrol.

The standard AAV comes equipped with a MK-19 grenade launcher and a M2 .50 caliber machine gun. With a 10,000 pound capacity, the AAV can also be used as a bulk refueler or a field expedient ambulance. It is easily the most versatile vehicle in the Marine Corps.



AAV Specifications:

Propulsion: 400hp diesel engine, 32-14,000 gpm water jet pumps

Length: 312.75”

Width: 128.72”

Height: 122.75”

Capacity: 21 combat equipped Marines or 10,000 lbs cargo

Weight: 50,758 lbs loaded, 46,3174 lbs unloaded

Speed: MAX-Land 45 mph, Water 8.2 mph, Cruise- Land 20-30 mph, Water 6 mph (planning factor 3-4 knots in sea states 1-3)

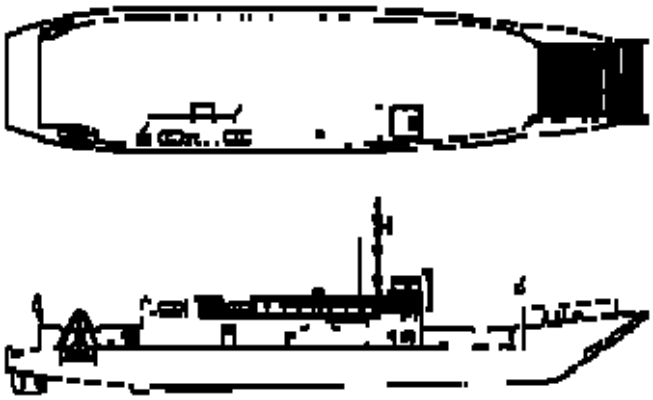
Range: 300 miles at 25 mph, 7 hrs at 2600 rpm (planning factor launch 2000-4000m off shore)

Crew: 3

Weapons: M-2 .50 cal machine gun, MK 19 40mm grenade launcher, smoke generation

Armor: Enhanced Appliqué Armor Kit
(EAAK)-No penetration by 7.62mm and below

Landing Craft Utility (LCU)



LCU 1610, 1627 and 1646 Class

The mission of the LCU is to land heavy vehicles, equipment, personnel, and cargo in an amphibious assault. The LCU is a highly versatile craft; like others of the landing craft family, it has been adapted for many uses including salvage operations, ferry boats for vehicles and passengers, and underwater test platforms. It is a self-sustaining craft with the typical habitability features found aboard ships. Its welded steel hull provides high durability with deck loads of 800 pounds per square foot. Arrangement of machinery and equipment has taken into account built-in redundancy in the event of battle damage. The craft features two engine rooms separated by a watertight bulkhead to permit limited operation in the event that one engine room is disabled. An anchor system is installed on the starboard side aft to assist in retracting from the beach.

The LCU's built in the 1970s are 135 feet long and can hold 11 crew members. Although the Navy now has a newer craft, the Landing Craft Air Cushion (LCAC), the LCUs have the backbone for heavier loads. It can carry 143 tons of equipment or 400 combat equipped Marines. Its development and design updated the landing craft used in World War II, made famous by the invasion of Normandy Beach and immortalized in numerous news reels and movies.

However, the LCU requires a 9 foot draft beneath its keel to operate safely, making it less versatile than the LCAC, which flies on top of water or ground. Another difference between the two landing craft is the LCU is home away from home for its crew, because it can operate independent of the amphibious ships on which it embarks. It contains living compartments that include sleeping quarters, a wash room with shower, a clothes washer and dryer, a lounge with a television and a complete galley.

The 189-ton LCUs are designed to carry 3 M-60 tanks, as many as 450 combat equipped troops or a variety of other support equipment such as surf cranes, bulldozers, trucks or artilleries. An LCU has a complement of a ten man crew consisting of a Radioman, Engineman, Electricians, Mess Management Specialist, Quartermasters and Boatswain mate, under the command of a Chief or First Class Craftmaster. The Craftmaster is wholly responsible for this craft and crew.

LCU Specifications

LCU Characteristics	
Length	135 ft
Width	29ft 6"
Height	17ft 9"
Cargo Deck Length	121ft
Cargo Deck Width	25ft
Cargo Deck	1,850 sq ft
Displacement	437 Tons
Troop Capacity	400
Bow Ramp Width	14ft 3"
Stem Ramp Width	18ft
Cargo Capacity	143 Tons
Speed	12 Knots
Range	1,200 nautical miles
Propulsion (diesel)	2
Draft Fore	3ft 6"
Draft Aft	6ft, 10"
Crew	11

Landing Craft Air Cushion (LCAC)

The Landing Craft, Air Cushion (LCAC) transports weapons systems, equipment, cargo and personnel of the assault elements of the Marine Air/Ground Task Force both from ship to shore and across the beach. The landing craft air cushion (LCAC) is a high-speed, over-the-beach fully amphibious landing craft capable of carrying a 60-70 ton payload. Capable of operating from existing and planned well deck ships, it is used to transport weapons systems, equipment, cargo and personnel from ship to shore and across the beach. The advantages of air-cushion landing craft are numerous. They can carry heavy payloads, such as an M-1 tank, at high speeds. Their payload and speed mean more forces reach the shore in a shorter time, with shorter intervals between trips.

The LCAC is capable of carrying a 60 ton payload (up to 75 tons in an overload condition) at speeds over 40 knots. Fuel capacity is 5000 gallons. The LCAC uses an average of 1000 gallons per hour. Maneuvering considerations include requiring 500 yards or more to stop and 2000 yards or more turning radius. The LCAC, like all "hovercraft," rides on a cushion of air. The air is supplied to the cushion by four centrifugal fans driven by the craft's gas turbine engines. The air is enclosed by a flexible skirt system manufactured of rubberized canvas. No portion of the LCAC hull structure penetrates the water surface; the entire hull rides approximately four feet above the surface.

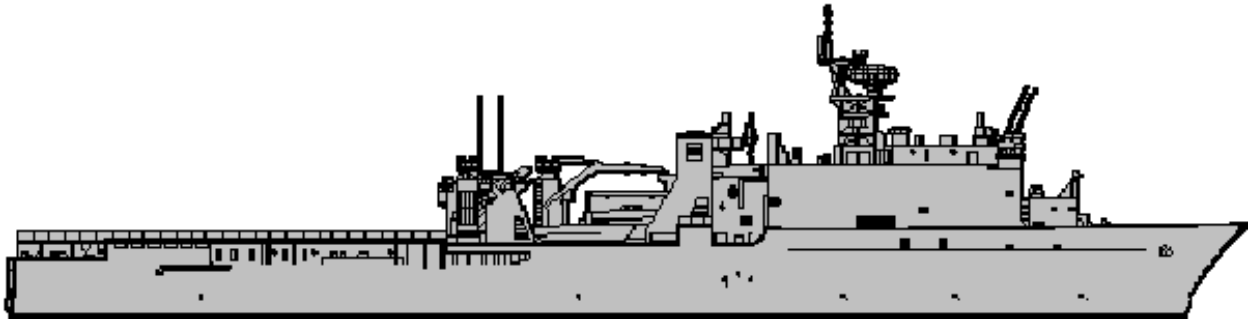
LCAC operates in waters regardless of depth, underwater obstacles, shallows or adverse tides. It can proceed inland on its air cushion, clearing obstacles up to four feet, regardless of terrain or topography), including mud flats, sand dunes, ditches, marshlands, riverbanks, wet snow, or slippery and icy shorelines. Equipment, such as trucks and track vehicles, can disembark via ramps located both forward and aft, there by shortening critical off load time. It is also important to point out the LCAC propulsion system makes it less susceptible to mines than other assault craft or vehicles.

LCAC is a dramatic innovation in modern amphibious warfare technology. It provides the capability to launch amphibious assaults from points over the horizon, thereby decreasing risk to ships and personnel and generating greater uncertainty in the enemy's mind as to the location and timing of an assault, thereby maximizing its prospects of success. The LCAC is accessible to more than 80% of the world's coastlines. It can make an undisclosed, over the horizon (OTH) assault from up to 50 miles offshore. Its high speed complements a joint assault with helicopters, so personnel and equipment can be unloaded beyond the beach in secure landing areas.

LCAC Specifications:

Power Plant	Four Avco-Lycoming gas turbines; 12,280 bhp; two shrouded reversible-pitch propellers; four double-entry fans for lift
Length	88 ft
Beam	47 ft
Displacement	181 tons
Deck Area	1, 809 sqft
Speed	40 plus knots with payload
Armament	2 - 12.7mm MGs. Gun mounts will support: M-2HB .50 cal machine gun; Mk-19 Mod3 40mm grenade launcher; M-60 machine gun
Crew	5
Range	200 miles at 40 kts with payload 300 miles at 35 kts with payload
Personnel Capacity	24 Troops 150 w/PTM
Vehicles per Sortie	12 HMMWVs per sortie 4 LAVs per sortie 2 AAVs per sortie 1 M1A1 per sortie 4 M923 per sortie 2 M923 5-Ton Trucks,2 M198 Howitzers, and 2 HMMWVs per sortie
Support Ship Capacity:	• LSD 41 Class.....4 LCAC • LSD 36 Class.....3 LCAC • LPD-4 Class.....1 LCAC • LPD-17 Class.....1 LCAC • LHA Class.....1 LCAC • LHD Class.....3 LCAC

Dock Landing Ship – LSD-41 Whidbey Island class



The mission of the dock landing ship (LSD-41) is to transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assaults by landing craft and amphibious vehicles. It can render limited docking repair service to small ships and craft.

The LSD 41 is a modified version of the LSD 36 class with design efforts directed to support emerging amphibious warfare concepts. The ships transport and launch loaded amphibious craft and vehicles with their crews and embarked personnel in amphibious assault operations. The ships feature a 440-foot well deck capable of holding four LCACs, a flight deck able to land and launch up to two CH-53E helicopters, the Navy's latest diesel propulsion and engineering technology, advanced repair facilities, complete medical and dental facilities, and troop berthing accommodations for up to 627 embarked Marines. Limited docking and repair service are provided for both conventional and air cushion craft.

The LSD 41 class ship program replaced the eight aging LSD 28 class ships which reached the end of their service lives during the period 1984-1990. **LSD-41 was designed specifically to operate LCAC vessels. It has the largest capacity for these landing craft (four) of any U.S. Navy amphibious platform**. The ships use a well deck which is flooded to launch and recover landing craft. LCACs are assault landing craft capable of speeds in excess of 40 knots when carrying a 60-ton payload.

The LSD-41 provides for greater storage space of weapons and equipment, improved facilities for embarked troops, greater range of operations, and the capability to embark either conventional landing craft or LCAC. The ships incorporate materials handling equipment including elevators, package/roller conveyors and forklifts, pallet transporters, and a turntable similar to that found on an LST. The turntable is located between the well deck and the helicopter deck forward of the boat deck to assist in the rapid turnaround of vehicles and equipment during loading/offloading operations.

LSD-41, Whidbey Island Class, Specifications:

Power Plant	(4) 16-cylinder Diesel Engines, (2) shafts (34,000 shp)
Length	609 ft
Beam	84 ft
Draft	20 ft
Displacement	15,165 tons
Speed	20+ knots
Crew	Ship's Company: 22 officers, 391 enlisted Marine Detachment: 34 officers, 470 enlisted
Vehicle Square	11,831sqft
Cargo Cube	8,970 cuft
Landing Craft	(2) LCPLs (4) LCACs, or
Aircraft (2) Landing Spots	No Organic Aircraft
Command and Control	Command Information Center (CIC) Helicopter Coordination Section AN/SPS-49 Air Search Radar AN/SPS-67 Surface Search Radar AN/SPS-64 Navigation Radar
Medical	(1) Operating Rooms (1) Post-op/Intensive Care Bed (5) Primary Care Beds (2) Isolation Ward Beds Ship's Doctor Ship's Dentist
Armament	(2) - 25mm MK 38 Machine Guns (2) - 20mm MK 15 Phalanx CIWS mounts (2) - .50 cal. machine guns (2) - Mk 31 Mod 1 RAM Guided Missile Weapon System (2) - Mk 46 Mod 1 30mm Gun (4) - MK 26 Mod 17 .50 Cal Machine Guns MK 36 Chaff System AN/SLQ-25 NIXIE Towed Torpedo Countermeasures AN/SLQ-32(V)3 Electronic Warfare (EW) system

Dock Landing Ship – LSD-49 Harpers Ferry class

The primary mission of the Harpers Ferry (Cargo Variant) ship is to dock, transport and launch the Navy's Landing Craft, Air Cushion (LCAC) vessels and other amphibious craft and vehicles with crews and Marines into potential trouble spots around the world. The ship also has the capability to act as primary control ship during an Amphibious Assault.

The ships were designed as a minimum modification variant of the LSD 41 Whidbey Island Class and contain the same lines and propulsion plant as the first eight ships. The major difference is that the well deck has been shortened to accommodate added vehicle stowage and cargo storage areas, reducing the number of LCAC's carried from four to two.

Dock Landing Ships support amphibious operations including landings via Landing Craft Air Cushion (LCAC), conventional landing craft and helicopters, onto hostile shores. These ships transport and launch amphibious craft and vehicles with their crews and embarked personnel in amphibious assault operations. The ships combat load, transport and launch amphibious craft, or vehicles, together with their crews and embarked personnel, and render limited docking and repair services to small ships and craft.

Wheeled vehicles can be embarked/debarked via three methods: pier crane, ship's crane, or the well deck. **The well deck will accommodate one (1) LCU or two (2) LCACs**. Vehicles may be onloaded/offloaded via the well deck by either landing craft while the ship is ballast down or by dropping the stern gate and backing up to a quay wall. The ships are equipped with a hydraulically-operated stern gate. This system has a watertight hinged closure located at the stern which swings out and down to permit entry of landing craft and vehicles into the well deck. The port and starboard hydraulic rams raise or lower the gate in approximately (5) minutes and provide positive control of the gate during travel. The stern gate can support the weight of two (2) AAVP7A1 Amphibian Vehicles, an M60A1 or M1A1 Main Battle Tank, or two (2) M923 5 ton trucks simultaneously.

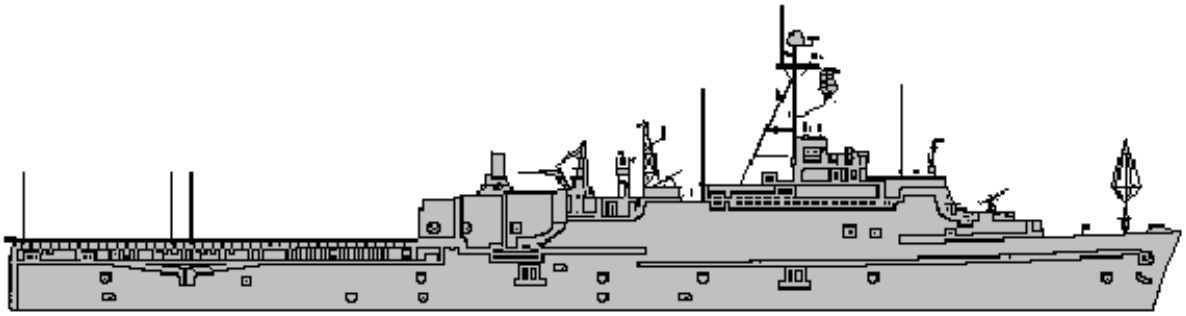
Loaded LCAC's can be launched while underway on their own power.Loaded conventional landing craft (such as LCU, LCM-8, or LCM-6) are launched under their own power with the ship ballasted down sufficiently to float the craft. Amphibious vehicles (such as LVT and LARC-V) are launched under their own power with the ship ballasted just below the sill.

Lighting, visual landing aides, and flight deck facilities are provided to allow launching / landing, and VERTREP/hover under minimum conditions of day and night VFR. The two landing spots allow for operation of aircraft as large as the CH-53E or MV-22.

LSD-49, Harpers Ferry Class, Specifications:

Length	Overall Length: 610 ft Waterline Length: 580 ft
Beam	Extreme Beam: 84 ft Waterline Beam: 84 ft
Height	177 ft., 2 in
Draft	Maximum Navigational Draft: 20 ft Draft Limit: 21 ft ballasted - 21.48 ft FWD / 34 ft AFT [No Cargo ballasted - 22.76 ft FWD / 36.11 ft AFT [w/Cargo]
Displacement	Light Displacement: 11547 tons Full Displacement: 16400 tons Dead Weight: 4853 tons
Compartments/ Spaces	733
Propulsion	4, 16 cylinder Colt-Pielstick Diesel Engines 33,000 combined shaft Horsepower at 520 rpm Propellers 2, 13.5 ft. controllable pitch blades
Speed	20+ knots
Well Deck Capacity:	2 Landing Craft, Air Cushion (LCAC), or 1 Landing Craft, Utility (LCU), or 4 LCM-8 Landing Craft, Mechanized (LCM), or 9 LCM-6 Landing Craft, Mechanized (LCM), or 15 AAV Amphibious Assault Vehicle
Weapons	6 - MK36 Super Rapid Blooming Outboard Chaff (SRBOC) 6 - .50 Caliber Machines Guns 2 - MK 38 25MM Machine Guns 2 - MK 15 MOD 12 BK 1 Close-In Weapons Systems Mounts

Amphibious Transport Dock – LPD-4 Austin Class



The LPD 4 Austin class of ship combines the functions of three different classes of ships; the landing ship (LSD), the tank landing ship (LST), and the attack cargo ship (LKA). The Amphibious Transport, Dock, is used to transport and land Marines, their equipment and supplies by embarked landing craft or amphibious vehicles augmented by helicopters in amphibious assault.

The assigned mission of the LPD is to transport and land troops and their essential equipment and supplies in an amphibious assault by means of embarked landing craft or amphibious vehicles augmented by helicopter lift.

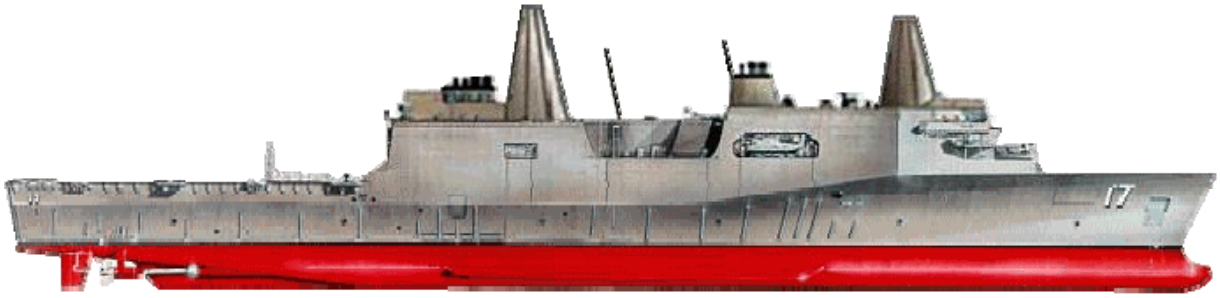
The LPD is a general purpose amphibious ship with substantial lift capacities for troops, vehicles, landing craft, cargo, and bulk fuel. The LPD is capable of ballasting to permit loading and launching of landing craft and assault amphibious vehicles. Vehicles can move about the various decks by a series of power operated ramps. The well deck can accommodate all types of landing craft currently in the amphibious force inventory. A limited number of helicopters may be transported on the flight deck as the LPD serves as a helicopter platform for landing embarked troops and their supplies. It also serves as a refueling station for helicopters of the landing force. Troops, vehicles, and equipment can be loaded/off-loaded by helicopter and landing craft simultaneously.

Although their capabilities are less than those of the new LSD-41 class, the ships of the Austin class, built between 1965-1971, were considered sufficiently modern to have their service lives extended, and the Navy had planned to inaugurate an overhaul program for all 11 of them commencing in early 1988. Their modernization could have extended their service lives to 2005. However, Congress did not authorize funding for the program. Although the predecessor LPD-1 *Raleigh* class was retired after three decades of service, the ships of this class will remain in service for nearly four decades until they began being replaced by the LPD-17 class beginning in 2003.

LPD-4, Austin Class, Specifications:

Power Plant	(2) boilers, (2) Steam Turbines, (2) shafts (24,000 shp)
Length	570 ft
Beam	84 ft
Draft	23 ft
Displacement	16,905 tons
Speed	21 knots
Crew	Ship's Company: 24 officers, 396 enlisted Marine Detachment: 68 officers, 717 enlisted
Vehicle Square	14,000 sqft
Cargo Cube	51,000 cuft
Landing Craft	**(1) LCU or** **(1) LCAC**
Aircraft (2, w/ 4x expanded) Landing Spots	(6) CH-46 Equivalents
Command and Control	Command Information Center (CIC) Troop Operations & Logistics Center (LFOC) Ship's Signals Exploitation Space Flog Plot (Flag configured only) Supporting Arms Coordination Center (SACC) Helicopter Coordination Section SPS-40 – Air Search Radar SPS-60 – Surface Search Radar
Medical	(1) Operating Rooms (12) Post-op/Intensive Care Beds
Armament	(1) – Phalanx 20mm Close-in Weapons System (CIWS) (2) – Mk 38 25mm Machine Gun (2) – M2 .50 Cal Machine Guns (1) – MK 36 Chaff System

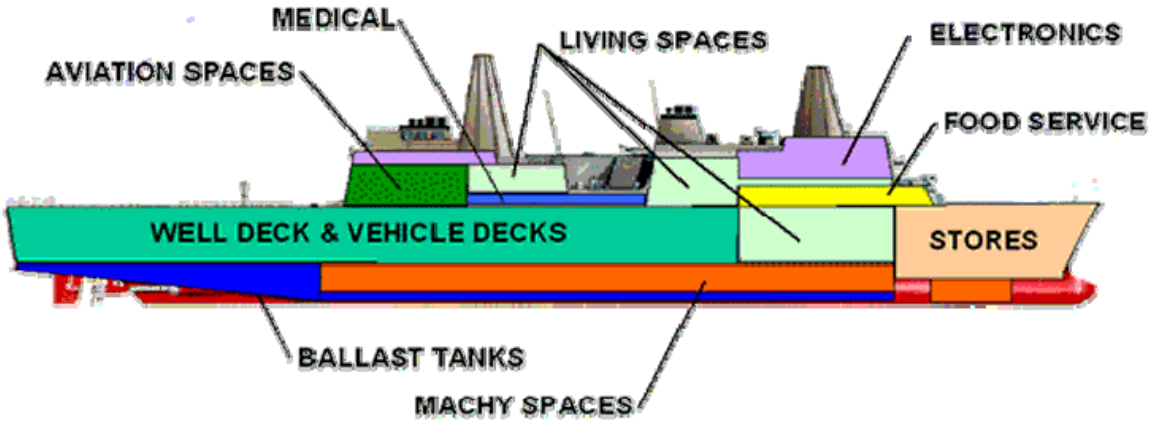
Amphibious Transport Dock – LPD-17 San Antonio class



The SAN ANTONIO (LPD 17) Class of amphibious transport dock ships represents the Navy and Marine Corps' future in amphibious warfare, and is one of the cornerstones in the strategic plan known as "Forward...from the sea". The San Antonio class is the first designed, from the keel up, to execute Operational Maneuver from The Sea [OMFTS] and Ship to Objective Maneuver. It is designed to support embarking, transporting, and landing elements of a Marine landing force in an assault by helicopters, landing craft, amphibious vehicles, and by a combination of these methods to conduct primary amphibious warfare missions.

The LPD 17 integrates with the existing amphibious ship force structure and the Navy's declining shore infrastructure. The LPD 17 class program is the replacement for three classes of amphibious ships that have reached the end of their service life -- the LPD 4, LSD 36, and LST 1179 classes - and one class that has already been retired, the LKA 113.

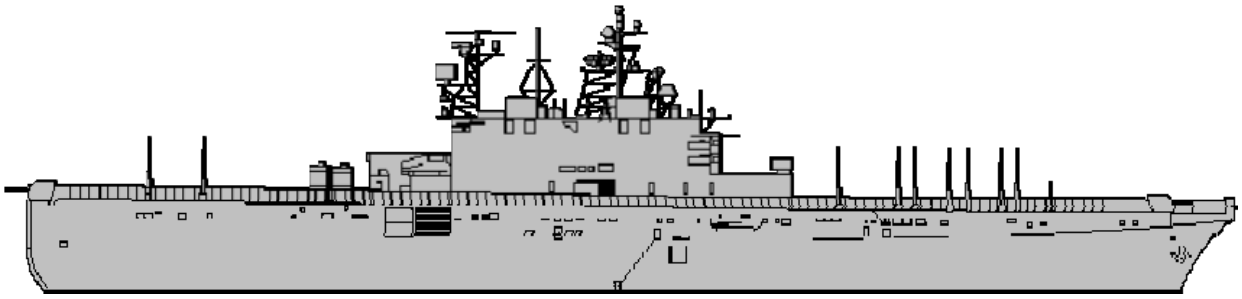
LPD-17 brings to us a ship designed solely to support the mobility triad (LCAC, AAAV, and MV-22). LPD 17 is able to embark, transport, and land elements of the landing force in an assault by helicopters MV-22, landing craft including air cushion (LCAC) and conventional (LCU) landing craft, amphibious vehicles (AAV) and expeditionary fighting vehicles (EFV), and by a combination of these methods. The combat power of this ship is it's embarked Marines and their equipment.



LPD-17, San Antonio Class, Specifications:

Power Plant	(4) Turbo Marine Diesel Engines, (2) boilers, (2) shafts (70,000 shp)
Length	684 ft
Beam	105 ft
Draft	23 ft
Displacement	25,296 tons
Speed	22+ knots
Crew	Ship's Company: 32 officers, 365 enlisted Marine Detachment: 77 officers, 535 enlisted
Vehicle Square	25,000 sqft
Cargo Cube	35,000 cuft
Landing Craft	**(1) LCU or** **(2) LCACs or** (4) LCM-8
Aircraft (2) Landing Spots	(4) CH-46 Equivalents
Command and Control	Command Information Center (CIC) Troop Operations & Logistics Center (LFOC) Ship's Signals Exploitation Space Joint Intelligence Center (JIC) Supporting Arms Coordination Center (SACC) Helicopter Coordination Section AN/SPQ-14 (V) - Advanced Sensor Distribution System AN/USQ-119E (V) 27 - Global Command and Control System – Maritime (GCCS-M) AN/KSQ-1 Amphibious Assault Direction System
Medical	(2) Operating Rooms (24) Post-op/Intensive Care Beds (2) Dental Operating Rooms
Armament	(2) - Mk 31 Mod 1 RAM Guided Missile Weapon System (2) - Mk 46 Mod 1 30mm Gun (4) - MK 26 Mod 17 .50 Cal Machine Guns (1) - MK 36 Chaff System AN/SLQ-25 NIXIE Towed Torpedo Countermeasures AN/SLQ-32(V)3 Electronic Warfare (EW) system

Amphibious Assault Ship – LHA-1 Tarawa class



The primary war-fighting mission of the LHA-1 Tarawa class is to land and sustain United States Marines on any shore during hostilities. The ships serve as the centerpiece of a multi-ship Amphibious Readiness Group (ARG). Some 3,000 Sailors and Marines contribute to a forward-deployed ARG composed of approximately 5,000 personnel.

The Tarawa class is designed to operate independently or as a unit of a force, as a flagship or individual ship unit in both air and/or surface assaults, these ships are key elements of the amphibious assault forces for the Navy.

A capital ship, the Tarawa class can simultaneously fulfill six war-fighting requirements: flagship for embarked amphibious squadron, flag or general officer staff; aircraft carrier, with a 35-aircraft complement (the LHA's full length flight deck can handle ten helicopters simultaneously); amphibious assault launching platform, employing a variety of surface assault craft; hospital ship, equivalent to the nation's finest local hospitals with 17 ICU beds, 4 operating rooms, 300 beds, a 1,00-unit blood bank, full dental facilities, and orthopedics, trauma, general surgery, and x-ray capabilities; command and control (C4I) ship, with the Navy's most sophisticated SHF and EHF satellite communications capability; and assault provisions carrier able to sustain embarked forces with fuel, ammunition and other supplies.

The ships have an extensive command, communication and control suite. These electronic systems give the amphibious task force commander nearly unlimited versatility in directing the assault mission.

The ships have an extensive mechanical system for vertical and horizontal movement of containerized and palletized supplies from deep cargo holds to assault craft or helicopters. A system of five centerline elevators, conveyor lines and a monorail system move cargo and supplies. Two large elevators, one aft and one portside, move aircraft and equipment from the hangar deck to the flight deck. Wheeled vehicles, trucks, jeeps and tanks can be driven or pulled from any deck level storage position via inclined ramps to either awaiting craft in the well deck or helicopters on the flight deck.

LHA-1, Tarawa Class, Specifications:

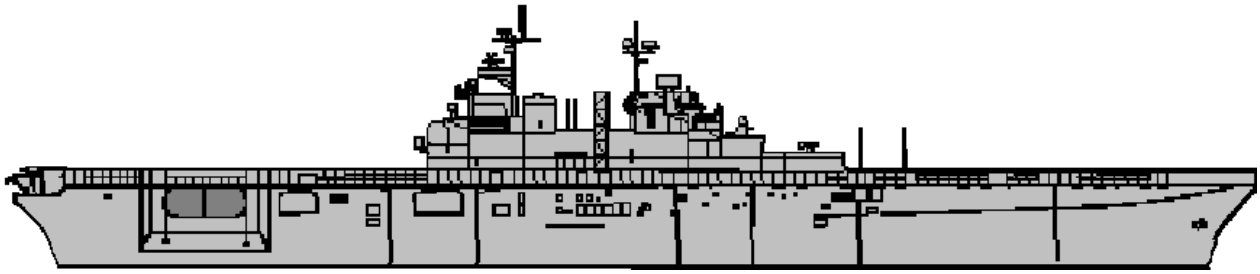
Power Plant	(2) geared steam turbines, (2) boilers, (2) shafts (70,000 shp)
Length	820 ft
Beam	106 ft
Draft	26 ft
Displacement	Light Displacement: 26,255 tons Full Displacement: 39,925 tons
Speed	24 knots (22 knots sustained)
Crew	Ships Company: 82 officers, 882 enlisted Marine Detachment 1,900 plus
Vehicle Square	28,700 sqft
Cargo Cube	156,000 cuft
Landing Craft	(2) LCU (1) LCAC
Aircraft (9) Landing Spots	(6) AV-8B Harrier attack planes (4) AH-1W Super Cobra attack helicopter (12) CH-46 Sea Knight helicopters (9) CH-53 Sea Stallion helicopters (4) UH-1N Huey helicopters Actual mix depends on mission/43X CH-46 equivalent
Command and Control	Command Information Center (CIC) Integrated Tactical Amphibious Warfare Data System Flag Plot Landing Force Operations Center (LFOC) Ship's Signals Exploitation Space Joint Intelligence Center (JIC) Supporting Arms Coordination Center (SACC) Helicopter Direction Center (HDC) Helicopter Coordination Center Tactical Air Control Center (TACC) 1 AN/SPS-48 radar 1 AN/SPS-49(V)7 radar 1 AN/SPS-64 radar 1 AN/SPS-67 radar AN/SYS-2 Detection/Tracking System 1 MK-23 Target Acquisition System (TAS) MK-91 Fire control System
Medical	(4) Operating Rooms

(17) Post-op/Intensive Care Beds
(1) Isolation ward w/ (4) beds
(1) Primary Care Ward w/ (48) Beds
Ship's Doctor
Ship's Dentist

Armament

(2) - 21 Cell Rolling Airframe Missile (RAM)
(4) - 25mm MK38 Gun Mounts
(2) - 20-mm Close In Weapons System Block 1
(5) - .50 Cal Mounts
(2) - SLQ-25 NIXIE
(6) - Mk 36 Chaff System

Amphibious Assault Ship – LHD-1 Wasp Class



The Wasp-class are the largest amphibious ships in the world. The LHD is an improved follow-on to the five ship Tarawa-class LHAs, sharing the basic hull and engineering plant. The LHD l has an **enhanced well deck, enabling it to carry three LCACs** (vice one LCAC in the LHAs). The flight deck and elevator scheme is also improved, which allows the ship to carry two more helicopters than its predecessor, the LHA. **The LHA can transport one LCAC when the LCAC is placed in the well deck sideways, while the Wasp class amphibious assault (multipurpose) (LHD) ship carries two LCACs which drive in and drive out of the well deck fully loaded.** The LHD has **20,000 more cubic feet storage capacity but 5,000 square feet less vehicle storage than an LHA.** The LHD has more hangar and deck space than an LHA giving the LHD the capacity to **carry three more CH-46 helicopters than the LHA**. A Marine Expeditionary Unit (MEU) with an LHA as the large deck amphibious ship requires three additional ships to provide the capabilities required of an MEU. When an LHD is the large deck amphibious ship in the MEU, one to two fewer ships are needed to support the MEU.

WASP class ships are the first to be specifically designed to accommodate the AV-8B Harrier jump jet and the LCAC hovercraft, along with the full range of Navy and Marine helicopters, conventional landing craft and amphibious assault vehicles to support a Marine Expeditionary Unit (MEU) of 2,000 Marines. The ships also carry some of the most sophisticated communications, command and control capabilities afloat, along with state of the art electronic systems and defensive weaponry.

WASP-class ships can also provide command and control and aircraft facilities for sea control missions, while operating with an aircraft carrier battle group. They transport and land ashore not only troops, but also the tanks, trucks, jeeps, other vehicles, artillery, ammunition and various supplies necessary to support the amphibious assault mission. Monorail trains, moving at speeds up to 600 feet per minute, transport cargo and supplies from storage and staging areas throughout the ship to a 13,600 square foot well deck which opens to the sea through huge gates in the ship's stern. There, the cargo, troops and vehicles are loaded aboard landing craft for transit to the beach. Air cushion landing craft can "fly" out of the dry well deck; or the well deck can be ballasted down for conventional craft to float out on their way to the assault area. Helicopter flights also transfer troops and equipment to the beach, while the ship's air traffic control capability simultaneously directs close air tactical support provided by embarked jet aircraft and helicopter gunships.

LHD-1, Wasp Class, Specifications:

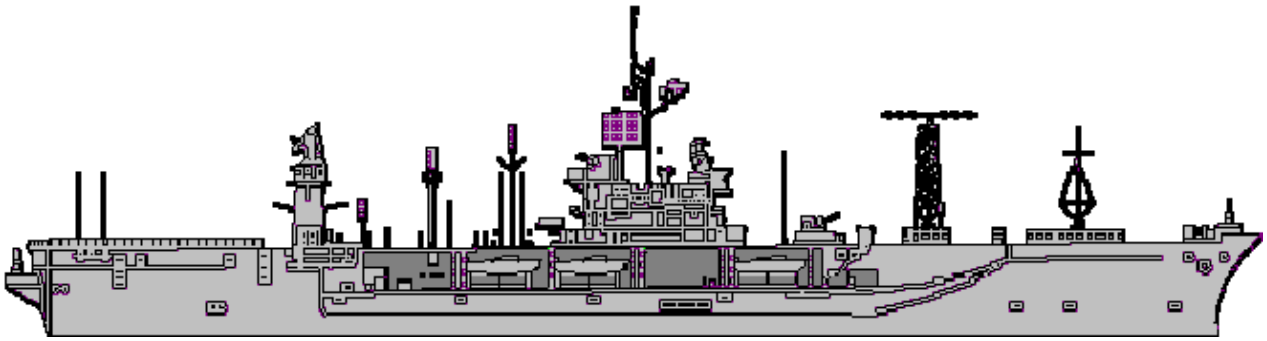
Power Plant	(2) geared steam turbines, (2) boilers, (2) shafts (70,000 shp)
Length	844 ft
Beam	107 ft
Draft	27 ft
Displacement	Full Displacement 40,532 tons
Speed	22 knots
Crew	Ships Company 104 officers, 1,004 enlisted Marine Detachment: 1,900 plus
Vehicle Square	24,012 sqft
Cargo Cube	145,000 cuft
Landing Craft	(2) LCU Landing Craft, Utility or (3) LCAC Landing Craft, Air Cushion or (6) LCM-8 Landing Craft, Mechanized or (40) AAV Amphibious Assault Vehicle [normal] or (61) AAV Amphibious Assault Vehicle [stowed]
Aircraft	(Actual mix depends upon mission) (6) AV-8B Harrier attack planes (4) AH-1W Super Cobra attack helicopter (12) CH-46 Sea Knight helicopters or (12) V-22 Osprey tilt-rotor (9) CH-53 Sea Stallion helicopters (4) UH-1N Huey helicopters Actual mix depends on mission/43X-CH-46 equivalent
Command and Control	Command Information Center (CIC) Integrated Tactical Amphibious Warfare Data System Flag Plot Landing Force Operations Center (LFOC) Ship's Signals Exploitation Space Joint Intelligence Center (JIC) Supporting Arms Coordination Center (SACC) Helicopter Direction Center (HDC) Helicopter Coordination Center Tactical Air Control Center (TACC) 1 AN/SPS-48 radar 1 AN/SPS-49(V)7 radar 1 AN/SPS-64 radar 1 AN/SPS-67 radar AN/SYS-2 Detection/Tracking System 1 MK-23 Target Acquisition System (TAS) MK-91 Fire control System
	(18) Post-op/Intensive Care Beds

(1) Isolation ward w/ (6) beds
(1) Primary Care Ward w/ (36) Beds
Ship's Doctor
Ship's Dentist

Armament

(2) - MK29 launchers for NATO Sea Sparrow
(3) - MK15 20mm Phalanx CIWS mounts
(8) - MK33 .50 cal. machine guns
(1) - MK-36 Chaff System AN/SLQ-49 Chaff Bouys
AN/SLQ-25 NIXIE Towed Torpedo Countermeasures
AN/SLQ-32(V)3 Electronic Warfare (EW) system

Amphibious Command Ship – LCC-19 Blue Ridge Class



The assigned mission of the amphibious command ship (LCC) is to function as the command ship for a joint task force as the command, control, communications, computers, and intelligence (C4I) platform, or for a naval component commander; numbered fleet commander; commander, amphibious task force (CATF); Marine expeditionary force (MEF).

The *USS Blue Ridge* (LCC-19) is distinctive in appearance. The ship can communicate in frequency ranges from high frequency to super high frequency, including two satellite systems for high speed/high volume communication links. The various internal command areas are highly automated to monitor and process information regarding the progress of an amphibious operation. This is the only class of ship designed from its hull up to support the command and control needs of the CATF; commander, landing force (CLF); and tactical air control center (TACC).

Specifications

Power Plant	(1) geared steam turbine, (2) boilers, (1) shaft (22,000 shp)
Length overall	620 ft
Beam extreme	180 ft
Draft	29 ft
Displacement	18,646 tons (16,987 metric tons) full load
Speed	23 knots
Crew	Staff: 217 / Crew: 774 Landing Force: 56 Officers / 153 Enlisted
Vehicle Square	3,015 sqft
Cargo Cube	2,175 cuft
Landing Craft	(2) LCPL

	(1) Utility Boat
Aircraft (1x Spot)	Can accommodate all helicopters. Can carry all helicopters except the CH-53 Sea Stallion
Command and Control	Command Information Center (CIC) Flag Plot Landing Force Operations Center (LFOC) Ship's Signals Exploitation Space Joint Intelligence Center (JIC) Supporting Arms Coordination Center (SACC) Helicopter Direction Center (HDC) Helicopter Coordination Center Tactical Air Control Center (TACC)
Armament	Phalanx 20mm Close-in Weapon System (CIWS) MK-38 25mm Machine Gun M-2 .50 cal Heavy Machine Gun Mk-36 Chaff Rocket Super Rapid Booming Off-board Chaff (SRBOC) Launcher

Navy Customs and Courtesies

Boarding a Navy Ship

You cannot just walk on and off a ship as you would enter and leave your home, you must follow certain procedures. When you are in uniform and boarding any ship and the national colors are flying, you halt on the gangway, face aft, and salute the colors. You then turn to the Officer of the Deck (OOD) and salute. Then, displaying your military ID you request permission to board the ship, saying "I request permission to come aboard, Sir/Ma'am." The OOD will then return your salute and give you permission to come aboard.

When you leave a ship, you first salute the OOD and say, "I request permission to leave the ship/go ashore, Sir/Ma'am." After recieveing permission, you then face aft and salute the colors (if it is still flying) and depart.

Quarterdeck Rules and Etiquette

Quarterdeck etiquette remains the same in peace and war. The quarterdeck has always been an honored as part of the ship on which official ceremonies are conducted. It still retains its sanctity. It should be kept immaculate and its ceremonial character maintained. Because of that sanctity, you cannot just walk on and off a ship as you would enter and leave your home; you must follow certain procedures. The watch officer should strictly enforce the etiquette of the quarterdeck:

- Avoid appearing out of uniform.
- Never smoke.
- Refrain from putting hands in pockets.
- Don't engage in recreational athletics unless they are sanctioned by the captain, and then only after working hours.

Wardroom Rules and Etiquette

The Wardroom was originally known as the Wardrobe Room, a place where officers kept their spare apparel. It was also a space where any loot secured from enemy ships was stored. In an effort to have some privacy on a crowded ship, officers would sometimes take their meals in the Wardrobe Room. Today, the wardroom is where officers take their meals, relax, and socialize. Rules of etiquette for the wardroom are as follows:

- All officers belong to the wardroom mess.
- Remove cover prior to entering mess.
- Always be in uniform (clean uniform).
- If necessary to leave the mess early, the officer will excuse him or herself to the senior officer present.
- Introduce any guests to others.
- Never show up late for the mess.
- If unavoidable, apologize and request permission to join.
- Don't loiter about the mess during working hours.
- Don't be noisy or boisterous.
- Don't talk shop, religion, or politics
- Wait for the senior member to sit before you do.
- No enlisted personnel allowed.

Navy Customs and Courtesies (Continued)

Morning and Evening Colors

Naval commands ashore and aboard ships not underway observe the ceremonial hoisting and lowering of the national ensign at 0800 and sunset. At 0800, this ceremony is known as morning colors; at sunset, it is known as evening colors, Commands carry out this ceremony as prescribed in *Navy Regulations* as follows:

- The guard of the day and the band are paraded in the vicinity of the point of hoist of the colors. "Attention" is sounded, followed by the playing of the national anthem by the band.
- At morning colors, the flag is started up at the beginning of the music and hoisted smartly to the peak or truck.
- At evening colors, the flag is started from the peak or truck at the beginning of the music and lowered at a pace with the music so as to be completed at the last note.
- At the completion of the music, the bugle call "Carry On" is sounded.
- In the absence of a band, "To the Colors" is played by the bugle at morning colors, and "Retreat" at evening colors.
- The salute is rendered as prescribed for the national anthem.
- In the absence of music, a whistle sounds "Attention" and "Carry On" to begin and end the salute. "Carry On" is sounded as soon as the ensign is completely lowered.
- During colors, boats underway within sight or hearing of the ceremony lie-to or proceed at the slowest safe speed.
- Boat officers (or in their absence, coxswains) stand and salute except when dangerous to do so. Other persons in the boat remain seated or standing and do not salute.
- During colors, vehicles within sight or hearing of the ceremony stop. Persons riding in such vehicles remain seated at attention.
- After morning colors, if foreign warships are present, the national anthem of each nation represented is played. Anthems are played in the order in which a gun salute would be fired to, or exchanged with, the senior official or officer present of each nation. This is provided so that when a ship is in a foreign port, the national anthem of the port is played immediately after morning colors, followed by the national anthems of other foreign nations present.

Summary

By projecting combat power precisely at the most advantageous location and time, amphibious operations capitalize on the Marine Corps core competencies and expeditionary mindset, and seek to exploit the element of surprise and capitalize on enemy weakness. By understanding amphibious and expeditionary operations, differences between the two, and how they are related, the student officer will have a better understanding of his/her role in the operating forces.

References

Reference Number or Author	Reference Title
JP 3-02	Amphibious Operations
MCRP 3-31B	Amphibious Ships and Landing Craft Data Book
JP 1-02	DoD Dictionary of Military and Associated Terms
MCDP 3	Expeditionary Operations
MCWP 3-31.6	Supporting Arms Coordination in Amphibious Operations
MCRP 3-31B	Amphibious Ships and Landing Craft Data Book
MCRP 3-31.1A	Employment of Landing Craft Air Cushion (LCAC)
MCWP 3-31.6	Supporting Arms Coordination in Amphibious Operations
MCDP 1-0	Marine Corps Operations
MCRP 5-12D	Organization of the Marine Corps Forces
MCO 3120.8	Policy for the Organization of Fleet Marine Forces for Combat
MCDP 1	Warfighting
MCRP 3-31B	Amphibious Ships and Landing Craft Data Book
MCRP 3-31.1A	Employment of Landing Craft Air Cushion (LCAC)
MCWP 3-31.6	Supporting Arms Coordination in Amphibious Operations

Glossary of Terms and Acronyms

Term or Acronym	Definition or Identification
AAV	Amphibious assault vehicle
AOA	Amphibious operation area
ATF	Amphibious Task Force
ACE	Aviation combat element
ACM	Air contingency MAGTF
CA	California
CE	Command element
LCE	Logistics Combat Element
GCE	Ground combat element
HQ	Headquarters
MAGTF	Marine air-ground task force
MEB	Marine expeditionary brigade
MEF	Marine expeditionary force
MEU	Marine expeditionary unit
MEU(SOC)	Marine expeditionary unit (special operations capable)
NC	North Carolina
NCA	National Command Authority
SPMAGTF	Special Purpose Marine Air-Ground Task Force
CATF	Commander, Amphibious Task Force
CLF	Commander, Landing Force
LF	Landing Force
MPF	Maritime Prepositioning Force
NEO	Noncombatant evacuation operations

OMFTS	Operational Maneuver from the Sea
OPCON	Operational control
PERMA	Planning, embarkation, rehearsal, movement, and action
STOM	Ship-to-Objective Maneuver
TACON	Tactical control
UNAAF	Unified Action Armed Forces

Notes