

The Coast Guard's piggyback 81mm mortar/.50-caliber machine-gun combination proved its worth in Vietnam.

By Chief Gunner's Mate William R. Wells, II, U.S. Coast Guard (ret.)

Because of its multi-functional role, the U.S. Coast Guard has fostered innovation within its ranks throughout its history. Often forced to function with an insufficient budget, the Coast Guard has relied on the can-do, make-do spirit of its guardsmen to complete its missions. That innovative approach extends into all aspects of the service, including weaponry.

In the 1930s, the Coast Guard adapted the .30-caliber Springfield rifle to create a line-throwing gun that is still used today. In addition, the guardsmen experimented with 2.75-inch rocket launchers, as well as a .50-caliber

line-throwing gun. During World War II, Chief Gunner's Mate James Sieg invented a compact semiautomatic rifle based on the "bullpup" design, and two reservists, Chief Specialists Bernard J. Cosneck and Benny J. Kessler, invented a knife they called the "Armette" that was later produced by the Imperial Knife Co.

In late 1947, the Coast Guard established stations in the Atlantic and Pacific oceans. The vessels used at those stations were commonly referred to as weather ships, because they helped to supply meteorological information to the U.S. Weather Bureau, but they also served as a lifeline for transoceanic commercial and noncommercial aircraft. The ships often fired illumination rounds so that pilots making emergency landings at sea could see the direction and height of the waves. The Coast Guard had Mk.21 and Mk.22 3-inch/.50-caliber guns, Mk.30 5-inch/.38-caliber guns and parachute flares (85,000-candlepower flares that reached a height of 1,000 feet and were fired from a base plate mortar arrangement with a 2½-inch-diameter barrel). However, the Mk.21, Mk.22 and Mk.30 guns often performed poorly, and the light of the flares was often too bright or too low to be of much



U.S. COAST GUARD VIA WILLIAM R. WELLS, II

Aboard an 82-foot U.S. Coast Guard patrol boat, crews load the 81mm guns on deck. "Piggybacking" mortars atop machine guns provided the Coast Guard crews on patrol in Vietnamese waters with both illumination and firepower.

use to the pilots. The parachute flare also had a propelling charge of about 25 grams of smokeless and black powders. The black powder gummed the barrel after four to six rounds, and the barrel had to be cleaned before firing continued.

With those problems in mind, the Coast Guard began to look for a better at-sea illumination system late in 1962. The primary function of the new system was to supplement existing systems and give commanding officers of cutters greater latitude in establishing emergency illumination. The Coast Guard found their alternative in the U.S. Navy's 81mm mortar. Coast Guard headquarters received two mounts from the Navy for testing and evaluation. Those first tests were held off the coast of Bermuda on board a 311-foot former seaplane tender. The tests were successful, and the Coast Guard pilots involved claimed that, unlike with the parachute flares, they could now see their instruments when the new illumination system was used. The mortar also had the advantage of speed. It was possible to fire mortar rounds much faster than rounds from the larger guns.

The Office of Gunnery and Readiness at Coast Guard headquarters did not restrict

use of the mortar to only ocean station vessels. Because the mount was relatively lightweight (about 400 pounds) and had a dual purpose, the Coast Guard believed that it might be used on board 82-foot and 95-foot patrol boats. At that point, the Coast Guard's patrol craft were still using the aging 20mm Oerlikon machine guns, which were satisfactory for law enforcement work but useless for the search and rescue missions that had become the service's main operation. It was hoped that the new weapons could replace the outdated machine guns.

The project of adapting the 81mm mortar to the piggyback system fell to the only ordnance man in Coast Guard headquarters. (There had been a general decline in ordnance and gunnery training of officers at the Coast Guard Academy. As a result, a single warrant officer handled both ordnance, engineering and operational responsibilities for the Coast Guard.) Chief Warrant Officer (Guns) Elmer L. Hicks, a former fire control technician, undertook the development of the multiuse weapons system. By mid-1964, Hicks had come up with the idea of mounting a .50-caliber M-2 HB machine gun on top of the 81mm mortar, and it seemed likely that this weapons system would satisfy all requirements.

Ordnance shop head Bob Penning, one welder and one machinist were assigned the task of interpreting Hicks' quick sketch of the weapon at the Coast Guard Yard in Curtis Bay, Md. Within a single eight-hour workday, they developed the prototype of the piggyback arrangement. Because all Coast Guard weapons of .50 caliber and above are owned by the Navy, Hicks had to ask the Navy Bureau of Ordnance for permission to adapt the mortar to dual-purpose use. The Navy granted permission for

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the work to continue, and Hicks and the ordnance shop fabricated the first version in two days.

In late 1964, Hicks took his invention to Dahlgren Proving Grounds for test-firing from a flatbed truck. Following the successful Dahlgren test, Hicks installed two mounts on board a 95-foot patrol boat at Norfolk, Va., for similar successful tests of both the mortars and machine guns.

The testing showed that the added weight of the mortar made accurate fire with the machine gun possible, despite the quick roll and pitch common aboard patrol boats. Craft later assigned to patrol Vietnamese waters and equipped with the piggyback weapons would be able to make hits on moving sampans at more than 1,000 yards.

Adding a counterweight spring made from an Mk.22 breechblock closing spring gave the gunner better control of the whole mount while firing the machine gun. There were two variations of counterweight springs: The original was mounted horizontally on the right side of the mount; a later, vertical version was mounted on the left side. This latter modification was to make room for the 400-round ammunition boxes used by the patrol craft, fast (PCF), or Swift boats.

Remembering that the first mission of the mortar was illumination, Hicks, with the help of the ordnance shop, developed a mounted fuse setter for the illumination round. In the previous night tests, one crewman had held the round and set the fuse while another held a flashlight. This procedure was both too slow and inaccurate to be of use in combat, so a small light was added to the fuse setter, eliminating the need for two people to set the fuses. The fuse setter's speed and accuracy would become more critical in the next years.

In early 1965, the U.S. Navy discovered that it did not have the capability to patrol the shallow waters off the coast of Vietnam. Having concentrated its efforts on opposing the Soviet fleet, the Navy had virtually ignored the possibility that coastal warfare would also be an integral part of its operations. Except for its aging PT-boats (patrol torpedo boats) and a handful of experimental Swift-type boats operating under foreign crews in Vietnam, the Navy was essentially without any small patrol craft. With only the Seventh Fleet available to counter infiltration from North Vietnam, the Navy found that its ships were at a major disadvantage against shallow-water junks in conducting patrols.

So the Navy asked the Coast Guard to supply 17 of its point-class 82-foot patrol boats for use in Vietnam. The Navy requested only the boats, intending to use Navy personnel to crew the vessels, but the

Coast Guard—which had been all but ignored during the Korean War—insisted that Coast Guard crews man the boats. That stipulation turned out to be fortunate for the Navy. Because experienced Coast Guard crews were available for immediate action, the Navy had time to train and develop small-craft crews of its own. During the first two years the piggyback-equipped patrol boats were used in Vietnam, the Coast Guard carried the weight of patrols.

The Navy's lack of small craft expertise left the arming of the vessels to Coast Guard headquarters. Hicks' invention gave the patrol craft 360-degrees of machine-gun coverage. To construct the adapters, Hicks requisitioned .50-caliber machine gun mounts, from which the Coast Guard yard made the first 200 adapters for the small craft. At least one of those mounts found its way to the U.S. Army Special Forces, who mounted it on a truck bed and used it in the flat delta areas of IV Corps.

Two fleet alterations were made to the gun during the war. Coast Guard gunner's mates added an extended handle to make it easier to control the mortar when firing. They also cut out the bottom of the basketlike protective guard for the mortar's recoiling parts. Prior to that alteration, the guard had filled with expended .50-caliber cases that kept the mortar from fully recoiling.

The innovation did not end there. Various local experiments took place, with or without official sanction. One Coast Guard gunner's mate mounted an Mk.19 40mm (crank type), affectionately known as the "Honeywell," in the machine-gun cradle. But perhaps the most unusual use of the piggyback involved a rocket adapter. Although no reports have surfaced on how the idea for this variation evolved, there is at least one Polaroid snapshot that documents its existence. It shows a rough, homemade mounting bracket with a 2.75-inch rocket pod attached upside down on the cradle designed by Hicks.

The rocket launcher could only be fired directly off the beam, making deployment and aiming awkward and probably inaccurate. Moreover, the crews of some patrol craft recall that when recoilless weapons such as light anti-tank weapons mounted aboard patrol craft were fired, the glass in the boats' windows was often damaged. Whatever the tests in Vietnam revealed, the rocket system was not used in further operations. However, the significance of the attempts was the willingness of officers and enlisted men to explore options and weapons innovation.

As developed and refined by the Coast Guard in the 1960s, the combination 81mm/50-caliber machine gun proved its worth time and again in the waters of Vietnam. It was one of the most rapidly developed field-weapons innovations of the war, relied upon by American military forces as a mainstay during the conflict. □