

UNCLASSIFIED
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By: NVA, Dals

HEAD QUARTERS 776TH TANK DESTROYER BN,
APO 758

29 December 1944

SUBJECT: Gun Motor Carriage 90 millimeter, M36.

TO : Anti-Pank Officer, 7th Army, APO 758.
(THEN: Commanding Officer, 5th TD Group, APO 758.)

1. This Battalion was equipped with the gun, motor carriage, 90mm, M36 before leaving Italy and entered combat with them in the vicinity of Lunerville, France. They have been used in defensive and offensive situations against the following targets: Enemy personnel, armored and unarmored vehicles, artillery positions, concrete pillboxes and Forts, and Mark IV and Mark V enemy tanks. In addition artillery missions of a harrassing nature have been fired. The following comments are based on two months operations against the above targets under severe weather conditions of rain, cold, and mud.

2. Construction of Vehicle.

a. Engine. The diesel engine is preferred for its quietness and developed power at low engine speeds. The fire hazard is greater with the gasoline motor requiring care in gassing to prevent accumulation of fumes in the hull. One man was overcome by fumes from this source.

b. Hull. Ammunition rack in turret is unsuitable, with the space available, to withdraw shell, reverse, and then load it.

The tray, or platform, is not necessary as the gun is rarely traversed so rapidly as to become a hazard to the crew. Its advantage is outweighed by the disadvantage of always blocking access to one of the ammunition racks.

The escape hatch in the floor of the tank destroyer should be strengthened and improved with an overlapping flange. Of three destroyers disabled by enemy mines, each had the escape hatch blown in by the explosion, causing casualties to the crew.

A thirty caliber machine gun mounted either in the radio operators compartment, on a ball mount, or coaxially with the ninety millimeter gun, is recommended. The present fifty caliber anti-aircraft machine gun is not considered properly mounted to defend against enemy foot troops. It is realized that the present machine gun was not designed for this mission, but the tank destroyers are constantly being used in this role. It is felt that the above recommended addition would aid the tank destroyers' efficiency.

c. Ignition System. Two Twelve-volt batteries are connected in series to give the twenty four-volt system. The radio is connected across one of these batteries and with the charging system and voltage regulator, as now connected, this battery is depleted without indication on the instrument board. A switch should be provided to switch the radio from one battery to the other.

d. Gun and Mount. The 90 millimeter is an excellent gun. Its heavy projectile and high velocity make it a superior weapon to engage and destroy enemy armor at long ranges. The high explosive projectile is large enough to destroy houses and with the T105 fuze is very effective in destroying enemy pillboxes and neutralizing concrete emplacements.

This Battalion has had trouble with the elevating mechanism in the M36. The bronze elevator invariably breaks near the collar. Some unconfirmed reports from the gun crews have blamed the weak mechanism with tending to impair the guns accuracy through wear resulting looseness. This may be a result of moving with the gun carried at the position of "ready".

The lock securing the turret is inadequate. Every destroyer in the Battalion has at one time or another broken the turret lock or sheared the turret lock bolts off completely. The most reasonable correction would be to mount an additional turret lock on the opposite side of the turret and strengthen both.

The direct sight on the M36 is much better than the sight on the M10. The sight reticule, system of mounting, and field view are excellent. The only possible addition which might aid the present sight is a slightly more powerful scope and a way of keeping the outside end of the sight clean. The latter should be accomplished from inside the turret without removing the complete sight. The system used by the German in his Mark IV and Mark V tank is considered a very

good method to adopt.

3. In secondary mission of indirect fire. This gun has been used with good effect in coordination with field artillery plans. The most effective ranges are between 10,000 and 18,000 yards. The trajectory is so flat that it is impossible to place fire on targets at ranges less than 10,000 yards in rolling terrain. At ranges greater than 14,500 yards the hull of the destroyer must be tilted. To fire at ranges greater than 18,500 it is extremely difficult to perform service of the piece due to the extreme tilt running to 25 degrees for the maximum range.

a. The gun is not built for sustained high rates of fire. A test was conducted under ordnance supervision and the maximum sustained rate of fire determined was twenty rounds per hour after removing six ounces of oil from each recoil cylinder.

4. Detailed firing results.

a. One church steeple destroyed with six rounds at a range of 3200 yards.

b. In the vicinity of Bissenheim one Platoon surprised an enemy column on the road. Firing at a range of 300 to 500 yards they destroyed six anti-tank guns, twelve general purpose vehicles, four 105 millimeter horse-drawn artillery pieces, four 75 millimeter horse-drawn artillery pieces, six mortars, twelve horses, and captured thirteen prisoners of war. The direct sights were clouded with mist so the gunners were forced to "fire from the hip" aiming over the top of the gun.

c. An enemy armored attack in the vicinity of Rawwiller was broken up with the following results to the enemy:

One Mark V hit through turret at a range of 1300 yards--it did not burn.
 One Mark V hit on left front at a range of 100 yards partially burned.
 One Mark V hit above bogeys at a range of 1900 yards did not burn.
 One Mark V hit in driving sprocket at a range of 2500 yards.
 Three Mark IV's hit did not burn and were evacuated before being destroyed.
 One half-track destroyed at a range of 2700 yards burned completely.

d. An enemy counterattack on the village of Wieslingen was broken up with the enemy losing two half-tracks and one self-propelled 75 millimeter gun. All three vehicles burned completely after being fired on at a range of 400 yards.

e. At a range of 400 yards, ten of fifteen rounds fired penetrated a ten-inch steel pillbox door. The fort is located in the vicinity of Bitch. Armor piercing cap was used.

f. Two M36 destroyers firing at Fort Simserhof completely disabled two of the guns of the Fort and partially destroyed concrete in area of all embrasures. A total of 122 rounds of high explosive, 14 T105 fuzes, and 74 armor piercing cap were fired at the three embrasures at a range of 2200 yards. All three of the embrasures were penetrated with armor piercing cap, but only two of them effectively.

g. Score of materiel destroyed to date:

1 Mark III tank
 10 Mark V tanks
 3 Self-propelled guns
 4 Combat vehicles
 15 General purpose vehicles
 9 Anti-tank guns
 17 towed artillery pieces
 10 Pillboxes
 8 Machine gun nests.

/s/ D. E. Moorhead
 /t/ D. E. MOORHEAD
 Lt. Colonel, C.A.C.
 Commanding

REPRODUCED by Hq., 5th Tank Destroyer Group, APO 758, US Army, 5 January 1945.