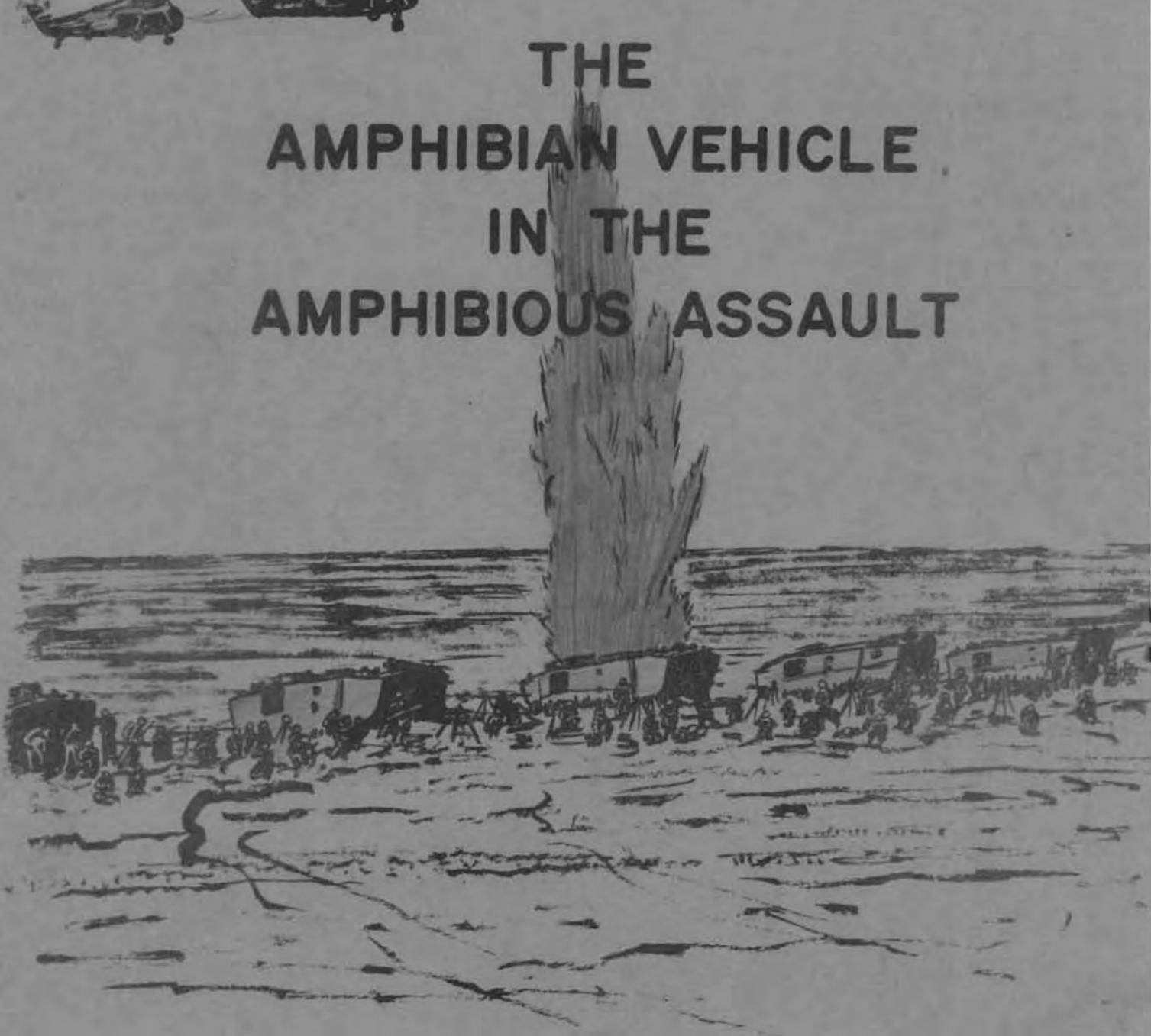




THE  
AMPHIBIAN VEHICLE  
IN THE  
AMPHIBIOUS ASSAULT



SHIP TO SHORE DEPARTMENT  
U. S. NAVAL AMPHIBIOUS SCHOOL, CORONAD  
SAN DIEGO, CALIFORNIA 92155

HANDOUT  
H-2E-5313/503  
H-813-5316/209  
H-2E-5319/201  
H-00-5210/104

TITLE: CHARACTERISTICS AND EMPLOYMENT OF AMPHIBIAN VEHICLES



INTRODUCTION: The following pages include information on characteristics, limitations, capabilities and missions of the following amphibian vehicles:

Landing Vehicle, Tracked, Personnel  
Model 5 (LVTP-5)

Landing Vehicle Tracked, Command  
Model 5 (LVTP-5 CMD)

Landing Vehicle Tracked, Engineer  
Model 1 (LVTE-1)

Landing Vehicle Tracked, Howitzer  
Model 6 (LVTH-6)

Landing Vehicle Tracked, Recovery  
Model 1 (LVTR-1)

Truck, Amphibious, 2½ ton, 6X6 (DUKW)

Lighter, Amphibious (LARC), 5 ton

1. GENERAL:

a. This handout is designed to give the student a general understanding of the missions, capabilities, characteristics, and limitations of the various amphibian vehicles which provide logistical and tactical support to the landing force.

b. Amphibian vehicles are designed to operate afloat or ashore without modification. They are able to negotiate off-shore obstacles which limit the use of landing craft. In providing this flexibility certain unfavorable characteristics results, such as slow water speed, poor waterborne maneuverability, and extensive maintenance requirements. The tactical advantages of uninterrupted movement to the beach and inland offset these disadvantages and provide amphibian vehicles a valuable role in the amphibious operation.

2. MISSION AND EMPLOYMENT:

a. Mission: Amphibian vehicle units are assigned the mission of supporting the landing force both tactically and logistically. Tactical support takes the form of fire support by the Amphibian Howitzers (LVTH), engineer support by the LVTE, communication support by the LVTP (CMD), and transportation of men and equipment from ship-to-shore and inland aboard amphibian tractors and trucks. Amphibian tractors and trucks play a logistic support role by their inherent capability for transportation of supplies and equipment from ships to inland points. The amphibian tractors are also employed to transport these supplies over terrain not normally negotiable by other vehicles.

b. Employment: Amphibian vehicles are employed during the amphibious assault, during the conduct of river crossings, as components of a mechanized or motorized-mechanized task force, and during other special operations ashore. When properly employed they are effective in operations after dark. They may be employed in swamps, in arctic terrain, in hilly areas, during desert operations, and on rough trails. Mountains, jungle areas, and certain types of mud flats often limit the employment of amphibian vehicles.

3. AMPHIBIAN VEHICLES-CAPABILITIES AND LIMITATIONS:

a. Capabilities:

(1) Can negotiate reefs, certain types of offshore obstacles, and shallow water areas which cannot be crossed by conventional landing craft.

(2) Can traverse beach terrain, swamps, light woods, ice, snow and minor obstacles which are impassable to wheeled vehicles.

(3) Provide protection for embarked personnel and cargo against small-arms fire, shell fragments and the effects of nuclear explosion.

(4) Can operate for extended distances on land without damage to roads.

(5) Useful in beach area salvage work or as a prime mover when great traction is required.

b. Limitations:

- (1) Low waterborne speed. 5
- (2) Poor maneuverability in the water.
- (3) High fuel consumption rate.
- (4) Visibility restricted when hatches closed.
- (5) Vulnerable to mines, heavy weapons fire.
- (6) Has no navigational equipment.
- (7) Requires approximately two (2) hours preventive maintenance for each hour of operation.

4. ORGANIZATION:

a. The amphibian vehicles shown in this handout, with the exception of the DUKW and the LARC, are landing force equipment. That is, they are part of amphibian vehicle units which are organic elements of force troops, Fleet Marine Forces (USMC).

b. At present the only amphibian vehicles organic to the United States Navy are the DUKW and the LARC(5). Beachmaster Units (BMU) employ these two vehicles in surf salvage and miscellaneous operations on or near the beach in an amphibious operation.

LVTP5A1

This vehicle is identified as the Landing Vehicle, Tracked, Personnel, Model 5 modified (LVTP5A1) (Armored Amphibian Assault Personnel and Cargo Carrier). It is employed to transport troops, equipment and cargo from ship-to-shore and to inland points, as required. The vehicle operates on land or in water without modification.

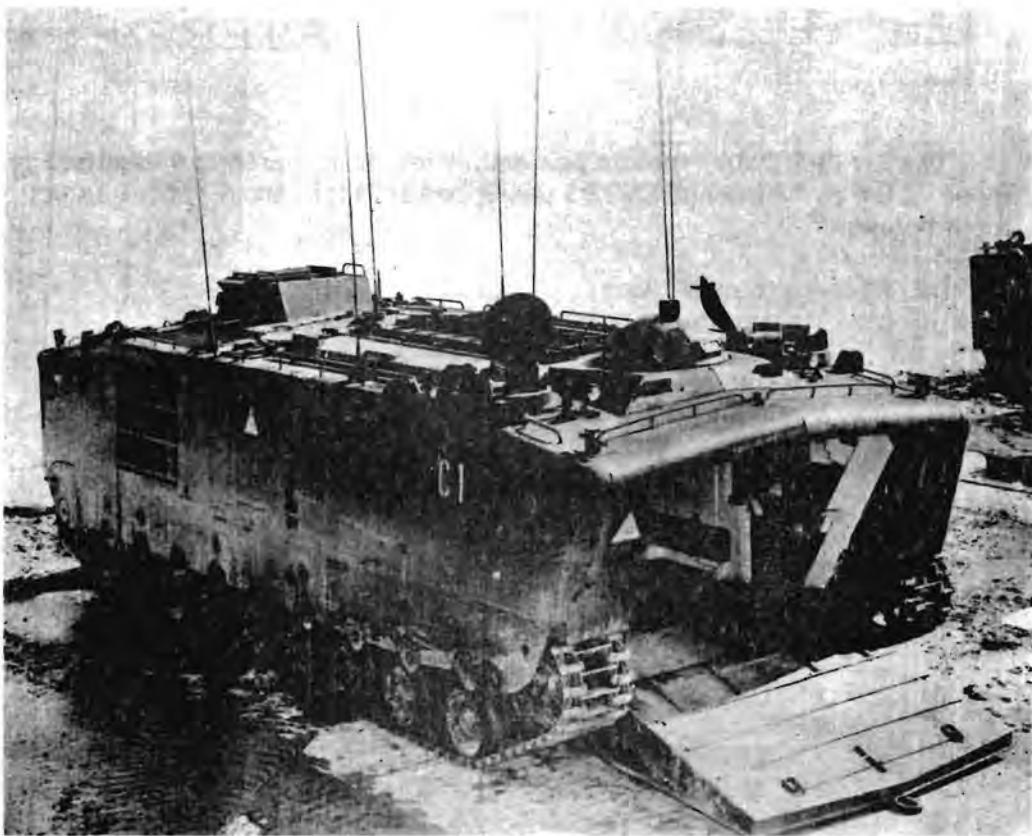


CHARACTERISTICS

a. Length:	29 ft. 8 in.
b. Width:	11 ft. 8 in.
c. Crew:	3
d. Passenger capacity:	
Maximum troop load (water and land)	34
e. Cargo capacities:	
Water	12,000 lbs
Land	18,000 lbs
f. Weight:	
Combat loaded water	81,780 lbs
Combat loaded land	87,780 lbs
g. Speed:	
Maximum land forward	30 MPH
Maximum water forward	6.8 MPH
Cruising, land	20 MPH
Cruising, water	56 MPH
h. Cruising range:	
Land: 190 miles @	20 MPH
Water: 57 miles @	6 MPH
i. Engine - Continental (liquid cooled):	810 hp., Y-12
j. Fuel capacity (80 octane gasoline):	456 gallons
Consumption at cruising speed:	
Land (gallons per mile)	2.4
Water (gallons per hour)	47
k. Armament:	
Machinegun, caliber .30 (pivot mounted in turret)	1

LVTP5A1 (CMD)

This vehicle is identified as the Landing Vehicle, Tracked, Command, Model 5 modified (LVTP5A1) (CMD) (Armored Amphibian Assault Command Vehicle). It is employed as a mobile command post, fire support coordination center, or observation post. It is identical to the LVTP except for the modified cargo compartment, which accommodates additional communication equipment, desk space, chairs and map boards.



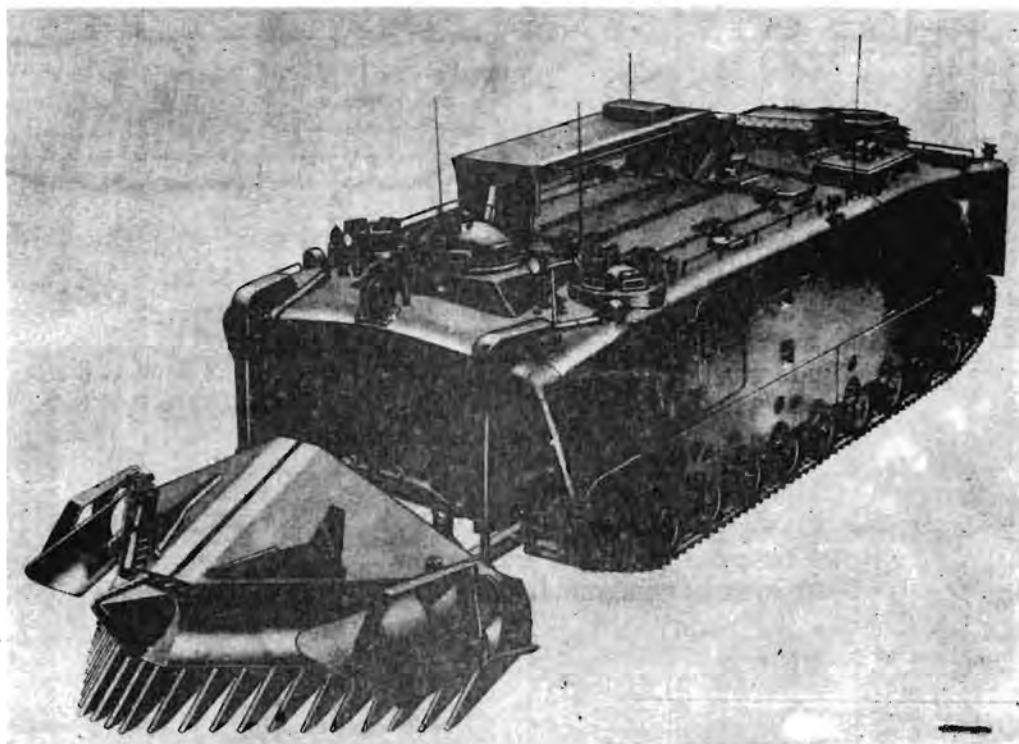
## CHARACTERISTICS

1. The LVTP5A1 (CMD) has characteristics which are identical to those of the conventional LVTP except as noted below:
2. Passenger capacity:
  - a. Maximum land and water 12
3. Weight:
  - a. Bare weight 64,200 lbs
  - b. Combat equipped with crew, OEM, fuel and lubricants 74,460 lbs
4. Radios:

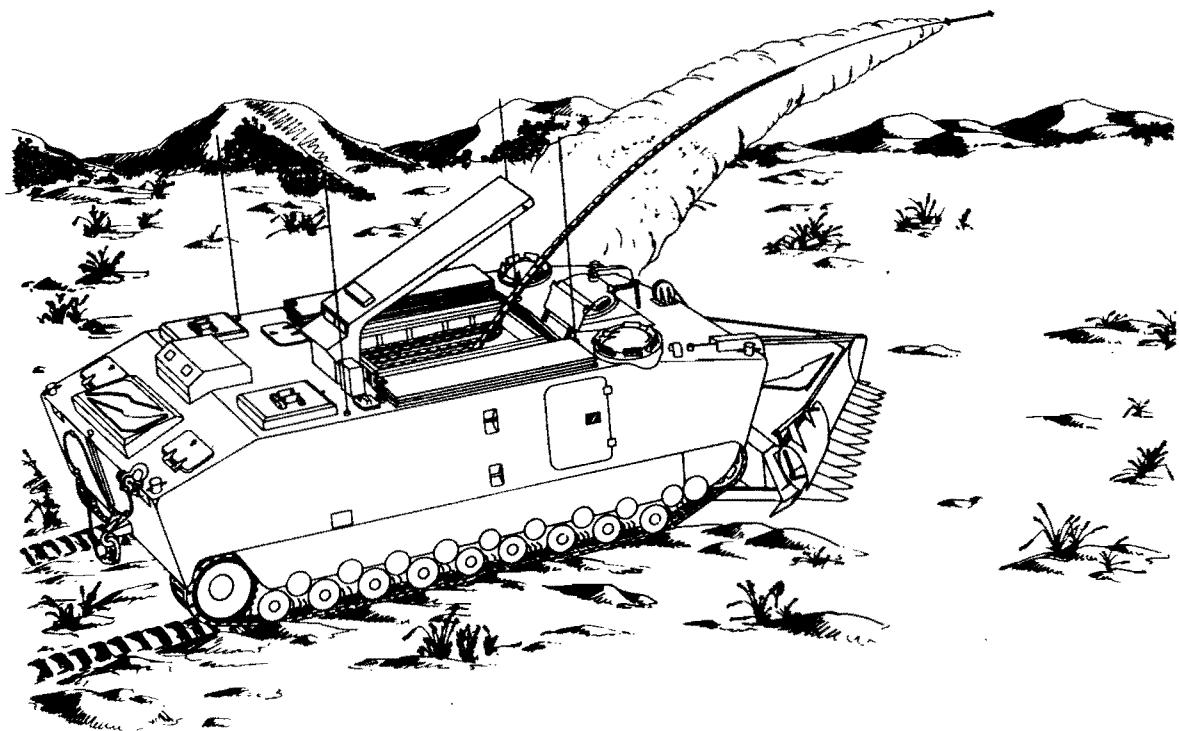
AN/GRC-7	1
TCS or PRC-47	1
AN/VRC-22	1
AN/ARC-27	1

LVTEL

This vehicle is identified as the Landing Vehicle, Tracked, Engineer, Model 1 (LVTEL) (Armored Amphibian Assault Engineer Vehicle). It is employed to breach minefields and clear obstacles during amphibious operations, river crossings, and during mechanized movements.



1,000 H.P. - SUPERCHARGED  
ROCKET LAUNCHER



#### LVTE1 FIRING DEMOLITION LINE CHARGE

##### CHARACTERISTICS

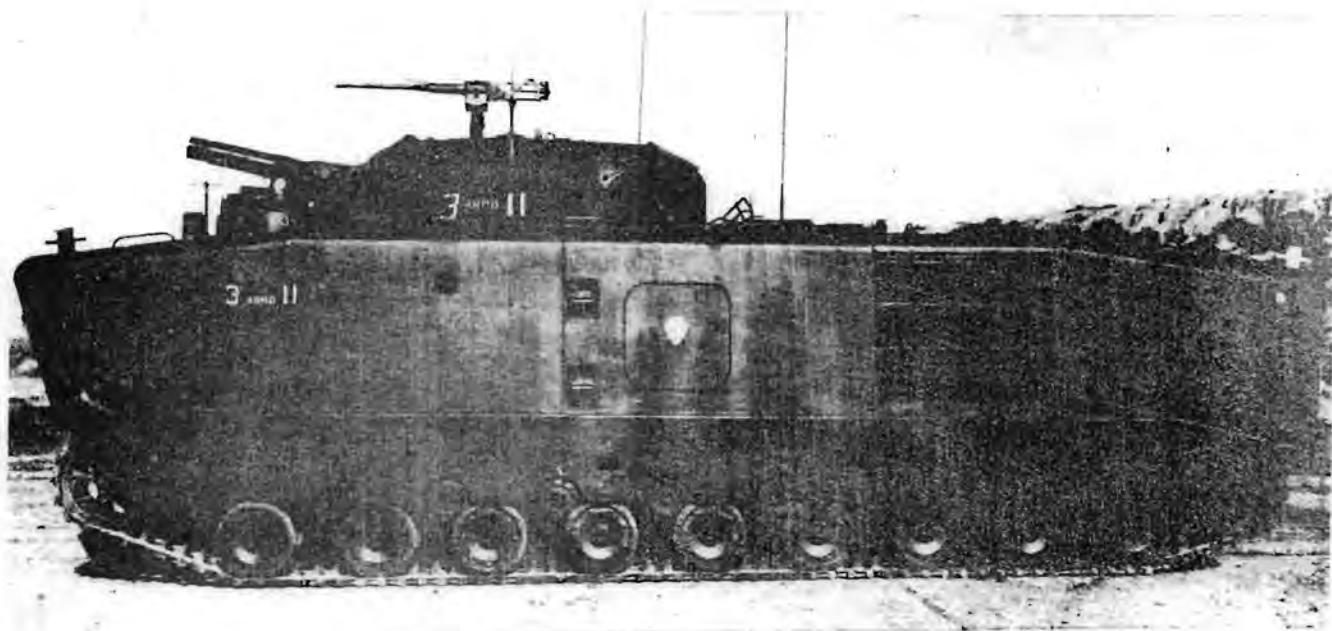
1. Length, overall:	39 ft. 9 in.
2. Width, overall:	12 ft. 8 in.
3. Crew:	
a. Without engineer component	3
b. With engineer component	7
4. Weight:	
a. Combat loaded	97,500 lbs.
5. Line charge stowage: (350 ft. each)	2
6. Speed:	
a. Maximum, land	24.9 MPH
b. Maximum, water	6.2 MPH

LVTH6A1

This vehicle is identified as the Landing Vehicle, Tracked, Howitzer, Model 6 modified (LVTH6A1) (Armored Amphibian Assault Vehicle, turreted with 105MM Howitzer). It is employed in general support of the landing force and in direct support of its subordinate elements in subsequent operations ashore. The LVTH is capable of supporting the amphibious assault with direct fire against beach defenses and subsequently with indirect fire in the field artillery role.



Front view of the LVTH6A1



SIDE VIEW OF LVTH6A1

CHARACTERISTICS

1. The LVTH has the same hull and engine as the LVTP. Its operating characteristics, therefore, are essentially the same as the LVTP.
2. Crew: 7
3. Armament:
  - a. Primary: 105MM Howitzer (360° traverse gyro-stabilized in vertical plane) 1
  - b. Secondary:
    - (1) Anti-aircraft - .50 caliber MG 1
    - (2) Coaxial - .30 caliber MG 1
4. Ammunition stowage: (105 MM rounds)
  - a. Waterborne 100 rds
  - b. Land 151 rds
5. Range: 105MM Howitzer (max)
  - a. Direct Fire: 3,500 meters; shell H.E., ch 7
  - b. Indirect Fire: 12,300 meters

LVTRIAL

This vehicle is identified as the Landing Vehicle, Tracked, Recovery, Model 1 modified (LVTRIAL) (Armored Amphibian Recovery and Maintenance Vehicle). It is employed in repairing amphibious vehicles. During land operating it has a retrieving ability but is not used to tow other vehicles.



CHARACTERISTICS

1. Length, overall: 31 ft. 9 in.
2. Width, overall: 11 ft. 8 in.
3. Equipped for organic maintenance:
  - a. Welder 1
  - b. Generator 1
  - c. Air compressor (2 cyl. reciprocating piston type) 2
  - d. Maximum boom lift 7,000 lbs.
  - e. Maximum winch capacity (single line pull) 45,000 lbs.
4. Has the ~~same~~ hull and engine as LVTP. Its operating characteristics are, therefore, essentially the same as the LVTP.

DUKW

This vehicle is identified as the Truck, Amphibious, 2½ ton, 6x6, DUKW. It can be employed in a troop and/or cargo transport role during the ship-to-shore movement and in subsequent operations ashore. The DUKW is capable of operating on land or in water without major modification. (The DUKW units of the Fleet Marine Force are presently in a de-activated status)



CHARACTERISTICS

1. Length, overall:	31 ft.
2. Width, overall:	8 ft. 2 in.
3. Cargo capacity:	
a. Water (dependent on surf conditions)	2½-5 tons
b. Land	5 tons
4. Crew (driver and assistant driver)	2
5. Troop capacity:	
a. Normal	25
b. Maximum	30
6. Speed:	
a. Water (maximum)	6.5 MPH
b. Water (normal)	6 MPH
c. Land (maximum)	50 MPH
7. The DUKW has a propeller and rudder for waterborne operations. For land operations its tires give it the same basic propulsion and steering system as a truck.	

LARC-5

This vehicle is identified as Lighter, Amphibious (LARC), 5 tons. It is employed in a cargo carrying capacity during amphibious operations, rivers crossings and limited operations ashore (is not presently used by Fleet Marine Force).



CHARACTERISTICS

1. Length, overall:	35 ft.
2. Width, overall:	10 ft.
3. Speed, loaded:	
a. Water	8.7 knots
b. Land	25 MPH
4. Crew:	2
5. Passenger capacities:	
a. Normal	0
b. Emergency	20
6. Cargo capacities:	
a. Normal	4.5 light tons
b. Maximum	5 light tons

REFERENCE

1. FMFM 9-2