

THE GENERAL BOARD  
United States Forces, European Theater

REPORT

ON

STUDY OF ORGANIZATION, EQUIPMENT, AND TACTICAL  
EMPLOYMENT OF TANK DESTROYER UNITS

MISSION: Prepare Report and Recommendations on the  
Tactical Employment, Organization and Equipment  
of Tank Destroyer Units.

The General Board was established by General Orders 128, Headquarters European Theater of Operations, US Army, dated 17 June 1945, as amended by General Orders 182, dated 7 August 1945 and General Orders 312 dated 20 November 1945, Headquarters United States Forces, European Theater, to prepare a factual analysis of the strategy, tactics, and administration employed by the United States forces in the European Theater.

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# TABLE OF CONTENTS

SUBJECT	PAGE
Part One: Organization for Combat.....	1
Chapter 1: Early Developments.....	1
Bibliography.....	3
Part Two: Employment of Tank Destroyer Units.....	4
Chapter 1: The Tank Destroyer Brigade.....	4
Chapter 2: The Tank Destroyer Group.....	5
Chapter 3: Tank Destroyer Battalions.....	8
Bibliography.....	11
Part Three: Tank Destroyer Tactics.....	12
Chapter 1: Pre-Combat Principles.....	12
Chapter 2: Early Combat Development.....	13
Chapter 3: Combat Employment of Tank Destroyers.....	14
Chapter 4: Special Type Operations.....	18
Bibliography.....	22
Part Four: Indirect Fire Missions.....	23
Chapter 1: Indirect Fire.....	23
Part Five: General Comments.....	25
Chapter 1: Enemy Losses.....	25
Chapter 2: Communications, Motor Equipment, and Tank Destroyer Weapons.....	25
Chapter 3: Fire Control Equipment.....	27
Chapter 4: Replacements and Conversion.....	27
Part Six: Conclusions and Recommendations.....	29
Chapter 1: Conclusions.....	29

SUBJECT

PAGE

Chapter 2: Recommendations.....	29
Appendix 1.....	30

THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APO 408

STUDY OF ORGANIZATION, EQUIPMENT, AND TACTICAL  
EMPLOYMENT OF TANK DESTROYER UNITS

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THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APO 403

STUDY OF ORGANIZATION, EQUIPMENT, AND TACTICAL  
EMPLOYMENT OF TANK DESTROYER UNITS

PART ONE

ORGANIZATION FOR COMBAT

CHAPTER 1

EARLY DEVELOPMENTS

1. Purpose. The purpose of this study is:

- a. To analyse the tactical organization and employment of tank destroyers in combat.
- b. To evaluate the advantages and disadvantages of the tank destroyer as compared to other armored weapons.
- c. To make recommendations as to changes in organization, equipment and training literature.

2. Overall Plan. The original overall plan for the invasion of the continent called for the participation of 72 tank destroyer battalions. This number was reduced to 52 battalions and agreed to by General Bradley in conference with representatives from the War Manpower Commission in November 1943. Of this number, 50 percent were to be towed and 50 percent to be self-propelled.<sup>1</sup> Of these 52 battalions four were assigned to the 8th Army Group leaving a total of 48 battalions under the control of the 12th Army Group.

3. Combat Lessons. The combat lessons learned in Africa caused higher headquarters to favor the towed battalions. This was felt in the United States early in December 1943 when an order was issued converting some 20 self-propelled battalions to towed battalions in order to provide a 50 percent towed and 50 percent self-propelled proportion. This late trend also changed shipping priorities to provide the same percentage of types of battalions in England.

4. Tank Destroyer Battalions in England. On 23 March 1944, there were 19 tank destroyer battalions in England, 16 self-propelled and three towed. As of that date arrival schedules called for eight towed and three self-propelled battalions to arrive in time to be equipped and take part in the invasion. The total tank destroyers in England equipped and available for the invasion were 11 towed and 19 self-propelled battalions.<sup>2</sup>

a. Amphibious maneuvers in England emphasized the vulnerability of the towed gun and prime mover when unloading and going into action. This caused a change in policy which resulted in only one towed battalion being included in the initial invasion force.

5. Initial Landing. Tank destroyer battalions were attached and landed with the assault infantry divisions without noteworthy incident. Although enemy tanks were not employed in large numbers during the first week of the operations, armor in strength was ever present and required tank destroyers to be employed in their primary role.

6. Battalion Attachments. Original plans called for towed battalions to be attached to each division with self-propelled battalions being held in corps and army reserve; but the invasion had hardly begun before the infantry divisions not in the initial landing force, requested self-propelled units. This was caused by: (1) The organic need for an armored self-propelled assault gun in the infantry division; (2) the inability of the towed gun to shoot direct fire over the hedgerows; (3) the thin armor of the towed gun which made it impossible to push it far enough forward to take advantage of the small field of fire defined by the hedgerows; and (4) the immobility of the towed gun once emplaced.

7. Trends. The changing policy in regards to tank destroyers was not limited to the matter of towed versus self-propelled battalions. As experience was gained in combat it became evident that heavier-gunned destroyers were needed. On 16 May 1944 Army Ground Forces asked European Theater of Operations United States Army if any M36's were desired; European Theater of Operations replied that they were not. On 6 July 1944 European Theater of Operations United States Army cabled Army Ground Forces requesting that all M10 battalions be converted to M36's and that all future arrivals be equipped with M36's or M18's. 4

8. Final Decision. By September 1944, thought on the type and armament of tank destroyer battalions had settled and a definite policy had begun to take shape. 12th Army Group decided upon the composition of the fifty-two battalions in this theater. A request was made to European Theater of Operations United States Army that twelve of the fifty-two battalions be towed and that they be armed with the T5E1 90mm guns. Of the remaining forty battalions, twenty were to have the M36 self-propelled 90mm gun and the remainder to be equipped with either the M10 self-propelled 3-inch gun or the M18 self-propelled 76mm gun at the discretion of the army commanders within the availability of the weapons.<sup>5</sup> The Ardennes Campaign caused a further change in this policy and as a result of the losses in towed units, it was decided that towed tank destroyer weapons would be discontinued. By the end of hostilities in this theater all towed units had either been converted to self-propelled or plans made for such change, units armed with M36's were limited only by production and delivery schedules.

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THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APO 408

PART TWO

EMPLOYMENT OF TANK DESTROYER UNITS

CHAPTER 1

THE TANK DESTROYER BRIGADE

9. Organization. The brigade was organized under TO & E 13-50-1 (tentative). It was composed of a headquarters and headquarters company and two or more groups. A total of two tank destroyer brigades were organized. The second tank destroyer brigade was disbanded in the United States without participating in combat.

10. Pre-Combat Doctrine. There was nothing published in field manuals on the combat doctrine of the brigade as it was listed as a tentative organization. Training demands for a higher headquarters to supervise, coordinate, and inspect the large number of groups and battalions dictated its organization, and the fear of great massed tank attacks influenced its being organized as a tactical headquarters instead of a special staff section on the army or corps level.

11. Employment of the Tank Destroyer Brigade. The function of the tank destroyer brigade can best be described by quoting directly from the after action report of the only tank destroyer brigade in this theater;<sup>1</sup> "On the 22d May 1944, the 1st Tank Destroyer Brigade Headquarters and Headquarters Company was designated as the Tank Destroyer Section, Third Army. Prior to Third Army's entry into combat, the Tank Destroyer Brigade Headquarters supervised the training and equipping of all tank destroyer units assigned to the Third Army. After Third Army became operational, Tank Destroyer Brigade Headquarters, as a special staff section, advised the Army Commander on tank destroyer employment and attachments; made frequent staff visits to all Third Army tank destroyer units; assisted these units in obtaining and maintaining equipment and in securing personnel."

12. The Tank Destroyer Brigade's Task Force. The 1st Tank Destroyer Brigade Headquarters, organized and commanded a task force in the Third Army designated as Task Force "A" during August and September 1944. This was an armored task force with the mission of driving up the Brittany Peninsula and assisting in clearing the peninsula. The task force consisted of:<sup>2</sup>

1st Tank Destroyer Brigade Headquarters and Headquarters Company

2d Cavalry Group



15th Cavalry Group

6th Tank Destroyer Group

705th Tank Destroyer Battalion

159th Engineer Combat Battalion

509th Engineer Light Pontoon Company

Task Force "A" drove rapidly up the peninsula to the vicinity of St. Kalo, side slipped and proceeded toward Brest until contact was made with the 3th Armored Division containing that city. It then assembled in the vicinity of Morlaix, France (R 41) and protected the beaches and the routes to Brest. The task force assisted in the attack on Brest and later completed clearing the Daculeas Peninsula.

## CHAPTER 2

### THE TANK DESTROYER GROUP

13. Organization and Purpose. The tank destroyer group consisted of a group headquarters and headquarters company, organized under TO & E 18-10, and two or more battalions. It was self-sustaining, had a complete staff, and was prepared to operate as a tactical unit. The pre-combat doctrine was that it would enter combat under corps or army control, but provision was made for possible attachment to any division if the employment was confined to that division area. The group headquarters would coordinate battalion intelligence and counter-intelligence, assign reconnaissance missions to battalions, preplan the use of available facilities to meet emergencies, and conduct tactical operations. If reinforced with motorized infantry, engineers, cavalry, or a combination of those arms, it could function as a task force headquarters.<sup>3</sup>

#### 14. Tactical Assignment and Employment.

a. Original plans called for a tank destroyer group to be attached to each corps while in England. Their mission was to supervise the equipping and training of all tank destroyer units attached to the corps, to accompany the corps headquarters to the continent assisting those battalions attached to divisions and commanding those battalions under corps control. Because of the ratio of tank destroyer battalions to divisions and the piecemeal employment of the German armor tank destroyer battalions were seldom attached to a group. Only in exceptional operations was this ever the case.

b. Higher headquarters dictated that the group commander and staff should not assume corps staff officer functions, but that the group should be kept ready and free to transfer to other sectors to meet an enemy armored thrust. This trend limited the usefulness of the group headquarters with the corps, and forced it to become an advisory group interested in seeing that the tank destroyer battalions were adequately supplied and gainfully employed.

c. As the attachments of tank destroyer groups to corps became more permanent, the group commander usually officially or unofficially became the corps antitank officer and used his staff to assist him in carrying out this assignment. In the exceptional instances in which the group headquarters was detached or assigned special missions or commanded task forces, the group left at the corps command post a staff officer and small detail to carry on as corps antitank officer in the group commander's absence.

15. Special Employment. Many instances show that the groups, acting as headquarters of task forces with special missions assigned, conducted operations of importance, but the infrequency of these actions led to the corps using the group headquarters for many other purposes. Some examples are: (1) Commanding airborne defense troops in rear areas; (2) supervision corps rest centers; (3) supervision traffic control within corps and army area; (4) establishing motorized patrols for corps headquarters area; and (5) supervising armored protection for supply columns in rear areas. One group's entire combat time was as Headquarters Security Command, First Army.<sup>4</sup>

16. Combat Examples. That the groups were organized, equipped, and trained to function tactically when the opportunity arose, is attested by the following example:

\* \* \* \* \*

### E X T R A C T<sup>5</sup>

\* \* \* \* \*

#### "TANK DESTROYER EMPLOYMENT

- in -

#### ROER RIVER CROSSING OPERATION

"The Roer River Crossing Operation in Western Germany by the XIX Corps, beginning on 23 February 1945, was a major military operation. It provided an excellent example of the complete utilization of all available fire support in the corps, in which the tank destroyers played a prominent part.

"The assault crossings were made on a two division front, with the 29th and 30th Infantry Divisions each attacking with two regiments abreast. To support the bridging operation, comprehensive and coordinated fire plans were made by both divisions and Corps Artillery in which the fires of tank destroyer units in the Corps were fully exploited. In addition to their primary mission of destroying enemy armor, tank destroyers were used on other direct and on indirect fire missions.

"Indirect fires of tank destroyer battalions attached to the divisions were incorporated in the division artillery fire plans, with the indirect phase ending as the tactical situation developed and the battalions were required to assume their primary missions. Two tank destroyer battalions in Corps (the 702d Tank Destroyer Battalion (90mm SP) and the 301st Tank Destroyer Battalion (3" towed)) were

attached to the 2d Tank Destroyer Group for the crossing operation. The assigned mission was three-fold; to provide direct fire support to assault infantry; to neutralize suspected enemy positions by indirect fire; and to harass and interdict main routes of approach to the scene of the assault by long-range indirect fire. The primary principle followed in siting of all tank destroyer guns was to be able to deny the use of flank approaches to the bridgehead by hostile armor, expressly ordered by the Corps Commander. His knowledge of a similar operation on the Volturno River in Italy, in which two battalions of Rangers were wiped out by enemy armored attacks from the flanks of the bridgehead led to ordering these preventative measures to insure that a like occurrence would not arise in this operation.

"Initially, six platoons (24 guns) of the 90mm SP's were emplaced in direct fire positions on the west bank of the Roer River, so placed as to permit the delivery of fire upon targets and areas which were deemed most likely to require neutralization. Tank destroyer forward observers with the leading infantry elements were in radio communication with the guns, and afforded a rapid means of placing fire upon desired targets. The forward observers remained with the assault infantry commanders in order to make recommendations and advise the Commanders on the direct fire possibilities of the tank destroyers. When the infantry advanced to such an extent that direct fire became unfeasible, the tank destroyers were moved to indirect fire positions. These positions had been previously prepared and surveyed, so that no delay was encountered in the change of mission.

"The fires of the tank destroyer battalions were utilized to the utmost to thicken and deepen the fires of Corps Artillery. Initially, the remaining three platoons of the 90mm SP's were sited to deliver long range enfiladed interdiction fire upon each of three highways, firing at the rate of 100 rounds per hour, per platoon, from H - 45 to H / 210, for the purpose of cutting and prohibiting the repair of wire communication and preventing enemy traffic from reaching the scene of the assault crossing.

"The 3-inch towed guns maintained neutralization fire upon the Staats-Forst, a woods east of the Roer River opposite the 30th Division sector, with one company, (12 guns) firing 300 rounds per hour from H - 45 to H / 210. Two companies maintained neutralization fires upon a system of trenches, opposite the 29th Infantry Division, on high ground east of the river. The rate of fire was 300 rounds, per hour for each company for one hour, beginning at H - 45. At H / 15, the fire was lifted to three towns, 3000 - 4000 yards farther east, maintaining the same rate of fire.

"At the end of the scheduled fires, both the 90mm guns and 3-inch guns were prepared to fire missions upon call from Corps Artillery fire direction center. Control was accomplished by establishing a tank destroyer fire direction center at the Corps Artillery fire direction center, through the Corps Artillery switchboard. During the ensuing four days, call missions were handled in this manner, without undue difficulty or delay. Missions were interdictory, harassing and neutralizing. Because of the

abundance of artillery, tank destroyers were not called upon to participate in serenades although fully prepared to do the job. The fire direction center was concerned only with fire control and those points directly connected with fire control. All decisions pertaining to reconnaissance, number of guns, siting, amounts of ammunition to be used, and movements were made and coordinated by the group commander.

"The planning phase for the crossing was long enough to allow for thorough attention to all aspects. Several days were devoted to reconnaissance of routes and positions, map and terrain studies, coordination with adjacent units, and pertinent administrative matters. The Corps sector was entirely familiar to all concerned, as all units had occupied the area for some time, a fact which greatly simplified the planning problems. Thorough orientation of personnel aided in reducing the problem of coordination to a minimum. This was especially true of the tank destroyer forward observers and the assault infantry Commanders. It is necessary that sufficient contacts and meetings occur between these officers that each thoroughly understands the other's capabilities and needs. Constant liaison between supported and supporting units maintained a high degree of cooperation."

### CHAPTER 3

#### TANK DESTROYER BATTALIONS

##### 17. The Self-Propelled Battalion.

a. The self-propelled tank destroyer battalion organized under TO & E 13-25, consisted of a battalion headquarters and headquarters company, three letter companies, and a reconnaissance company. The battalion was commanded by a lieutenant colonel who was assisted by a full tactical staff. The battalion headquarters company contained the normal complement of enlisted men to man the headquarters staff sections, the supply section, motor maintenance section, personnel section, and the medical detachment. It was completely motorized and included three cars armored, utility (M20's) for the commander's party and command post.

b. The reconnaissance company included a company headquarters, three reconnaissance platoons, and a pioneer platoon. Each reconnaissance platoon was made up of two sections, each section consisted of a car armored, light (M8) and two 1/4 ton trucks; the platoon leader had an additional 1/4 ton truck, making a total of one officer, 21 men, and seven vehicles in each reconnaissance platoon. The pioneer platoon consisted of a platoon headquarters and two sections; each section included ten men and two 1-1/2 ton trucks equipped with pioneer tools and equipment; the platoon headquarters consisted of six men, a car armored, utility (M20), and an air compressor (MT2) complete with all its various air powered tools.

c. The three lettered tank destroyer companies each consisted of: a company headquarters of 23 men, including the service echelon, with two armored and six other

motor vehicles; three combat platoons, each platoon made up of four self-propelled tank destroyers, either M10's, M36's, or M18's, plus two cars, armored, utility (M20) and a 1/4 ton truck. To summarize, the tank destroyer lettered company included five officers, 130 enlisted men, 12 self-propelled guns, and eight armored cars, plus its unarmored vehicles.

18. The towed tank destroyer battalion, organized under TO & E 18-35, differed very little from the self-propelled unit except in being equipped with 36 3-inch antiaircraft guns, M5, mounted on a split-trail carriage M1 and using the half-track personnel carrier M3 as a prime mover. The only other material difference was the elimination of the reconnaissance company and the inclusion of two reconnaissance platoons in the battalion headquarters company. This reduced the battalion to a battalion headquarters and headquarters company and three lettered companies. The pioneer platoon and one reconnaissance platoon were eliminated because they were considered unnecessary for the towed gun unit.

#### 19. Pre-Combat Doctrine.

a. In Field Manual 18-5, dated 13 July 1944, the pre-combat doctrine as taught in the Tank Destroyer Center, emphasized aggressiveness, a defensive offense, and the fact that armor must be destroyed. To accomplish this the following points were stressed: (1) Accurate firing at stationary and moving targets; (2) continuous and thorough reconnaissance; (3) terrain appreciation; (4) the use of armored tactics, both American and German; (5) physical fitness; (6) unit esprit; (7) development of a "do or die" attitude, "the armor must be destroyed."

b. The German armored conquest of France and the Low Countries and the fluid armored warfare of the African Campaign provided the impetus which first gave birth to the tank destroyers and later dictated their pre-combat doctrine.

c. The maneuvers in Louisiana and Tennessee in 1941 and 1942 had shown the need for a self-propelled tank destroyer for all operations except a well dug-in defense of position. It was believed that it would be impossible to save emplaced towed guns if the infantry was forced to make a hasty withdrawal. This led to the production of two temporary expedients, the M3 destroyer, a half-track mounted 75mm gun, and the M10 destroyer, a 3-inch high velocity turret-mounted gun, with 360 degree traverse, on an M3 tank chassis. It had sufficient frontal armor to stop a 57mm projectile and sufficient side armor to stop .50 caliber bullets and shell fragments. This lighter armored, heavier gunned, open turret destroyer was built to out-shoot and out-maneuver either the American M4 medium tank or known models of the German Pk IV tank. Tank destroyer's inherent need for speed to outflank the German armor caused the later development of still another self-propelled gun, the M18, also known as the T70. This destroyer, a 76mm gun with a power operated turret mounted on approximately an 13 ton chassis with the new semi-christie suspension, had more horsepower per ton than any other vehicle in the United States Army. This weapon provided greater get-away than even the 1/4 ton truck and road

speed of over 60 miles per hour. With these new weapons, the Tank Destroyer Center, on the rolling, firm terrain of Camp Hood, Texas, produced fast slashing units, particularly trained to seek out and destroy enemy armor. However, at the time the first tank destroyer units went overseas, the M10 was still being tested and the M18 was still under development so the destroyer used in Africa was the M3, a half-track mounted, 75mm gun.

20. Effect of the African Campaign. The naked terrain in Africa, the poor showing made by the half-track-mounted 75mm tank destroyer, and the British use of towed tank destroyer guns in hedgehog defense in depth, caused a late change in the ratio of self-propelled and towed weapons, and to some extent, the tank destroyer doctrine in 1943. Those officers who had been through the African Campaign, who had become indoctrinated with the British defense against armor, and who had seen the impossibility of concealing the self-propelled gun in open terrain, requested towed tank destroyer battalions. In fact they refused to accept the self-propelled units. This caused not only the conversion of many self-propelled units, but also a change in the doctrine to suit the towed weapon.

## 21. Tactical Assignment and Employment.

a. Towed battalions were requested and assigned by the theater on a ratio of one towed battalion per division. The self-propelled battalions already in England and in transit were to be held at corps and army level as mobile reserves. This assignment held until just before the invasion when the lessons learned in amphibious maneuvers conducted in England and the impossibility of providing sufficient towed units forced a change. The initial invasion was made by one towed and several self-propelled units.

b. It was seen at once that the hedgerow terrain of Normandy, the need for an armored assault gun, and the piecemeal commitment of enemy armor, made the self-propelled unit far superior to the towed. Therefore, division commanders soon demanded the self-propelled tank destroyer. This demand was met by changing priorities and shipping instructions and finally by converting towed units during combat.

c. The employment of the battalions with variations and special tasks is covered in paragraphs 21 to 24. Suffice it to say that the self-propelled tank destroyer proved to be a most versatile weapon on the battlefield and although its use did not follow pre-combat doctrines, it did fill a need and became a very highly respected part of the successful infantry-armor-artillery team.

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THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APC 408

PART THREE

TANK DESTROYER TACTICS

CHAPTER 1

PRE-COMBAT PRINCIPLES

22. Early Influences. Tank destroyer teachings and doctrine in existence at the time of the European invasion were developed on the battlefields of North Africa and the training grounds of the Tank Destroyer Center, Camp Hood, Texas.

23. Tank Destroyers Employed in Mass. It was contemplated that tank destroyers would not be employed alone but would work in close cooperation with all other combat arms. Believing that these forces possessed organic anti-tank weapons capable of unit protection against all but large scale tank attacks, it was not advocated that tank destroyers be attached and used as organic antitank weapons. In fact, it was believed that enemy armor would be employed in mass with the aim of making a penetration of the front lines, disrupting communication and attacking rear area installations. Therefore, tank destroyer doctrine contemplated that the supported organization's organic antitank weapons would stop all small harassing tank attacks, and that upon determining the location and direction of a large scale armored thrust, tank destroyers would move from assembly areas or positions in readiness to pre-reconnoitered and prepared positions, these positions to be on or near the regimental reserve line where they could not only stop the tank attack but could destroy the enemy's armor. This meant that tank destroyers would be employed by battalion, would be mobile, concentrated and possess a defense in depth. When concentrated to meet an attack they would be in a mass superior to that of the hostile armor. The doctrine did sanction the decentralization of tank destroyers by attachment to divisions; but this was governed by the principle that the smaller the number of available destroyers and the less that was known of the hostile armored strength, the greater was the need for centralized control.

24. Tank Destroyer Capabilities. Secondary missions of a direct fire nature consisted of assault fire against pillboxes and other permanent fortified positions, beach defense, and anti-airborne and parachute defense. Although these types of employment were recognized and sanctioned because of the high velocity weapon of the destroyers, not much emphasis was placed on them and little or no training was furnished tank destroyer units in these fields. The varied capabilities of the tank destroyer were realized early in its development, but because of the difference in the mission of tank and tank destroyers, and the design of the thin skinned, fast vehicle, no indication was present in the early stages that it might be necessary for



tank destroyers to assist in the assault fire role of the armored force.

## CHAPTER 2

### EARLY COMBAT DEVELOPMENT

#### 25. Influencing Factors.

a. Weapons. It early became evident to tank destroyer units in combat that their employment was not as contemplated. Infantry divisions found that the organic antitank weapons, the 57mm towed gun and the Antitank Rocket Launcher M1A1, would not protect them from harassing armor. The Antitank Rocket Launcher M1A1 (bazooka) was considered to be greatly superior to the 57mm gun in the Normandy conditions, but in the hands of green, unseasoned troops, its use did not prevent enemy armor from making short, penetrating, harassing attacks at will.

b. Hostile Armor Employment. With but one exception during the entire Normandy operation in the First Army sector, enemy armor was employed in small numbers. Their mission was to keep our attacks off balance and limit our advance by disorganization and destruction of personnel and materiel. In all of these they were highly successful. In the one instance where a mass of tanks was employed in an attempt to cut the First Army in two by a drive to Isigny, France, an initial penetration was made. It was only the accidental presence of a self-propelled tank destroyer battalion on the canalized routes available to tracked vehicles that made possible the destruction of a large part of the enemy armor and prevented the enemy's success.

c. Effect of Terrain. The wooded terrain of hedgerows, small fields, and apple orchards with poor, narrow, sunken, winding roads and extremely restricted fields of fire made the Normandy area a vastly different place from the wide open desert spaces of Africa. Tank destroyers emplaced a few hundred yards behind the infantry front lines were unable to furnish any support and could in no way cope with shallow, harassing enemy attacks. At the same time towed tank destroyer units were suffering losses of personnel and materiel from small arms, mortar, and artillery fire for lack of armor protection. When this type unit was employed in the front lines they suffered loss of guns whenever friendly infantry was forced to retire. This proved the pre-combat ideas that it would be impossible to move emplaced towed guns while they were under mortar, artillery, or small arms fire.

d. Infantry Need for an Assault Gun. It soon became apparent that the infantry urgently needed an armored assault gun, an accompanying high velocity self-propelled armored gun capable of knocking out strong points, emplaced self-propelled guns, or tanks used in a defensive role. The practice of attaching only one separate tank battalion to a division did not provide a sufficient number of suitable tanks for this offensive role. The light tank company with its 37mm guns did not meet the particular needs of the situation and it was necessary to divide the two medium tank companies of the tank battalion between the three infantry regiments. Because of battle and operational

tank losses; it became necessary to use tank destroyers to augment the tanks in the performance of their offensive role.

26. The Change in Defensive Policy. The factors outlined in the proceeding paragraph made necessary a command decision as to the type of antitank defense to be employed. Was the defense to be a front line antitank defense or was it to be a defense in depth? The decision was made to defend on the front lines. This was justified by the enemy's piecemeal use of armor, the terrain conditions, and the limited number of suitable antitank weapons available.

27. Changes in Employment. As a consequence of the change in policy, by the end of the Normandy Operation, all tank destroyer units then in combat found that the following modifications and changes in their employment had been or were being made:

a. Tank destroyers moved into the extreme front lines and took over the function of the division antitank weapons, which meant that the combat procedure was the fending off of enemy armor rather than the sucking in, entrapping and destroying of enemy tanks.

b. When operating in the front line, tank destroyer companies, in the great majority of cases, were attached to infantry regiments or armored combat commands. The tank destroyer battalion lost all control over its smaller units except for supply and administration. In some cases battalions even lost supply functions.

c. Front line employment required prompt occupation of position along the entire front, thus destroying mobility, concentration of force, and eliminating the possibility of a defense in depth.

d. Continually in the front lines and possessing a splendid direct fire gun, self-propelled and to some extent towed tank destroyers took on assault fire and armored force missions.

### CHAPTER 3

#### COMBAT EMPLOYMENT OF TANK DESTROYERS

##### 28. General Employment of Battalions.

a. Tactical Principle. Field Manual 18-5, dated 18 July 1944, chapter 10, emphasizes that tank destroyer operations consist of prior planning by the battalion commander, Pre-reconnoitering of possible combat areas, establishing a series of prearranged combat plans, and occupying successive positions of readiness pending actual entry into combat. Also, the battalion commander would select the defensive areas, control the fire fight and commit his forces as the situation developed. Those were tank destroyer tactics. However, antitank employment of tank destroyer units in the European Theater resulted in all of these principles being practically untried.

b. Disposition of Tank Destroyer Battalions. During the pre D-Day planning stage it was contemplated that every division, infantry or armored, would have one towed

tank destroyer battalion with a self-propelled unit being available as a reserve at corps and army levels. By D-Day, armored divisions had self-propelled units attached and where there was a surplus of these units over and above those required for the armored force, infantry divisions were similarly reinforced. In order to obtain close support one tank destroyer company was either in direct support or actually attached to each regiment or combat command. The companies were usually further broken down with a platoon in direct support or attached to each infantry battalion or armored task force. Although battalion commanders highly censured such attachments of their units; this practice became firmly established in the majority of divisions. While the attachments of platoons to infantry battalions was a matter of preference of the individual regimental commander, the general rule in infantry divisions was that platoons would not be attached. Within armored divisions the attachment of platoons to tank companies was the general practice.

### c. Results of Attachment.

- (1) Loss of Coordination. The attachment of tank destroyer companies to regiments and combat commands meant that the battalion commander lost all control over his unit, had nothing with which to fight and had little work for his staff. He had no functions other than the administration and supply of his unit, and the occasional furnishing of technical advice to the division or regimental commander. By command liaison the battalion commander attempted to make the road smoother for his detached units. Although control over the gun companies had been lost, pre-combat trained unit staffs continued reconnoitering and making plans for possible mass battalion employment. However, as time went on they came to the realization that their work was futile and useless, that they could not expect the companies to return to them for operational control, and that the more critical the situation became the less the possibility of securing the release of a unit from regimental control. An example of this situation arose at Mortain, France, with the 30th Infantry Division. A critical, unprotected area developed and the division issued instructions to the tank destroyer battalion that a platoon would be moved to that area at once. The tank destroyer battalion commander reminded the division staff that all units had been attached and nothing remained under battalion control, but recommended and received approval, that one platoon of the tank destroyer company attached to the regiment not engaged be detached and returned to battalion control. Notwithstanding this, the regiment refused to permit the platoon's movement and delayed its detachment for 5-1/2 hours.

Fortunately, the Germans did not attack in the unprotected area and no harm resulted from the delay. All this meant that as time went on less and less pre-planning was done by most units. Planning was accomplished by the gun company commander within the regimental zone, and the staff merely checked results after occupation. Because each company had a regimental mission and a regimental sector of responsibility, a complete coordinated antitank defense of the division front was seldom obtained.

- (2) Lack of Depth in Defense. The large fronts covered by divisions, the use of tank destroyers in antitank roles, and the fact that assault fire and fire on targets of opportunity could only be accomplished by tank destroyers from front line positions, caused guns to be placed in position in the front lines. In order to cover the entire front all guns had to be utilized, leaving only a thin single line of guns with no depth and no replacements available when guns were put out of action. At any given place, the most that could be expected was the mutually supporting fire of two guns. Against small scale, harassing and piecemeal attacks this arrangement proved satisfactory in that the enemy tanks were usually driven off or knocked out. Against large scale attacks, and so far as the destruction of a mass of armor was concerned, this employment was very inadequate. Had the enemy been willing to accept losses, a fast moving, hard hitting attack could have penetrated our lines almost at will. With his companies attached to the infantry, and all guns continually employed in an antitank role, the battalion commander could do little but make terrain study and disseminate 3-2 information; he had no control over the fire fight and no reserve to commit in a critical situation developed.

d. Movement of Tank Destroyer Units. Successive occupation of positions of readiness had no place in antitank employment. Tank destroyer units in this theater occupied such positions only in a few cases where it was necessary to stop, get off the road and gain control of the unit after a long march, or where for some reason advance reconnaissance of positions could not be made and the unit had to rendezvous while this was being done. Platoon, and to a lesser extent company, employment was characterized by leapfrogging of units from one firing position to another. Usually, enough time was available to permit sufficient reconnaissance to allow the guns to move directly into final position. When this was not so, the usual practice was for individual guns to leave the platoon upon arrival at the new area and go directly to the approximate firing locality

where they took up a covered position pending the actual occupation of the firing site.

## 29. General Employment of Companies.

a. Liaison. The breaking up of the tank destroyer battalion for operations and the assignment of support missions directly to the companies introduced the problem of liaison at the company level. Tank destroyer companies were not organized to include this function. The officer strength included a company commander, an administrative officer, and three platoon leaders. The use of platoon leaders as liaison officers to the infantry regiment was impracticable because they were required to maintain close contact with the infantry battalion commanders. The tank destroyer company commander could not maintain this liaison because, even when he established his command post with that of the infantry regiment, his tactical duties kept him away the greater part of the time. This left only the administrative officer to act as liaison officer, at the expense of his administrative duties. These, in turn, had to be done by the company commander, forcing him to neglect part of his tactical duties. In some units, this situation was partially corrected by attaching a reconnaissance platoon to the company and the platoon leader became the administrative officer. In other units, a solution was found by using battalion staff officers for liaison between the company and the infantry regiment.

b. Control. Whether platoons were attached to or supporting a battalion, there was little the company commander could do to affect the final results of the operation as, usually, all his forces were committed. So many factors outside his control influenced the employment that he had to issue mission type orders, leaving most of the decisions that arose to the platoon leader.

c. Movement. Depending upon the rate of progress, the advance of platoons was either by zone or position area. During a rapidly moving situation, the platoon leader usually remained with the infantry battalion commander or sometimes with the leading infantry company commander. The platoon, under the control of the platoon sergeant, moved into successive hastily occupied firing positions upon receipt of radio instructions. In slower moving situations, much more detailed reconnaissance was made. Initially, firing positions were selected by map inspection. Then, personal reconnaissance was made as soon as the infantry secured the area. This was usually done by the reconnaissance elements or by the platoon leader actually going in with the advancing infantry; this was especially true with towed units. The gun commanders then went forward and picked out individual gun positions.

d. Fire Support. In an attack it was desirable to put one and perhaps two platoons on a hill overlooking the attack. From these positions the guns fired assault fire into the objective over the heads of the infantry and tanks, or assisted in isolating the area by preventing the movement of hostile reinforcements and supporting fire from adjoining areas. If the units was self-propelled, the platoon working with the attacking elements usually followed closely the leading elements; furnished flank protection; fired upon targets of opportunity; and when the objective was taken immediately occupied antitank defensive positions.

When necessary they fired assault fire to assist the infantry in taking the objective. In towed units, because of their lack of armor, the supporting platoon had to wait under cover until the objective was taken, and then moved forward to take up new positions on the objective. In either case the rule was that tank destroyer units must be in position in the new area in time to assist the repulse of the expected counterattack. Thorough reconnaissance for gun positions was extremely important but was not permitted to delay the emplacement of the piece. If, after the guns were ready for the counterattack, further reconnaissance indicated that they were not in the best positions, adjustments were made to cover every avenue of approach.

e. Morale Effect. The following incident described by Colonel L. E. Jacoby, Commanding Officer of the 5th Tank Destroyer Group, describes forcefully the effect these tank destroyers had on the infantry. 1

"What is not in the field manuals on tank destroyer use is the effective support which they render to a fighting infantry at the time of actual combat. An infantryman has his fortitude well tested, and the mere presence of self-propelled tank destroyers in his immediate vicinity give a tremendous shot of courage to the committed infantryman. For example at Chambois, an infantry battalion moved towards the town with utter fearlessness to enemy artillery, mortar, and small arms fire when accompanied by some M10's. However, the M10's were delayed in crossing a stream for about thirty-five minutes. During this time the infantry battalion continued to their objective which dominated a roadway leading west from Chambois. They fought infantry, they bazooka-ed some armored vehicles including three tanks on the road, but upon realization that M10's were not firing they started a retirement. Leading the parade to the rear was a short lad affectionately known as 'Shorty'. Shorty, in the lead, was the first man to see a platoon of M10's who had finally gotten across the stream. Shorty took a good look at the M10's; turned around, and shouted to the other men, 'Hell, boys, what are we retiring for, here comes the TD's.' The entire company in mass immediately reversed their direction and returned to their excellent positions, and to say they fought for the next few hours with unusual bravery is stating it mildly. The point I am trying to make is that the appearance and the knowledge that self-propelled tank destroyers were at hand was a major reason that the infantry attained success and victory. Often many men die or suffer to take important objectives and others will die or suffer to retain or exploit if the inspiration furnished by the presence of the self-propelled tank destroyer is known. The towed gun crews can be just as brave and thoroughly trained but they never give much 'oomph' to the fighting doughboy when the 'chips are really down'."

#### CHAPTER 4

##### SPECIAL TYPE OPERATIONS

30. General Statement. Fundamentally, there was no such thing as different employment of tank destroyers in various types of operations. Reconnaissance, occupation of positions prior to combat, concealed positions, constant

observation, and firing the first accurate shot were the cardinal principles under which one's right to live or die was based. The only changes dictated by the operation were the amount of time devoted to the various phases of employment. When considering operations as a whole, it is no longer possible to separate completely the direct and indirect fires of a tank destroyer battalion; and in the future reference will be made in general terms to both direct and indirect missions performed. No attempt can be made to cover all the important operations of this theater, but each type operation will be discussed. So far as tank destroyer units were concerned in most large operations, there was no overall tank destroyer plan; so that it was usually only at corps or division level, and lower, that any attempt was made to tie the tank destroyers in to the fire plan.

### 31. Defense.

a. Types of Defense. Defensive operations can be classed in two categories: (1) Those wherein the decision to defend was made by the defender prior to serious enemy pressure; and (2) those wherein enemy pressure forced the defense by sudden preponderance of force.

b. Planned Defense. This phase was keynoted by a detailed reconnaissance of the terrain to determine the following: all tank approaches; the most easily defended positions; fields of fire; concealed and covered positions; routes of ingress and egress to the positions; and road nets. A coordinated plan was then developed for the defense of the area, utilizing all means available to include a mobile reserve, preparation, occupation and continuous improvement of positions, and continual reconnaissance and observation to determine the activities of the enemy. An excellent example of this is found when the entire Ninth Army assumed the defensive along the line of the Roer River in the Aachen Sector during the Ardennes Campaign. The decision to defend was made by reason of enemy activity in the Ardennes and the need there for all available troops. The Roer River presented a good natural barrier along the entire front. Full advantage was taken of the terrain and both armor and tank destroyers were emplaced in depth along the defensive line. Supplemental, alternate, and dummy positions were prepared. In addition to tank and tank destroyer weapons, advantage was taken of captured enemy equipment, and skeleton crews manned German antitank weapons of all types. Behind the tank destroyers, to establish depth, 90mm antiaircraft guns were placed in direct fire positions. Everyone was made thoroughly familiar with all sectors in which it might be necessary to operate, and was briefed upon plans for defensive action in the event of an enemy attack. Most tank destroyer units performed their dual role by keeping about one third of their strength out of their prepared positions and on the secondary mission of indirect fire. These guns had assigned sectors and prepared positions and were a reserve for deepening the defense in all sectors.

c. Forced Defense. Where enemy action forced a hasty defense, the terrain and positions occupied were not always well suited. A command decision had to be made as to whether a defense of position would be taken or a delaying action would be fought while better defensive positions were found, prepared, and occupied farther in the rear. In the first instance, to the extreme limit allowed

by the enemy, the procedure outlined in paragraph b above was followed.

d. The Ardennes Example. The overall Ardennes Campaign represented a blending of both types of defenses. Initially all units attempted to defend in position, and being forced back went into a delaying action of successive defensive positions. While that was being done, tank destroyer units from other sectors were rushed into the area and at once took up positions deepening the defensive line and established a defense in depth. When driven back to the prepared lines, the delaying forces added their strength to the lines or passed through to rear areas where they reorganized and acted as reserves. The entire Ardennes defense can be characterized as piecemeal in that enemy action broke up many organizations and, when contact was lost with their parent headquarters, they were forced to fight as separate units, attaching themselves to whatever unit was in that locality. As units arrived, they went into the line separately giving the enemy an opportunity to destroy our force by segments. In the final stages such a great number of tank destroyers had been brought into the area, and so many 90mm antiaircraft weapons had been put on antitank missions under tank destroyer control or supervision, that a mobile reserve of tanks and some tank destroyers was established giving many sectors a very adequate defense in depth.

### 32. Attack of Permanent Defensive Position.

a. General. The attack of permanent defenses of any type demanded a high velocity weapons. Even where destruction was impossible, well aimed fire destroyed the guns or made the position so unbearable that their fire was neutralized.

b. The Attack of the Siegfried Line. The XIX Corps was one of the few organizations that was forced to attack a fully manned section of the Siegfried Line. The initial phase was handled by the 30th Infantry Division which had a towed tank destroyer battalion attached. In this action the tank destroyer battalion commander was given the mission of organizing all antitank defense in the sector of the holding attack. Employing the organic 57mm guns, Antitank Rocket Launchers M1A1 (bazookas) and two companies of tank destroyers, the battalion commander established a coordinated defense. Prior to the attack the other tank destroyer company kept one or two platoons continually in front line positions firing at and destroying all visible pillboxes in the area of the attack. The other one or two platoons were always in indirect fire positions firing harassing and interdiction missions. During the initial phases of the attack, two platoons from overwatching positions fired assault fire in the zone of the attack and neutralized targets of opportunity and strongpoints interfering with the infantry's progress. Later one platoon took defensive positions covering the flank of the penetration while the other returned to indirect fire positions. During this period the other companies from their defensive positions fired harassing assault fire at targets of opportunity in order to pin down the enemy and prevent reinforcements of personnel, materiel, or fire in the assault area. In addition to the towed battalion, a self propelled unit was attached to the division just for this operation. It took no part in the opening



phase since it was attached to the infantry and was alerted to cross the Worm River at the earliest possible moment. Wet, boggy terrain delayed the crossing, but when across, it worked in assault roles with the attacking infantry. With the establishment of a small bridgehead over the river the 2d Armored Division crossed, assisted in the expansion of the bridgehead, and drove for a breakthrough. It had a self-propelled tank destroyer battalion attached which was employed in the usual armor-tank destroyer manner (tank destroyer companies attached to each combat command). As the 30th Division turned south, defensive tank destroyer guns on the west side of the river assisted in the capture of pillboxes within their fields of fire. One company continued in indirect firing positions and fired night harassing and interdiction missions. Then, as sufficient room was secured within the bridgehead and the division's defensive front was shortened, the towed units moved across the river to indirect fire positions. After a short time on that mission, they returned to their regimental attachments, reverted to their usual antitank roles and assisted with assault fire when possible.

### 33. River Crossings.

a. Whether river crossings were made after a delay in advance long enough to preplan and bring up additional forces, or were made immediately without bringing up reinforcements, maximum use was made of all available tank destroyers. In the carefully planned attack some tank destroyers were used to assist armor by direct fire missions from firing position on the near shore, knocking out known strong points, observation posts, and denying the enemy armor access to the initial bridgehead. Those tank destroyers not needed on this direct fire mission and not attached to the assault regiments were generally placed in indirect fire positions reinforcing fires of division or corps artillery. As soon as the minimum bridgehead was established to allow the construction of fords or bridges, the tank destroyers crossed, initially strengthening the perimeter, then assisting in its expansion. In the exploited river crossing the employment was as similar to the preplanned crossing as troops available, preplanning time, and space would permit. Possibly the best example of this type of operation was the Rhine River crossing over the Remagen Bridge. The following two paragraphs are quoted from First Army's Field Artillery and Tank Destroyer Operations Summary No. 40 dated 13 March 1945.

"First Army tank destroyer units were among the first supporting arms to cross into the REMAGEN bridgehead, and at the end of the period, 112400A March 1945, three battalions and elements of another had crossed the RHINE RIVER.

"The majority of the tank destroyer fire was in the antitank and assault roles. Nine German tanks and three self-propelled guns were knocked out. Other losses inflicted on the enemy included nine antitank guns, five antisircraft guns, 15 machine guns, 63 general purpose vehicles and 75 strong points. Four serviceable 105mm howitzers and 60 prisoners of war were captured. Tank destroyer units lost six primary weapons of which three were repairable."

# Bibliography

## Part Three

1. Paragraph 6, Letter, Headquarters, from Col L. E. Jacoby, Commanding Officer, 5th Tank Destroyer Group, to Col Wendell Westover, Chief of Staff, Tank Destroyer Center, dated 16 January 1945, Subject: "Reports of 776th Tank Destroyer Battalion", Artillery Section, The Theater General Board.

PART FOUR

INDIRECT FIRE MISSIONS

CHAPTER 1

INDIRECT FIRE

34. A Specialized Force. Tank destroyers were organized and armed for the primary purpose of destroying enemy armor. The short time available to organize, arm, and train this new force made it necessary to concentrate all training on the primary mission. As units passed their Army Ground Force tests, completed maneuvers in Louisiana and Tennessee, and were shipped to various camps to await overseas shipment, they began to study and train for possible secondary missions. Field Manual 18-5, dated 16 June 1942 (paragraph 11) stated: "When tank destroyer units can be spared from their primary mission, they may be employed on secondary missions, such as beach defense, action against parachute and airborne troops, and the reduction of bunkers, pillboxes, and other weapon emplacements." This does not include indirect fire, but in the minds of the artillerymen then assigned to tank destroyer units was the realization that the only artillery reserve was ammunition, and that no commander would allow a battalion of 36 artillery weapons to remain in reserve.

35. Early Developments. First, individual officers worked out crude methods of laying these guns which were equipped with direct laying sights. Units tested these methods and improved upon them, and finally panoramic sights were added to some destroyers. Eventually, the azimuth indicator method of laying the self-propelled gun was adopted by both the armored force and the tank destroyers, while towed guns were equipped with panoramic sights.

36. Indirect Fire Taught in 1943. In the spring of 1943 indirect fire tests were conducted at the Tank Destroyer Training Center, and a demonstration of indirect fire was included in the curriculum of the Tank Destroyer School. Battalions stationed at Camp Hood were allowed to fire indirect fire, after completing all other requirements, following a very brief two-day course of instruction by a team of two officers.

37. Maneuvers in 1943. During the 1943 fall maneuvers in Louisiana, the 823d Tank Destroyer Battalion (Towed) was attached to a different division in each phase of the maneuver for the purpose of teaching the divisions the capabilities and limitations of the towed unit in both its primary and secondary missions. This unit was used consistently in its secondary mission by all divisions; and by the close of the maneuvers, through continual use and training, it was able to accomplish survey of its position area, control its fire from company fire direction center, and successfully demonstrate the tank destroyer's ability to function as reinforcing artillery.

38. Field Manual 18-5 Revised. In the revised tank destroyer Field Manual 18-5, dated 18 July 1944, paragraph 6 states: "Suitable secondary missions are: a. Direct or indirect fire to reinforce or supplement that of artillery units. b. Destruction of pillboxes and permanent defensive works. c. Support of landing operations. d. Defense of beaches against waterborne attack. e. Roving gun and roving battery mission." Placing the tank destroyers in the artillery branch stimulated this artillery training, and during the intensive training period in England prior to the invasion, all tank destroyer units were further trained and qualified in both direct and indirect firing so far as equipment and time allowed,

39. Issued Equipment in England. Tank destroyer units in England were issued fire direction sets, switchboards, telephones, wire, aiming circles, and the other essentials necessary to accomplish basic survey, fire direction, and to establish their own wire communication without additional manpower or transportation.

40. Indirect Fire in European Theater. The employment of the tank destroyers as field artillery in the European Theater varied to compensate for the degree of proficiency attained by the individual unit. Initially, it was normal for the division to attach a company of tank destroyers to a field artillery battalion. That field artillery provided the target area survey, and the tank destroyer unit executed the position area survey. Until the artillery was satisfied that the tank destroyers could deliver accurate fire, an officer was usually sent to the tank destroyer fire direction center to assist and supervise. Recognition of proficiency generally found the tank destroyers being treated as any other reinforcing battalion when a tank destroyer company was employed, or as a reinforcing group when the tank destroyer battalion was employed in its secondary mission. The range and flat trajectory of tank destroyer guns made their employment as corps artillery more suitable than employment as division artillery. Furthermore, division artillery units in action did not have the manpower or equipment to supervise and instruct an attached unit of equal or larger size.

41. Effective Reinforcing Fire. Tank destroyers did furnish effective reinforcing fires to both division and corps artillery in the European Theater. The use of tank destroyers as infantry antitank and assault guns, and the limited supply of high explosive ammunition controlled this reinforcement in most instances. The long range of the weapon, the light weight ammunition, and the high velocity of the projectile made its best employment that of night harassing and interdiction fire, while its ricochet fire proved deadly whenever firing positions producing enfilade fire could be found.

THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APO 408

PART FIVE

GENERAL COMMENTS

CHAPTER 1

ENEMY LOSSES

42. The Success of Tank Destroyers in Combat. An often heard statement in this theater was, "Tank destroyers were the most versatile weapon on the battlefield." Tank destroyers did accomplish the missions assigned them, and after-action reports of 39 battalions, although incomplete, indicate their success.

1344 tanks and self-propelled guns, giving an average of over 34 per battalion; one organization reported 105.

684 towed antitank guns or artillery pieces captured or destroyed; giving an average of over 17 per battalion.

251 armored cars or heavy trucks, an average of 6 per unit.

942 light cars and sedans, 24 per unit.

663 pillboxes were knocked out by 40 battalions, an average of more than 16 per unit.

614 machine guns, an average of over 15 per unit.

18 enemy airplanes, by organic antiaircraft weapons; one unit being credited with five.

40070 prisoners of war, an average of 1027 with one unit taking 5421.

Thus, it is evident from incomplete records that tank destroyer units, acting in either their primary or secondary role, inflicted a varied and telling blow to the enemy.

CHAPTER 2

COMMUNICATIONS, MOTOR EQUIPMENT

AND TANK DESTROYER WEAPONS

43. Communications. Tank destroyer battalions utilized both radio and wire as a means of communications. When employed in their primary mission as tank destroyers, principal reliance was placed upon radio but whenever possible, a wire net was established. When employed in

their secondary role as field artillery, wire and radio nets similar to those used by field artillery battalions were established. Communication equipment was similar to that of the field artillery; detailed discussion of that equipment is found in the Theater General Board Study Number 63 on "Field Artillery Communications". The principal comments on radio, from the tank destroyer point of view, concerned range and power supply. The equipment used in this theater definitely did not have sufficient range. Operation of radio equipment from the vehicular power supply was very unsatisfactory; in addition to the excessive wear on vehicle engines caused by running the engine to keep the battery charged, the noise frequently disclosed the location of the destroyer. A universal comment was that a silent-operating auxiliary battery charger was needed for this purpose.

#### 44. Motor Equipment.

a. Motor Carriage M10. The M10 motor carriage, powered by two diesel engines, proved to be a very good self-propelled gun mount. The main advantages were: (1) The flexibility of the two motors, which made it possible to move after one had been knocked out or failed in operation; (2) the power of the diesel motors at low speed; (3) the increased range per gallon of fuel; and (4) the ease of motor maintenance of the diesel engine.

b. Motor Carriage M10A1. The M10A1 motor carriage, powered with a 500 horsepower Ford tank gasoline engine, also proved to be a very sturdy and well designed gun mount. The units that were equipped with both the M10 and the M10A1 in turn felt that the latter had a little less power than the M10, that its one engine made it less flexible, and that the gasoline engine was a little harder to maintain and would not stand the rough going as well as the diesel engines.

c. Motor Carriage M18. The M18 self-propelled semi-christie gun mount, powered with a radial airplane motor, proved to be an ideal light destroyer and was highly praised by the using troops. Into the design of this destroyer were built maintenance aids which proved of great value in combat. Two such aids were: (1) The extension track for replacing engines, and (2) the removable frontal plate which made it possible to change the transmission in less than one hour. In a very large percent of its employment in this theater, its road speed of sixty miles and hour and its great cross country speed, were never needed. However, its floatation did prove to be a great advantage during the winter operation.

d. The M8 Car Armored Light and the M20 Car Armored Utility. These vehicles were not popular with the tank destroyer units. The common complaints were: (1) Lack of power in the higher range of speeds; (2) lack of floatation; (3) lack of sufficient armor and armament; (4) the open turret of the M8 and the open top construction of the M20; (5) the position of the driver and commander directly over the front wheels caused casualties whenever a mine was hit; (6) the lack of sufficient operating room for the crew in the M20; and (7) the vulnerability of the radiator to small arms fire. Maintenance was not diffi-

cult, but it was a major operation to get to the motor for even the first echelon check.

e. Unarmored Vehicles. This report will not cover the unarmored vehicles in the tank destroyer units except to comment on the need for an armored vehicle for the combat platoon leader. Without such a vehicle, it was impracticable for him to command his platoon in action. He generally left his unarmored 1/4 ton truck and entered one of the destroyers for protection; this limited his actions to a point where he really became a crew member or commander of that weapon and lost control of the other three.

45. Tank Destroyer Weapons. The 3-inch (AA) gun M7, the 76mm (AA) gun M2, and the 90mm gun T8 all proved to be excellent weapons; the only comment indicated is the need for larger caliber and higher velocity weapons. Tank destroyers or tanks did not have continuous superiority over the German armor in caliber and muzzle velocity. For example, when the enemy was using the 75mm gun, the 3-inch gun afforded a temporary superiority but the Germans nullified this by adapting the 38mm gun for the self-propelled mount. This was countered by the introduction of the 90mm gun but the Germans then made a great increase by using the 128mm gun. Thus, the American weapons maintained only a temporary superiority and for the great majority of the time the hostile weapons had greater caliber or greater muzzle velocity or both.

### CHAPTER 3

#### FIRE CONTROL EQUIPMENT

46. Binoculars. There is a definite need for binoculars of at least twenty powers as standard equipment with every tank destroyer gun. It is essential that the crew have the best visual aids; a perfect gun is helpless and dangerous if the crew cannot positively identify the opposing armor. The German tank crews were equipped with at least a ten power glass for identifying personnel and equipment, watching for movement, and sensing the direct fire of the weapon.

47. Range Finder. Range estimation, involving the human element, causes more misses than any of the other calculations made in firing the high velocity direct fire weapon. The estimation method now used requires a continuous training program and takes into consideration changes in terrain, color and foliage, lighting, water, and snow. The average soldier is unable to accomplish and maintain this ability and for that reason the best possible range finder should be provided.

### CHAPTER 4

#### REPLACEMENTS AND CONVERSION

48. Replacement of Tank Destroyers. Incomplete tank destroyer replacement figures furnished by European Theater Headquarters through ordnance channels give a rather vague picture of the necessary replacement of the primary

weapon from both combat and operational losses. There were 539 M10's and/or M10A1's replaced, 215 M18's, 151 M36's, and 228 M5's (towed). It is impracticable to draw comparative conclusions of guns used to guns lost from these figures because of the preponderance of M10's and M10A1's used initially, the gradual increase in the M18 battalions employed, and finally the introduction of the M36 which replaced the M10A1's while the M10A1 was in turn replacing the M5 (towed).

49. Conversion of Units. Several lessons were learned in this theater regarding the converting in combat of the basic weapon of a unit, and changing a towed unit to self-propelled. If at all possible, the complete unit should be moved out of combat and allowed a period of training emphasizing test firing and combat firing, driving and maintenance, and changes in tactical employment. This should be taught by seasoned instructors secured from combat-seasoned, similarly-armed units. The gunners must fire the new weapon sufficiently to gain confidence in their ability to destroy with the first round, and the driver must demonstrate, primarily to the crew, his ability to handle the vehicle. One tank destroyer battalion attached to an armored division was converted from M10's to M36's during combat and had no chance even to test-fire the guns. The Telescope T93E3 was strange to the gunners; its center line was not vertical, but slanted enough to take care of drift at the longer range of the 90mm gun. This was not explained to the gunners' satisfaction and caused a doubt in their minds as to its use. Before conversion was complete, they were heavily engaged resulting in losses and failure to kill in instances in which they were sure the old M10 with its 3-inch gun would have killed. It was necessary, and later became possible, to have platoons or companies relieved long enough to fire these guns on improvised ranges. This gave the gunners confidence and sold them on the new weapon. In the conversion of the towed units to self-propelled, it was possible in some cases to anticipate the conversion and secure training aids, and schools for gun crews and mechanics were established well in advance of the conversion date. When the new weapons were available, the entire crew took them to the range. In a few instances platoon and company problems were conducted but they were exceptions because of the shortage of time. However, the majority of the converted units went back or stayed in action with very little training in the use of their new weapon. Exploiting the aptitude and ingenuity of the American soldier along with his willingness to adopt a new weapon while in action, without sufficient time and training to become proficient in its use, cost the tank destroyers in lives and weapons.



THE GENERAL BOARD  
UNITED STATES FORCES, EUROPEAN THEATER  
APO 408

PART SIX

CONCLUSIONS AND RECOMMENDATIONS

CHAPTER 1

CONCLUSIONS

50. Training Literature. That the employment of tank destroyers in the European Theater was not based on the methods prescribed by Field Manual 13-5.

51. Armor in Infantry Division. That the use and employment of tank destroyers in the European Theater clearly indicates the necessity that armored, self-propelled, high-velocity guns be organic in the infantry division.

52. Tank Destroyers in Armored Division. That the trend toward tanks armed with weapons capable of destroying other tanks and the ability of tanks to develop the same mobility and fire power as the destroyer make tank destroyer units unnecessary to the armored division.

53. Infantry Division includes Sufficient Antitank Weapons. That the inclusion of sufficient antitank means in the infantry division proposed by the Theater General Board, (Organization, Equipment, and Tactical Employment of the Infantry Division 320.2/9 Study No. 15) eliminates the need of attachment of tank destroyers.

CHAPTER 2

RECOMMENDATIONS

54. Armor in Infantry Division. That armored, self-propelled, high-velocity guns capable of destroying piecemeal commitment of enemy armor and of assaulting strong points and fortified positions be included in the infantry division.

55. Tank Destroyer Function Assumed by Armored Force. That the tank destroyer doctrines be revised and included in the defensive doctrines of the Armored Force.

56. Artillery Antitank Responsibility. That the artillery assume the responsibility of deepening organic anti-tank defense.

57. Discontinuance of Tank Destroyers. That the tank destroyers as a separate force be discontinued.

## APPENDIX 1

### Tank Destroyer Units

#### Whose

#### After Action Reports Were Studied

1. 601st Tank Destroyer Battalion.
2. 602d Tank Destroyer Battalion.
3. 603d Tank Destroyer Battalion.
4. 605th Tank Destroyer Battalion.
5. 607th Tank Destroyer Battalion.
6. 609th Tank Destroyer Battalion.
7. 610th Tank Destroyer Battalion.
8. 612th Tank Destroyer Battalion.
9. 628th Tank Destroyer Battalion.
10. 629th Tank Destroyer Battalion.
11. 630th Tank Destroyer Battalion.
12. 633d Tank Destroyer Battalion.
13. 634th Tank Destroyer Battalion.
14. 635th Tank Destroyer Battalion.
15. 636th Tank Destroyer Battalion.
16. 638th Tank Destroyer Battalion.
17. 643d Tank Destroyer Battalion.
18. 644th Tank Destroyer Battalion.
19. 645th Tank Destroyer Battalion.
20. 648th Tank Destroyer Battalion.
21. 654th Tank Destroyer Battalion.
22. 656th Tank Destroyer Battalion.
23. 661st Tank Destroyer Battalion.
24. 691st Tank Destroyer Battalion.
25. 692d Tank Destroyer Battalion.
26. 702d Tank Destroyer Battalion.
27. 703d Tank Destroyer Battalion.
28. 704th Tank Destroyer Battalion.

29. 705th Tank Destroyer Battalion.
30. 771st Tank Destroyer Battalion.
31. 772d Tank Destroyer Battalion.
32. 773d Tank Destroyer Battalion.
33. 774th Tank Destroyer Battalion.
34. 776th Tank Destroyer Battalion.
35. 801st Tank Destroyer Battalion.
36. 802d Tank Destroyer Battalion.
37. 803d Tank Destroyer Battalion.
38. 807th Tank Destroyer Battalion.
39. 808th Tank Destroyer Battalion.
40. 809th Tank Destroyer Battalion.
41. 811th Tank Destroyer Battalion.
42. 813th Tank Destroyer Battalion.
43. 814th Tank Destroyer Battalion.
44. 817th Tank Destroyer Battalion.
45. 818th Tank Destroyer Battalion.
46. 821st Tank Destroyer Battalion.
47. 823d Tank Destroyer Battalion.
48. 893d Tank Destroyer Battalion.
49. 899th Tank Destroyer Battalion.