

Defending the LCU's

by Staff Sergeant Gilbert Warner



Weapon systems for the Army's landing craft, utility, may not provide adequate defense against future threats.

In the old war game "Afrika Korps," one of the rules is that any unit without a clear logistics chain cannot attack and, after so many turns, is eliminated from the game. A review of military history shows that good supply channels are needed not only to win games but also to win wars.

Transportation assets need to be defended or the logistics chain falls apart. But how is this best accomplished? Combat-capable assets are frequently used as escorts, so they may not be available when the enemy arrives on the scene. The only personnel who definitely will be there to defend a transportation asset are those who operate it. Each transportation asset should be examined to determine how an enemy could attack it and how best to defend against such an attack.

For example, let's take the Army's landing craft, utility (LCU), class of watercraft. The LCU is a medium-sized landing and cargo vessel. There are three types in service: classes 1466, 1646, and 2001.

In general, they are capable of carrying between 120 and 320 tons, are 120 to 170 feet long, and cruise at speeds of 9 to 12 knots over distances of 1,000 to 2,000 miles. They are designed to land cargo on beaches. They can operate on rivers, between islands, and, depending on the weather, on open seas.

The LCU operates in four basic environments—ports, logistics-over-the-shore (LOTS) operations, open water, and narrow waters. These environments can be modified by weather and light conditions.

The first environment, a port, is a resupply, refuel, repair, recuperate, and do-the-paperwork area. If the LCU is kept busy, it will spend little time at port. A port may be simply a tent city on a beach, a "mother" ship at anchor, or a fully equipped shipyard. It may be collocated with a LOTS operation at a more elaborate installation. A port is relatively immobile and hard to hide, so an enemy will probably know where it is.

The second LCU environment is in a LOTS opera-



tion, which is like a two-ring circus in the middle of a waterway. It is the connection between land and sea. Supplies are concentrated here before being dispersed. In the LOTS area one can usually spot one or more freighters, other LCU's, and a nearby destination for cargo. If the LOTS operation is near a port, the enemy will consider it a prime target. Defense for the major assets is enhanced if all minor vessels can defend their zones.

The third possible LCU environment, open water, includes broad bays, estuaries, straits, and water lying between islands. An LCU in these locations is far enough from land to have little chance of engagement with shore-based weapons.

On the other hand, rivers and creeks are examples of narrow waters where the threat of confrontation with the enemy is greater. In narrow waters it is difficult for the LCU to maneuver, and it may be impossible to turn around. Even if other vessels accompany the LCU, they may not be able to support each other due to bends and turns in the water route that hamper visibility.

There are several possible threats that can occur in each of the four operating environments. Some threats are present everywhere, and some are likely only in one of the four areas. The threats fall into four major categories—ambush, patrol craft, air attack, and mines.

Ambushes are confined primarily to narrow

waters where LCU's spend more than half of their time. In Vietnam, an ambush frequently took the form of 10 to 15 positions on the shore or a command-detonated mine, or a combination of the two. The ambush area would be along a riverbank about 200 meters long and 2 deep. Every fourth or fifth weapon was a recoilless rifle or RPG rocket, and the rest were various automatic types. Fire was concentrated on the wheelhouse and conning towers of the vessel. Because maneuvering room was scarce, the boat had to be able to fight its way through. To do this, it had to gain fire superiority as quickly as possible.

To make a Sagger gunner duck before his missile can hit, or to suppress machinegun or recoilless rifle fire, the LCU needs to cover large areas with rapid fire. If one bullet can be fired into every square meter of the ambush site, or if 1 or more square meters can be included in the casualty radius of an explosive, the enemy should go for cover. The more bullets fired into that area, the better. A machinegun like the .50-caliber M2 or the 7.62-millimeter M60 can cover that 200- by 2-meter ambush area in 40 seconds. But the enemy can do a lot of damage in 40 seconds. The M19 automatic grenade launcher could cover the area in 15 seconds. The 5.56-millimeter minigun, at 10,000 rounds per minute, can cover the same zone in 2 seconds; or 5 rounds can be fired into each square meter in 12 seconds. This

should be enough to drive the ambushers under cover.

Surface craft are more likely to be encountered in disputed waters, usually between islands, such as in the Aegean, North, and Caribbean Seas, or in straits such as those between Cuba and Florida. The Soviet Union has sold or given away hundreds of Komar, Osa, "P," Turya, Poti, and Stenka classes of high-speed patrol craft. Armed with various cruise missiles and four 30-millimeter automatic cannons in two turrets, these descendants of the old PT boats can attack any target that they can locate by radar, low-light-level television, or the Mark I eyeball.

The threat posed by these boats may be considered in two categories—gunnery and missiles. To successfully engage in a gunnery duel, you must have equal or greater weight of shells and equal or better firing accuracy. Range is vital. If your weapons cannot at least match the enemy's range, he will merely stand out of range and pound you to pieces. An LCU is not fast; it cannot outrun the enemy. It cannot shorten the range if the enemy does not allow it. If your aim is better than the enemy's at equal range, you may be okay, but you must assume the enemy can aim as well as you. If that is true, it comes down to whose shell will penetrate a vital spot first. The heaviest shell will do more damage, but the smallest weapon will fire more rounds and make more hits. It is a gamble, and you don't want the enemy to be eager to risk it.

The cruise missile component of armament can be considered a low-level, kamikaze, air threat. There are various ranges of weapons that could be used to defend the LCU against this air threat, just as there are various ranges at which attacking aircraft may fire or release munitions. Shooting down the bomber after it has dropped or fired is mere revenge. The idea is to hit the aircraft before it has a chance to fire. The attacker is vulnerable to the .50-caliber machinegun only in a lay-down type of attack, and then only for 3 to 5 seconds. The .50-caliber is not, therefore, a credible threat to aircraft. The 30-millimeter cannon, however, can start firing before the threat reaches its release point. The longer the range of the weapon, the more time there is to hit and damage the aircraft. Similarly, for the cruise missile threat, it is not enough to knock out the target seeker; the missile must be damaged enough to make it aerodynamically unstable so that it crashes, breaks up, or explodes.

It should be pointed out that an LCU sailing in company with other vessels or engaged in a LOTS operation is part of the defense for larger, more important vessels. If a couple of LCU's are lost while

successfully defending a freighter, the defense has won. If the freighter is lost, the whole operation may be for naught. Effective anti-aircraft capability requires positioning LCU's so they can engage attackers long before the major vessels can be hit. An unarmed cargo ship surrounded by six to eight LCU's, each with a 3- to 4-kilometer engagement range, is probably better protected than one with a 5- to 6-kilometer self-defense range and surrounded by LCU's, as they are now armed.

If a gunnery type system is to be used, it would seem that the LCU needs a weapon of about 30 millimeters with a range of 3 or 4 kilometers. It could handle both surface and airborne threats. It would be as heavy as those most attack boats carry and could hit aircraft before they could fire. It must be pointed out that many navies are choosing the 76-millimeter autocannon, although that requires a larger share of the allowed weight than an LCU could afford. Another option might be a missile that could be used in both roles. The Swedish RBS 70, a long-range missile, might be one to consider. The Hellfire and the Israeli-improved TOW could be used against surface targets and possibly helicopters, but a backup would be needed for the high-speed bombers. There are also turrets available that combine guns and missiles, like the FMC Blazer.

The fourth threat, mines, must not be underestimated. During the last 2 years of World War II, mines destroyed half of the Japanese vessels under 1,000 tons that were lost. Most of England's losses in the Channel area were from mines. At that time the only way to find out if there were mines was to send someone out or sweep and see if you caught anything. Today, mines are capable of delivering themselves to an area and lying in wait for weeks before homing in on a target. Aside from these highly sophisticated types, the range includes contact, command-detonated, magnetic, acoustic, and influenced types.

The good news is that there are now mine-hunting sonars available in sizes small enough to be deployed on a Zodiac rubber boat, such as the Mark 24 underwater ordnance locator. More sophisticated types are available that are light enough for one person to lift out of the water. Resolution is claimed to be so good that objects on the bottom can be identified as junk or mines. In practice, if it looks like it could possibly be a mine, it is either avoided or destroyed with a small charge.

What weapon systems will fit on board the LCU? After all, the LCU is designed to transport cargo, not to fight battles. The New Jersey class of battle-

	Option 1	Option 2
Aircraft and surface craft threat	Oerlikon-Burhle AO3-3, 30-millimeter twin gun on GCM-A mount 2.09 tons	RBS-70 surface-to-air/surface-to-surface missile, two launchers and 20 reloads .75 tons
Close threat	G.E. M214, 5.56-millimeter minigun, 10,000 RPM*, two with 5,000 RPG** .22 tons	G.E. Sea Vulcan 20, 20-millimeter system, 1,500 RPM* cyclic, two with 1,000 RPG** 1.35 tons
Radar and laser lock-on warning equipment (weights approximate)	AN/APR-39A(V) radar warning system; AN/AVR-2 laser detector .06 tons	HWR-2 radar warning receiver; Racal Radar Defenses, Ltd. .02 tons
Mine detection sonar	Marconi small ship's sonar; Marconi Underwater Systems, Ltd. .33 tons	Klein Mark 24, underwater ordnance locator/detector .07 tons
Chaff launcher and decoy	Raffael short-range chaff rocket launcher .02 tons	Raffael short-range chaff rocket launcher .02 tons
	Total 2.72 tons	Total 2.21 tons

*RPM - rounds per minute **RPG - rounds per gun

□ Lower weight defense systems, such as the combinations shown above, could be used to defend the LCU.

ships devote 13 percent of displacement to armaments. That does not include the electronics and the considerable weight of armor. At present, less than .07 percent of the displacement of a 1646 class LCU is used for defensive gear. Compared with a logistics support vessel (LSV), that is good—they have only .02 percent devoted to weapons. Even with cargo, it should be reasonable to devote 1 percent of the total displacement to defense. For LCU's, 1 percent works out to 10 tons for the 2001 class and 3.6 tons for the two older classes.

The chart above presents a few alternative lower-weight defense systems that can be used on the LCU. Forewarned is forearmed, so radar and laser warning systems should be considered. These systems can give warning if someone is targeting the vessel with radar. Infrared and laser detection can also be used. Mine detection gear allows each vessel to check its own route and reduces the workload of the Navy's sweepers. In an emergency, and in the absence of dedicated mine warfare vessels, Army vessels could be tasked to clear ports.

The most difficult part of arming the LCU is finding a place to put the weapons. On the 1466 and 2001 classes there is plenty of deck space that is not used for cargo. The 1646 series only has room for one 30-millimeter turret located on top of the deckhouse.

If it requires part of the magazine and mechanism to be below the turret, one of the commode spaces in the head must be sacrificed! A single turret is cheaper and lighter and requires no director, but it also leaves a blind spot. Two separate mounts can double the amount of damage inflicted, compensate for malfunctions, and cover all sectors, although not with the same firepower. A director can be used to coordinate the fire of the gun turrets remotely or both weapons can be controlled locally. It definitely would be worthwhile to fit one on the larger LCU where as many as four turrets could be carried inside the weight limit.

An analysis of this nature should be run for each type of logistics asset. It is time we consulted with the troops and found out what types of environments they really encounter and what they need to effectively defend themselves and our assets in those environments. Supply is the key to winning, but we must be able to fight the supplies through to where the victory is won. **ALOG**

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