

TANK DESTROYERS . . . AGAINST JAPAN

By Lt. Col. Allerton Cushman

*M36 mounts 90-mm
gun on medium
tank chassis.*



The 671st Tank Destroyer Battalion arrived in Leyte in the summer of 1945 and immediately began intensive training for the projected operation OLYMPIC against southern Kyushu. The role assigned to the battalion was to furnish direct support to the assault division of the IX Corps.

It is unusual indeed for an organization of battalion size to know so far ahead of time the exact when, where, and what of its mission. But know we did. Not only did we have detailed 1/50,000 maps but we also had excellent oblique photographs of the target area. These revealed a terrain ideally suited for defense. From the beaches the land rose sharply toward rough, high cliffs and peaks. The lowlands and foothills were a patchwork of terraced rice fields with some dry farming areas at the higher levels. Interspersed with the cultivated areas on the upper slopes were thick stands of pine scrub. Dominating the entire area was a Japanese picture-book mountain rising in perfect symmetry to a height of 3,000 feet.

G-2 did not anticipate the use of enemy armor to anything like the extent employed by the Germans in Africa or Europe, so the business of destroying tanks was relegated to a minor place in our training program. Since the Kyushu terrain was obviously well suited to the construction of artificial strong points and the development of natural ones, we concentrated instead on the technique of pinpoint firing against stationary targets.

The 76-mm Gun Motor Carriage M-18, with which the battalion had been equipped since November 1943, was to have been replaced by the 90-mm M36 (see cut) before the loading date. While the M-18, with its half-inch armor, could perhaps be differentiated from a tank, we knew perfectly well that no such distinction would be applied to the M-36 with its M-4 medium tank chassis. And quite rightly, too, for in the new vehicle we would have a tank in

every characteristic except for an open turret. The company commanders and platoon leaders were called together, therefore, and told that the old song-and-dance about "not being tanks but tank destroyers" was over; henceforth, they could be expected to be used as corps artillery, infantry assault guns, tanks, or—possibly—as tank destroyers.

There are two elements in the tank destroyer battalion which the tankers lack entirely: the organic security sections and the reconnaissance company. If we were going to be used either as tanks or assault guns, these two elements could be employed to unusual advantage, especially in the terrain where we were slated to fight.

The security section, which is an organic element of the tank destroyer platoon, was originally intended to provide close-in protection for the destroyers against enemy foot troops. When the tank destroyers first went into action in Africa the security sections did just about everything except that for which they had been conceived. Throughout the war the Germans fought us with guns of equal or larger caliber and with some weapons managed to keep ahead of us in muzzle velocity by about 1,000 ft./sec. Consequently, there were times when they did not have to close with our armored vehicles to knock them out. But with the Japs the situation was different. Although they did develop and make effective use of a 47-mm antitank gun, their antitank doctrine for the defense of the homeland placed the greatest emphasis on close quarter tactics, usually of suicidal character. There can be no question, moreover, that such desperate methods would have proved costly to us, especially in the rugged, wooded terrain of Kyushu. The probability that the M-36 tank destroyers would have been used much further forward than conventional tank destroyer tactics called for, also intensified the danger from enemy foot soldiers indoctrinated with a fanatical determination to become human antitank mines.



An unusually intensive training program was laid out for the security sections following the principles first developed back in 1942 by the Tank Destroyer Center at Camp Hood, Texas. Certainly if the Japs had operated according to their avowed plans of *kamikase* attacks on armor, the security sections would have proved of inestimable value. It might be argued that the proximity of our infantry would obviate the need for organic security sections. The combat infantryman, however, thinks primarily about himself and his objective, and only incidentally about protecting the armor that is supporting him. The Jap tactics were to remain concealed (when possible, in carefully prepared spider-holes) until the infantry had passed by, and then attack the tanks that followed with mines, grenades or heavy demolition charges strapped to their bodies. To counter such methods, the very closest cooperation between the dismounted security personnel and the destroyers would be required; as with the blocking backs on the football field, adequate "interference" could be assured only by *team* training.

The reconnaissance company is the other organic element lacking in the tank battalion. Our particular target called for revision of the accepted use of this unit. We knew that in all probability we would not fight as a battalion but rather as three independent gun companies each supporting an infantry unit. This would leave the reconnaissance company without a job—unless, of course, it were taken over by some higher headquarters for use as an independent mechanized reconnaissance troop. In order to prevent this anticipated loss of an entire company, we attached each of the reconnaissance platoons to a gun company—permanently we hoped. The pioneer platoon and company headquarters were to be kept with battalion headquarters for use wherever needed.

A reconnaissance platoon consisting of one officer and 21 men would obviously provide each gun company commander with a handy little task force, either for close-in reconnaissance or to supplement his security sections. In our training we concentrated on the development of each reconnaissance platoon into a group of five completely equipped and self-sufficient forward observation parties.

The efficient cooperation of the tank-infantry team in both Europe and the Pacific often failed because of communication difficulties. The fundamental obstacle is that in most cases the tanker and the infantryman don't know each other—or if they do, it is a friendship of a most casual nature. Certainly there is rarely that harmony between the two that comes after long association in the same outfit and from working together as a team for weeks and months. And even if the infantryman succeeds in maintaining perfect communication with the supporting tanks, he still is at a disadvantage when it comes to calling for and directing fire on a particular target. Only in rare instances has he become completely familiar with their fire orders, technique of adjusting fire or—and this is of no small importance—with their personalities. But the TO/E of the tank destroyer battalion provides the means for overcoming these difficulties. Each of the three gun platoons in the tank destroyer company has one organic forward observation party consisting of the platoon sergeant and two men, mounted in a ¼-ton truck and equipped with a SCR 610. This radio was to have been replaced by the much lighter SCR 619. In practice we alternated the platoon sergeant with the platoon leader for this FO job so that both would become equally proficient. A total of three such forward observation parties in a company is not such a bad set-up all by itself, but with an attached reconnaissance platoon a total of *five more* FO parties, manned and equipped exactly the same, are added!

The term *forward observation party* is perhaps a misnomer since it calls to mind indirect fire technique. We used it, however, to avoid introducing an entirely new term into the soldiers' vocabulary. Actually *fire support team* would be far more descriptive. Although these FO parties were trained to adjust high angle indirect fire if necessary, their principal mission was to designate to the tank destroyers the targets which the infantry wanted knocked out, and, if these targets were invisible from the guns, to adjust the destroyers' high velocity, direct fire on those targets.

It required no deep-domed military masterminds to anticipate that the Japs on Kyushu would do as well as they had on Okinawa in concealing their defensive positions. And if we were going to knock out this kind of expertly camouflaged target, we would have to do it either by bringing our destroyers up so close that they could practically stick their muzzles into the mouths of the caves, or else adjust our fire by FO parties operating in the infantry front lines where they *could see* the targets although the latter might be completely invisible from the gun positions, be they 200 or 2,000 yards to the rear.

The jungle-covered hills of Leyte gave us an excellent opportunity to test the practicability of this technique. The only available range necessitated firing across a bay against



Carrier-based U. S. Navy bombers blast airfield on Kyushu. Although beach is not shown, hinterland is typical of terrain anticipated in Operation Olympic.

the side of a steep hill some 2,300 yards away. At this range the height of the vertical dispersion scale for the 76-mm gun is about 10 feet, as compared with only 3 feet at 1,000 yards. Nevertheless, with practice a forward observer posted at the base of the hill could obtain direct hits on a target two or three feet in diameter and entirely invisible from the gun positions, in less than a minute.

The technique of adjusting fire was exactly the same as conventional field artillery forward observation methods except applied in a *vertical* rather than a horizontal plane. There were two good reasons why it was necessary to work in the vertical instead of the horizontal plane: first, the study of maps and photos indicated that, as in Okinawa, the principal Jap defenses would be in the rugged terrain inland from the beaches; second, the extremely flat trajectory of the 76-mm or 90-mm gun renders range sensing practically impossible at distances under 3,000 yards.

At Camp Hood all gunnery standards had been based on hitting a target eight feet high, the height of the German PzKw IV tank. We established our standard as a target only 6 feet high and 2 feet wide and the following table became our gunnery bible. We drilled it into the minds of the gun crews and all forward observers. The latter included every man in the battalion, not excepting cooks.

The reason that the adjustment of fire could be accomplished with such speed is to be found in column 3 above.

1. Range	2. Height of dispersion scale	3. Probability of missing 6' × 2' target	4. Probability of missing expressed in rounds
1000	3 ft	zero percent	—
1500	5 ft	zero "	—
2000	8 ft	4 "	1 out of 25
2500	12 ft	18 "	1 out of 5½
3000	17 ft	34 "	1 out of 3

At ranges of 2,000 yards or less the dispersion scale is so small that bracketing is unnecessary. We found that with practice the initial data would bring the first round so close to the target that the first correction would produce effect. However, at ranges over 2,000 yards when a round was in the vertical dispersion scale a confirming round was always fired before making the small elevation change necessary to get right on the pin-point target. It may be noted here that in the vertical plane the width of the dispersion scale is approximately one third of its height. This practically eliminated the problem of horizontal dispersion.

Gunnery training emphasized that when targets were visible from the gun positions the FO parties had only one mission—to designate the targets to the gun commanders. Theoretically it should be no problem for the infantryman to point out targets to his supporting armor. We found, however, that constant practice was necessary in order to develop speed and accuracy in this department; this was

the case even between FO parties and guns which had the advantage of both employing the same type of radio and— even more important—were members of the same team who habitually worked and lived together, and who knew each other so well that each could almost tell in advance how the other's mind would work.

Another reason why we always tried to let the gun commanders rather than the FO handle the adjustment of fire was to clear the traffic on the radio net. To realize the maximum advantage of the eight FO parties it would be necessary to use every means possible to bring the destroyers far enough forward so that they could identify and attack their targets by direct fire adjusted by the gun commanders themselves, thus leaving the radio channel clear for missions where the nature of the target made this impossible.

In this direct fire training we developed a short cut in the methods taught at the Tank Destroyer Center, where gun commanders are taught that a certain change of range will move the trajectory so many feet up or down in the vertical plane of the target at various ranges:

500 yards	1 foot
1000 "	2 feet
1500 "	4 "
2000 "	6 "

If a gun commander is firing at a German PzKw IV at 1,500 yards and hits just at the base of the target he is supposed to figure like this: "Damn! I want to hit in the center of mass of the tank or four feet higher than that last shot. At 1,500 yards a 100-yard change in range will lift the trajectory exactly four feet. Good! UP 100, 1 LEAD, FIRE!" All very well at Camp Hood but a little too rugged for combat, especially if the soldier has to go into interpolation to get his range figures. And the figures will prove that he will get just about the same results, and a lot quicker too, if he makes a 100-yard range change for every mil deviation in the vertical plane as measured through his field glasses.

It would seem fundamental that everything possible should be done in war to obviate the necessity for thinking—even for remembering. In that connection we always made it SOP in the fire orders that the gun commanders give a new range and lead command for each shot, rather than make the adjustments in successive increments such as UP 200, DOWN 100, etc. If the gun commander does all the thinking (and he gets a sergeant's pay for that job) all the gunner has to do is concentrate on laying on the target the range and lead data given him. That seems quite enough to occupy his time without requiring him to remember from one round to the next what range and lead he had on the target.

Whereas we planned to use direct fire wherever possible, even if it meant moving our destroyers up where TDs are

not usually supposed to be, it was quite apparent from the dope brought back from Okinawa by the Battalion Executive Officer, Major Mowder, that the Japs would have plenty of prepared positions to which our destroyers could not approach close enough to identify and destroy by direct fire adjusted from the gun itself; these targets would have to be attacked by forward observation methods. On this type of target we used field artillery methods modified for employment in a vertical plane and adapted to fit the extraordinarily small dispersion error of our high velocity weapon. To avoid any confusion with the adjustment of high angle fire we substituted, in sensings, ABOVE for OVER and BELOW for SHORT. For example:

Observer to Gun: REFERENCE POINT IS 200 RIGHT,
30 ABOVE, CONCEALED CAVE, WILL ADJUST.

Gun to Observer: ON THE WAY.

Observer to Gun: 5 RIGHT, 10 BELOW.

The FO gave his sensings in yards which were converted into commands in mils by the gun commander. Sometimes, in actual firing at the jungle-covered slopes, targets which were initially invisible through the gunner's telescope would be revealed by the fragmentation effect of the HE which was always used for the initial adjustment. (In the 90-mm the muzzle velocity for both HE and APC are the same so that no changes have to be made in range when switching from one to the other.) In such cases the gun commander would take over from the forward observer and continue the adjustment and fire for effect by direct methods, using his field glasses to measure deviations from the now visible target. We found that in firing at ranges over 2,000 yards, the elevation quadrant and azimuth indicator (panoramic sight in the M36B1) gave more efficient results and was practically as fast as using the 5-power telescopic sight. The advantage in using these instruments rather than the telescopic sight would of course be more pronounced over terrain obscured by drifting smoke and dust.

Although the atomic bomb rendered this whole business purely academic, we think that combat in Kyushu would have proved our two main premises: (1) that armor employed in restricted terrain should be protected by organic security personnel as now provided in the T/O of the tank destroyer gun company, and (2) that supporting fire from tanks (or TDs) should be directed by tank (or TD) personnel, just as a field artilleryman, rather than the supported infantryman, adjusts the fire of the artillery.

This was our set-up for operation OLYMPIC: three gun companies each with twelve 90-mm high velocity guns mounted in heavily armored destroyers and each protected by its own security personnel; each gun company with a total of eight well trained and fully equipped forward observation parties. With this organization we felt capable of putting down "accurate fire when wanted, where wanted and in sufficient quantity," to use the oft-repeated motto of a former commanding general of the Tank Destroyer Center.