U.S. Army Flamethrower Vehicles

(Part Two of a Three-Part Series)

By Captain John Ringquist

Background

The development of the U.S. flamethrower tank took off during World War II as U.S. Soldiers encountered strong, dug in, defensive positions manned by veteran Japanese and German soldiers. The characteristic that set these tanks apart from others was their armament—fire. Such formidable armament would be relied upon numerous times against flammable and inflammable defenses. The thick fuel of the flamethrower could not only incinerate flammable materials, but could also superheat the air in fortifications, causing defenders to surrender or be incapacitated while seeking protection from the heat. The flame tank could overwhelm embrasures, rendering them liabilities as the flames poured into the enclosed defenders and detonated munitions. While other fortification-reducing weapons required pinpoint accuracy or the firing of numerous rounds to be effective, the effectiveness of the flame tank was immediate. These tanks served the United States well during combat in Asia.

A number of methods were used to produce flamethrower tanks. Flamethrower vehicles were created through custom design or by modifying existing infantry flame weapons. Typically, existing tank chassis were field- or factory-modified.

Medium Flamethrower Tanks

Initially, the M3 Stuart was used as a flame tank in the Pacific. In the Mariana Islands, Marines successfully modified M3A1 light tanks with the Canadian Ronson flame system. However, the small vehicles proved vulnerable. At Peleliu, the 1st Marine Division mounted the improvised Mark 1 system on a thin-skinned LVT-4 vehicle, but again, vulnerability limited the system's effectiveness. The obvious solution seemed to be to mount the flamethrower on a medium tank.[1] The result was the M4A1 (chosen for the Iwo Jima and Okinawa campaigns). An Army-Navy design team developed the M4A1-POA-CWS-H1 (Marine design M4A3R5), replacing the main gun with a flamethrower that performed much better than the E-3 bow machine gun, station-mounted flamethrower. The flame could be aimed and fired up to 150 yards for 55–80 seconds.[2] This was a three-fold increase in range and a five-fold increase in efficiency over the U.S.-used, back-pack flamethrowers with 50-yard ranges and 10-second durations.

Improvement in flamethrower accuracy made the weapon more useful and less dangerous to personnel providing support. Still, the risk of flame tanks in the Pacific theater came not from tanks or missile launchers, but from suicide attacks close to tank-infantry support personnel. A brief rundown of H1 variant flamethrower tank losses demonstrates how important infantry support was to the tanks. During the period of 6 April 1945 to

An H1 variant from the 713th Tank Battalion Division burns out a cave in Okinawa on 25 June 1945. (U.S. Army Signal Corps photograph)

25 May 1945, the 713th Tank Battalion sustained damage to 14 flamethrower tanks. Contrary to the sensationalism of Hollywood movies, it was not the fuel in the flamethrower tanks that put the crews at catastrophic risk for explosion; the extremely stable fuel in the flamethrower tanks was napalm. The engine fuel (gasoline) was more flammable than the napalm. Rather, tank losses were attributed to antitank guns (3), land mines (4), satchel charges (2), immobilization (4), and a fall in the ocean (1). Eight of the fourteen tanks were later repaired and returned to action.[3]

According to Captain Frank C. Caldwell, a company commander with the 26th Marines, "In my view, it was the flame tank more than any other supporting arms that won this battle." These are heady words for a force consisting of eight modified M4A1 tanks. Bow-mounted flamethrower tanks of the M4A2 series were also used, but it was the M4 H1 variant that instilled great fear due to its accurate fire and range of elevation and depression. The modified M4 H1 models proved ideal against the rugged caves and concrete fortifications of Iwo Jima. The Japanese feared this weapon greatly; time and again, suicide squads of "human bullets" assailed the flame tanks directly, only to be shot down by covering forces or scorched by the main weapon.[4]

Unique among units fighting in the Pacific theater was the 713th Armored Flamethrower Battalion, designed to support ground forces on Okinawa. There were 54 M4A1 H1 variant tanks fabricated in Hawaii by an interservice conversion program. The battalion impacted far more than their numbers. In 75 days of operation, 4,788 Japanese troops were killed; the flamethrower battalion did not lose a single member to enemy fire while fighting inside the tanks.[5] The 711th Tank Battalion fought with auxiliary flamethrowers mounted in ball machine gun turrets and made a valuable contribution to the battle, but the flexible H1 variant was able to engage targets in a wide range of fire. More utility was provided by the tanks of the 713th when extension hoses and M2-2 flamethrowers were coupled to the tanks so that the tankers could engage caves and fortifications.

There are two M4-series medium flame tanks located at Fort Leonard Wood, Missouri. Their active-service life has been terminated by doctrine, treaty, and tactical obsolescence. One of the tanks is an M4A1 POA-CWS-H1 Sherman flame tank. This version carried an M5-4 main armament flamethrower and was the product of Chemical Warfare Service personnel in Hawaii modifying an M4A1 tank by replacing the 75-millimeter guns with flamethrowers that were housed in main gun barrels. The barrels were cut to install the flamethrower apparatus and then welded closed—except for the breech, which held the flame gun and the ignition apparatus. Thickened fuel was expelled from the barrel by high pressure, creating a thin stream of highly accurate flame. This design was successfully used in the Pacific theater. This tank is undergoing final restoration efforts and will soon be available for display. The other tank, the M4A1 POA-CWS-H5, was operated by five Soldiers and was armed with both a 75-millimeter cannon and a coaxial M5-4 (E12-7R1) mechanized flamethrower that was developed by the Standard Oil Development Company. The tank could hold 290 gallons of fuel—enough for two minutes of flame or 200 one-second flame bursts—and had a range of 100 yards. For use against infantry, the tank had a secondary armament of a .50-caliber M2 machine gun and two .30-caliber Browning M1919 machine guns. The H5 tank is displayed adjacent to the main gate with several other armored vehicles.

The main armament flamethrower tank looks similar to other M4 tanks on the surface; but when the flamethrower was fired, the concentrated flame stream made it immediately obvious as a flamethrower. When the flame was cut off, the tank returned to the standard M4 tank appearance. The H1, which was a single-barrel tank, suffered from constant Japanese attacks on Okinawa. Personnel from the 713th Tank Battalion noted in an after-action report that the lack of a gun cannon made the H1 more vulnerable to attack and complicated support relationships with other conventionally armed tanks. They recommended a tank with a cannon and a flamethrower.[6] The result was the M47 flamethrower tank, which was almost immediately replaced by the M48 flamethrower tank (M67). Neither of these tanks was evaluated and put into service in time to be used during the Korean War. The M67 was used in Vietnam by the Marines; but by the early

M4A1 POA-CWS-H5 with E12-7R1 flamethrower and 75-millimeter gun (author's photograph, Fort Leonard Wood)

1980s, flamethrower tanks had become obsolete in the face of guided missiles and long-range tank guns.

The photograph on page 27 shows what appears to be a double-barrel M4A1 POA-CWS-H5 tank. This design, however, is deceptive. While the tank retains its 75-millimeter gun, a close look at the lower left gun barrel reveals perforations. This is the housing for the flamethrower, and it is carefully shaped to resemble a 75-millimeter gun. The nozzles of the flamethrower can be seen by looking into the barrel of the "gun." The fuel, the mechanical fuel pumping, and the ignition components for the flamethrower are within the tank. This variant was used in the Korean War. While a replacement for the M4 flamethrower tanks was being developed, the M4 H5 variant was used since it had the 75-millimeter cannon and flame gun and it met the needs for a close-support flame weapon and mobile 75-millimeter artillery. The M4A1 H5 version with two gun barrels was, and still is, immediately recognized as unusual.

The veteran H1 and H5 variant tanks are obsolete by today's standards; their speed is too low, and their armor is too thin. In their time, however, they were fearsome weapons of war and highly effective at their missions. The H1's finest hour was in the Pacific on Iwo Jima and Okinawa, and it was there that the greatest value of the weapon was realized; the flame tanks were so effective that they saved American lives. If that is the measure of an effective design, then the H1 was outstanding at its mission. The H5 was valuable from 1950 to 1953 during the Korean War, and today it serves as an example of the American ingenuity and determination used to accomplish a mission. The H5 was later replaced by the M67 flamethrower tank.

The Auxiliary Flamethrower

A seemingly obvious modification to the flamethrower was spurred by tactical ingenuity and immediate need. This modification addressed two dilemmas:

- How could an infantry flamethrower be used in a broken or mountainous environment while retaining the storage capacity and armored fuel protection of an armored flamethrower?
- How could bunkers that were too high for tanks to engage with their flame guns and too large for the infantry flamethrower capacity be engaged without infantry or close air support?

The solution was a 400-foot hose extension that was coupled with the M2-2 flame gun. The hose extension could be adapted to portable or mechanized fuel tanks. In fact, the hose could be linked to flame tanks to extend their ranges while keeping them away from short-range engagements with enemy cave defenders. This development immediately impacted the fighting on Okinawa. The combat on Peleliu had highlighted the need for a flame weapon to engage bunkers and caves. The Navy's solution was to take 50-foot lengths of 1½-inch fire hose, link them together, and issue them in 400-foot sections to the crews of flame tanks in preparation for fighting on Okinawa.[7]

Members of the 713th Tank Battalion were in continuous action on Okinawa from 7 April 1945 to 30 June 1945. During that time, members of the unit repeatedly used the hose extensions to attack pockets of resistance. In one instance, two Marines, with the aid of covering fire, reached the top of an escarpment and killed several hundred Japanese with a flamethrower.[8] Casualty figures illustrate the effectiveness of the simple flamethrower hose expedient; there were 4,788 Japanese killed and 49 captured, while there were 8 killed or missing and 111 wounded from the 713th.[9]

The hose extension is one of the many weapons of World War II that reduced allied casualties by exploiting Soldier and Marine ingenuity to overcome challenges, close in, and destroy the enemy. The example of the 713th Tank Battalion highlights how one unit can have a profound effect on the course of a battle. While the 713th inflicted casualties through the offensive actions of the M4A3 medium tanks, the flamethrower extension made it possible to completely exploit the weapon's capabilities against all enemies, regardless of the terrain.

Endnotes:

[1]Colonel Joseph H. Alexander (U.S. Marine Corps [Retired]), *Closing In: Marines in the Seizure of Iwo Jima*, 1994.

[2]U.S. Army Chemical Museum research notes.

[3]"Tank Casualty Report," U.S. Army Chemical Museum, 6 April–25 May 1945.

[4]Colonel Joseph H. Alexander (U.S. Marine Corps [Retired]), *Closing In: Marines in the Seizure of Iwo Jima*, 1994.

[5]John W. Mountcastle, *Flame On!: U.S. Incendiary Weapons, 1918–1945*, White Mane Books, Shippensburg, Pennsylvania, 1999.

[6]U.S. Army Chemical Museum research notes.

[7]Colonel George F. Unmacht, "Flame Throwing Seabees," *Armed Forces Chemical Journal*, July 1948.

[8]Ibid.

[9]Ibid.

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