THE DEVELOPMENT OF AMERICAN TANK DESTROYERS DURING WORLD WAR II: THE IMPACT OF DOCTRINE, COMBAT EXPERIENCE, AND TECHNOLOGY ON MATERIEL ACQUISITION

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MASTER OF MILITARY ART AND SCIENCE

by

C. M. BAILY, CPT, USA
B.S., United States Military Academy, 1966
M.A., Duke University, 1975

Fort Leavenworth, Kansas
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Name of candidate CHARLES M. BAILY

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Approved by:

William D. Kathol, Research Advisor

Member, Graduate Research Faculty

Member, Graduate Research Faculty

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The opinions and conclusions expressed herein are those of the individual student author and do not necessarily represent the views of either the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

The success of Germany's armored formations during the early years of World War II forced the US Army to reexamine the problem of antitank warfare. The result of that reexamination was a uniquely American solution--the tank destroyers.

Primarily the brainchild of General Lesley J. McNair, the doctrine of tank destroyers was based on the concept of mobile antitank guns, organized in battalions, which could move and mass as necessary to defeat enemy tanks. By early 1942, the US Army had developed organizations and detailed doctrine to implement General McNair's concepts. However, an intrinsic problem, developing equipment for the units, had yet to be solved.

This study focuses on the development of guns and gun motor carriages for the tank destroyers. The Tank Destroyer Center used a twofold approach to solve its equipment problems: first, adapt what was immediately available as expedient equipment, and, second, begin development of an ideal tank destroyer designed to fit their doctrine. Circumstances forced the US Army to thrust its tank destroyers into combat before the ideal tank destroyer was available.

The tank destroyers in combat theaters were never employed according to their doctrine. Misemployment and the limitations of expedient equipment created dissatisfaction among overseas commanders concerning tank destroyers. Pressure from overseas effected

doctrine, organization, and development efforts in the United States. The US Army forced the Tank Destroyer Center to adopt and develop weapons unsuitable, in the latter's view, for tank destroyer doctrine--towed guns.

A technological threat from heavy German tanks caused development efforts in the United States to incorporate bigger guns. The US Army's failure to properly assess the magnitude of the threat resulted in a scarcity of adequate antitank weapons in Northwest Europe. When the ideal tank destroyer, the M-18 "Hellcat," finally reached Europe; it proved to be undergunned.

The study concludes that the development of equipment is not strictly a technological process. Doctrine and combat experience alter the path of development. Personalties and the pressure of war accentuate different views and also effect development. Technology dictates the speed of creating new equipment demanded by doctrine and combat experience.

TABLE OF CONTENTS

INTRODUCTION

"Stopping enemy tanks and other mechanized vehicles is the biggest job confronting our Army today."[1] Thus, Brigadier General Henry L. Twaddle, Assistant Chief of Staff, G3, War Department, expressed his own sentiments and the attitude of many other officers in the summer of 1941. America's impending involvement in the war in Europe forced the Army's leaders to consider methods for countering a new, potent threat--the German Panzer Divisions.

The antitank defenses of Germany's adversaries had been generally similar. In essence, each division possessed an allocation of antitank guns that were dispersed among the divisions' units.[2] In considering the antitank systems that had opposed Germany during the first years of war, only one thing was clear--all had failed.

The most influential event to the military leaders in the United States had been the fall of France. Prior to World War II, the French Army was probably the most respected in Europe. After a winter of "phony war," France was crushed in a month's time. Although there were many reasons for the defeat of France, an important one was that French antitank defenses had not stopped German tanks.

Lack of a successful European model induced the US Army to create a new, uniquely American system for antitank defense--tank destroyers. The American concept, which committed the bulk of

antitank assets to semi-independent battalions that were assigned to a force pool, was not duplicated in any other army. In general, the solution used by other armies was twofold: first, increasing the size and effectiveness of antitank guns, and, second, increasing the number of antitank guns throughout their force structures. Essentially, foreign armies reacted to the threat of tanks by increasing antitank firepower.[3] In contrast, the United States developed a defined doctrine to counter tanks and created special organizations to implement the doctrine. While other nations had antitank organizations, those units reinforced or were organic to divisions; and divisions fought the antiarmor battle. American doctrine visualized fighting tanks behind the divisions with units under corps or army control. The American Army had to initiate major development programs to build equipment for the new units.

Like the tank destroyer battalions, American gun motor carriages, which were popularly called tank destroyers or TD's, were unique to the US Army. Designed to fit a specific doctrine, the fast, turreted, lightly armored tank destroyers of the United States had no foreign counterparts. The European armies merely reacted to the necessity of providing mobility and armor protection to increasingly heavy antitank guns. The British specialized in mounting antitank guns on trucks, while the German Army favored the modification of existing, often obsolete, tank chassis to carry the largest gun possible. Russian efforts mimicked the Germans. The visible differences between the tank destroyers and the German or Russian self-propelled guns reflected opposing views concerning tactics.[4] However, the development of America's specialized

vehicles proved to be more difficult than the German or Russian ventures which were straightforward adaptations that sacrificed traverse for the capability to carry bigger guns. Developing the desired gun motor carriages proved to be the biggest obstacle involved in creating the tank destroyers.

The primary focus of this study will be the development of guns and gun motor carriages for the US tank destroyer battalions. The development of tank destroyers, whose requirement was generated by a defined tactical doctrine, offers a case study of the process of producing military equipment. The checkered career of tank destroyers exposes most of the factors that effect the development of major items of military hardware.

Superficially, the development of equipment is a very straightforward process. Given a broad set of requirements that are dictated by tactical doctrine, engineers put together various components to arrive at a piece of equipment that satisfies the requirements. However, even this idyllic process is time consuming. All the necessary components are rarely lying on a shelf. Human errors in design complicate the entire procedure. The complete development cycle for a major piece of equipment takes years, and this was true for tank destroyers.

While the tank destroyer units waited for the desired equipment, they were forced to go to war with expedients. Since their equipment could not meet the demands of tank destroyer doctrine, the doctrine had to be modified. Just as tactics have always been changed to take advantage of new military technology, tactics must allow for deficiencies of technology.

The test of combat affected both doctrine and equipment. The limitations of the first tank destroyers forced the adoption of equipment unsuited to tank destroyer doctrine—towed antitank guns. This started a new path of development, and doctrine had to be bent to accomodate the new weapon.

In addition, changes in foreign technology and doctrine posed new realities for the tank destroyers. The tank destroyers rarely faced the enemy that they were designed to meet (massive armored attacks), because the big German tank formations were severely eroded in Russia. Meanwhile, the Germans began piling heavier armor on their tanks, and technical intelligence failed to expose the true dimensions of this new threat. The tank destroyers were forced to adopt far heavier weapons than those envisaged in 1941 in order to combat the heavy German armor.

The move toward heavier guns played a large part in the ultimate demise of the tank destroyers. The mobility of the towed guns shrank drastically as their size grew. Gun motor carriages also grew and became, in effect, hybrid tanks. Finally, as tanks were equipped with heavier guns, the advantage in firepower that the tank destroyer had held was erased. After World War II, tank destroyers were abandoned.

In summation, the thesis of this study is that the development of tank destroyer equipment during World War II was a dynamic process that combined technology, doctrine, and combat experience. Personalties affected all phases of development. Finally, the events were focused and compressed by the pressure of war.

ENDNOTES

[1]"Notes on G-3, Anti-tank Conference, July 14-20, 1941, War College, Washington, D.C." (hereafter cited as AT Conf.), Andrew D. Bruce Papers, Archives, US Army Military History Research Collection, p. 7, hereafter cited as Bruce.

[2]Daniel Vilfroy, War in the West (Harrisburg, PA: Military Service Publishing Co., 1942), p. 22 mentions France's antitank organization, but Robert A. Doughty, French Antitank Doctrine, 1940: The Antidote that Failed (a manuscript which the author expects to see published in Military Review, May 1976) provides a much-needed analysis of the topic. Lionel F. Ellis, The War in France and Flanders: 1939-1940 (London: H. M. Stationery Office, 1953), p. 371 and Victory in the West (London: H. M. Stationery Office, 1962), p. 539, briefly describes the antitank organizations of England. W. J. K. Davies, German Army Handbook (New York: Arco Publishing Company, Inc., 1974), pp. 28-52. While the German Army did have some independent, antitank battalions, these were used to reinforce divisions with heavy, scarce equipment which the divisions did not have. Of course, the German situation is complicated by the fact that some of the best antitank weapons were in Flak (Air Force) units.

[3]Ibid., and Peter Chamberlain and Terry Gander, Anti-Tank Weapons: WW 2 Fact Files (New York: Arco Publishing Co., 1974), pp. 1-2, 6-20, 38-42, 47-50, and 53-57.

[4]Peter Chamberlain and Terry Gander, Self-Propelled Anti-Tank and Anti-Aircraft Guns (New York: Arco Publishing Co., 1975), pp. 9-25, 41-44, 50-58, and 59-64.

CHAPTER 1

CREATING DOCTRINE

Although the lifespan of the tank destroyers covered only the years of World War II, the ideas that generated them began well before America's involvement in that conflict. If there was a "father" of the tank destroyer, such a title would have to belong to General Lesley J. McNair.[1] The broad outlines of the tank destroyer formations had crystalized in General McNair's mind by 1940. General McNair's successive duties as Commandant of the US Army Command and General Staff School, Chief of Staff of the General Headquarters, and Commander of Army Ground Forces (AGF) placed him in an unmatched position to influence the organization and doctrine of America's land army.

Although it is impossible to select a precise date for the birth of the tank destroyer in McNair's thinking, there are indications that the idea had begun to form by 1939. During that year, while General McNair was Commandant, the officers of the US Army Command and General Staff School studied the problem of antiarmor defense. One product of their efforts was a text, Antimechanized Defense.[2] It can be assumed that General McNair concurred with and probably influenced the text.

The thinking at Fort Leavenworth was that antitank units must concentrate into an organized defense to meet an attack by a large number of tanks. As the text of Antimechanized Defense states:

> A few tanks can be combated by a few antitank guns. On the other hand an organized tank attack must be met by a well organized antitank gun defense which will normally employ complete units . . . an organized attack calls for the concentration of strong antitank forces . . . .[3]

The statement above was somewhat at odds with the antitank organization of the time. Antitank weapons were dispersed within regiments or battalions. Clearly, the concentration envisaged by the officers at Fort Leavenworth was not well supported by existing organization. Concentration would be easier if all divisions' antitank assets were concentrated in a single unit.

Although the text written at Fort Leavenworth was intended only for antimechanized defense within the infantry division, its ideas could be logically extended to larger formations. If a tank attack was large enough to be a corps problem, it followed that the corps' antitank assets should be concentrated. The idea of concentrating antitank units on a large scale did not escape General McNair.

By 1940 General McNair's thoughts on defeating enemy armor had crystalized into a relatively well-defined concept that ultimately led to the tank destroyer units. However, by that time a major controversy had developed in the Army concerning the best means of countering enemy tanks.

There were essentially two conflicting positions. One, in agreement with General McNair's ideas, held that the best defense against tanks was to improve the efficiency of antitank measures. The opposing idea was that enemy tanks could be stopped by friendly armor formations.

In July 1940 Major General George A. Lynch, Chief of

Infantry, advised the adoption of the latter proposition to the G3 of the War Department. Lynch argued that antitank guns, due to their vulnerability while moving, could only be used to oppose the initial attack of armored forces and were useless if the enemy force achieved a breakthrough. He concluded that "The best antitank defense lies in the defeat of hostile armored forces by our own armored units." According to Lynch, the French had failed because they lacked effective mobile units, and " . . . antitank guns proved inadequate to meet a breakthrough, even against the most lightly armored tanks."[4]

General McNair's response to the Chief of Infantry's memo clearly explained his ideas concerning antitank defense. "It is believed," commented General McNair, "that the European war to date has supplied no conclusive lessons as to antitank defense, other than that it has been inadequate." Further, General McNair pointed out that during tests of the triangular division in 1937, antitank units proved to have mobility equal to armor units. He contended that:

> Antitank guns must be organized and "multiplied" so as to permit their timely concentration in numbers commensurate with the strength of the hostile tank attack. Their organic assignment to divisions and similar units tends to prevent their concentration when and where needed, and subjects us to the inevitable consequences of dispersion. An antitank gun is cheaper than a tank. Providing antitank guns in fully adequate numbers is a waste of resources only in case such guns are dispersed so widely as to be effective nowhere . . . . [Antitank] guns should be organized in tactically self-sufficient battalions, each complete with warning communications . . . this number of guns should constitute a mobile GHQ reserve, available for meeting major masses of tanks.[5]

General McNair's comments expressed the conceptual outline

that ultimately led to tank destroyers. Although he fought the dispersion of antitank guns, he was willing to accept some scattering of those weapons. He noted that, " . . . guns should be provided organically in the infantry division, in order that it never may feel helpless against tanks."[6]

General McNair opposed tank-versus-tank combat because such action wasted tanks. He pointed out that, "[the tank's] natural and proper victim is unprotected personnel and material." To General McNair, a tank-versus-tank battle would be " . . . one in which both sides are certain to sustain heavy losses in costly materiel--which could be employed more profitably and effectively against more vulnerable targets."[7]

The ideas of mass and mobility were essential to General McNair's ideas for antitank warfare. He held that, " . . . the great mass of antitank and mobile antiaircraft guns should be held in large masses. This mass should shift along the front directly opposite the mass of enemy mechanization."[8] Orienting on the enemy's tank forces, General McNair believed that this mass could always be superior to the enemy force in any particular locale.

It is significant that General McNair did not advocate any specific organization or particular weapons. He believed that such details should be determined by field tests. By stating only general concepts, McNair avoided being maneuvered into defending a doctrine that had not been fully developed. McNair maintained flexibility in relation to future planners and avoided interfering with details of organizations or weapons, although he might disagree with specifics. Thus General McNair's concepts for antitank warfare

were well developed by the summer of 1940.

When he assumed the duties of Chief of [illegible] 1940, General McNair was in an effective position to influence Army policies. His duties with the GHQ placed him in direct contact with General George C. Marshall, the Chief of Staff. Since General Marshall's duties left him little time for direct supervision of the GHQ, General McNair became the de facto commander.[9] General Marshall's selection of General McNair for these important duties is an indication of General McNair's influence with the Army's Chief of Staff.

General McNair's influence was apparent in a message that General Marshall sent to the War Department G3 on 14 May 1941:

> I am certain that one of our urgent needs is for development, organization and immediate action of the subject of defense against armored forces to include an offensive weapon and organization to combat these forces.

He went on to comment that such a force should use rapid movement to intercept enemy forces and fight them with active defensive tactics. While General Marshall normally would have delegated the creation of such a force to one of the combat arms, he felt that the complexity of combined arms within such units would put them beyond the scope of any single arm. Therefore, General Marshall directed the G3 to take action on the matter, and he flatly stated that he did not want to bring up the question of a new combat arm.[10]

In the same memorandum, General Marshall directed the G3 to:

> . . . organize in your division a small planning and exploring organization, composed of visionary officers, with nothing else to do but think out improvements in methods of warfare, study developments abroad and tackle such unsolved problems as measures against armored force action . . . .

The G3 established the Planning Branch the following day. A relatively unknown Lieutenant Colonel, Andrew D. Bruce, was named to head the new organization. His most important duty became the creation of the new antitank units.[11]

During the summer of 1941, two events occurred that encouraged American endeavors toward antitank defense. First, the Germans destroyed over 200 British tanks in a single battle in North Africa. This was the first case where a large mass of tanks had been decisively stopped. The first defeat of a large force of tanks was good news in the United States, even though the prospective foe had been the victor. In addition, the maneuvers of the Second Army in Tennessee had demonstrated that the location of large enemy tank units would be known constantly. This would permit friendly antitank units to be moved and massed to combat enemy tank units.[12]

Soon after the Second Army maneuvers, the War Department G3 hosted an important antitank conference. The weighty assembly at the Army War College included representatives of the War Department and GHQ; antitank officers from armies, corps, divisions, and service schools; and the Chiefs of Engineers, Artillery, and Infantry. The significance of the conference was twofold. Most important, it showed that the most influential figures in the Army's bureaucratic heirarchy had lined up to support the Chief of Staff's position concerning antitank doctrine. The participants were able to agree on the concept of a mobile, semi-independent tank-killing force.

The most serious note of disagreement at the conference was the statement from Major General Courtney Hodges, Chief of Infantry, that the infantry should not be left unprotected against tanks.[13] Arrival at a consensus concerning the controversial topic of antitank warfare was a milestone.

Only slightly less important, the conference revealed that the outline of the tank destroyer force was already quite well defined. General Twaddle emphasized at the conference that the broad aspects of the problem of building a tank destroyer force could be divided into two phases: first, determining how to use equipment that was readily available and how to organize it properly; and second, developing weapons, organizations, and tactics to stay ahead of any foreign developments.[14] The proposed antitank unit that was explained at the conference included a headquarters battery, a reconnaissance battery, and three antitank batteries.[15] Perhaps the most significant change in organization was the use of the term "company" instead of "battery."

The aggressive nature of the new units was emphasized by General McNair, who made the closing remarks at the conference:

> The counterattack long has been termed the soul of defense. Decisive action against a tank attack calls for a counterattack in the same general manner as against the older forms of attack. A counterattack of course may be delivered by other tanks, but the procedure is costly. There is no reason why antitank guns, supported by infantry, cannot attack tanks just as infantry, supported by artillery, has attacked infantry in the past. Certainly it is poor economy to use a $35,000 medium tank to destroy another tank when the job can be done by a gun costing a fraction as much. Thus the friendly armored force is freed to attack a more proper target, the opposing force as a whole in much the same manner as seacoast defenses free the Navy for defensive action at sea.[16]

Following the July conference, the tank destroyer concept made rapid progress. General McNair ordered the Second and Third Armies to form provisional battalions for use in maneuvers, and the Third Army was ordered to form groups of three battalions, each under a single group headquarters, in an effort to further centralize antitank operations. The employment of these units during the major maneuvers during the fall of 1941 was generally successful, although there was a tendency to disperse the units too quickly and thus dissipate their strength.[17]

In view of the success of the provisional antitank units, the War Department G3, General Twaddle, developed long-range plans for such units. The G3's office recommended 4 antitank battalions per division for the 55 divisions it envisaged. Of those 220 battalions, 55 would be organic to the divisions; 55 were allocated to armies or corps; and the remaining 110 would be reserved for the GHQ.[18] The large number of antitank battalions (220) recommended is an indication of the seriousness with which the War Department viewed the armored threat.

General Twaddle also recommended that the three established arms--infantry, cavalry, and field artillery--who had an interest in antitank warfare should each be given the responsibility to form antitank battalions for their own units. The Armored Force, which had not wanted the responsibility for antitank units, was to establish an antitank center.[19]

Marshall's response to this recommendation was a victory for General McNair and his desire to centralize antitank units. General

Marshall directed that the established branches assume no responsibility for the new units. Further, he stated that the antitank center would be under the War Department's control. The War Department allotted no battalions to divisions. All of the 55 battalions ordered for immediate activation were to be under the control of the GHQ.[20]

The establishment of an antitank center was not intended to create a new arm. Instead, the center was to be similar to the machinegun centers established during World War I. It would offer a central place for training units with a new type of weapon and new tactics, since such expertise was lacking in the Army as a whole. The trained units would then be alloted to existing organizations.[21]

On 27 November 1941, the War Department ordered the activation of the Tank Destroyer Tactical and Firing Center.[22] This day can most nearly be called the official birthday of tank destroyers. Colonel Bruce was named to command the new center which was located at Fort Meade, Maryland until a permanent site could be determined.[23]

The directive of 27 November also marked the creation of a new name for antitank units. The term "tank destroyer" had been used on various occasions for months, but "antitank" had remained the official term. The title of "tank destroyer" was made official on 3 December by the War Department in a directive that ordered all antitank battalions to be redesignated "tank destroyer" battalions, since the old term smacked too much of passive, defensive tactics.[24]

The new Tank Destroyer Center consisted of a Headquarters,

a Tactical and Firing Center, a School, and a Tank Destroyer Board. The Center was charged with developing doctrine, cooperating in the development of equipment and organizing and operating the Firing Center, School, and Board.[25] Like the rest of the Army, the Tank Destroyer Center entered a period of rapid expansion.

By the end of December, Colonel Bruce had managed to assemble a skeleton staff at Fort Meade. During January 1942, a permanent site was selected at Kileen, Texas, but the Center did not officially move there until 14 February. Even after the Center had moved, it had to stage its operations from Temple, Texas, since there were no facilities at the Kileen site, which had been christened Camp Hood. Some of the civilians who owned property on the site had to be forcibly removed. The first tank destroyer battalions, which arrived at Camp Hood in March and April of 1942, had to move into field sites on the reservation and use materials from old CCC camps for construction. The completion of a limited number of buildings finally permitted the Headquarters of the Tank Destroyer Center to move into Camp Hood on 20 August 1942. In spite of its problems, the Tank Destroyer Center was able to train and release 42 battalions by 13 April 1943.[26]

One of the most significant accomplishments of the Tank Destroyer Center during this formative period was the completion of Field Manual 18-5, Organization and Tactics of Tank Destroyer Units which was published in June 1942.[27] This manual spelled out the basic doctrine for all tank destroyer units and is the clearest presentation of the antitank concepts for such units as conceived

prior to US involvement in combat. Even after the war, the men who had developed the concepts were steadfast in supporting them. As representatives of the Tank Destroyer Center commented after the war:

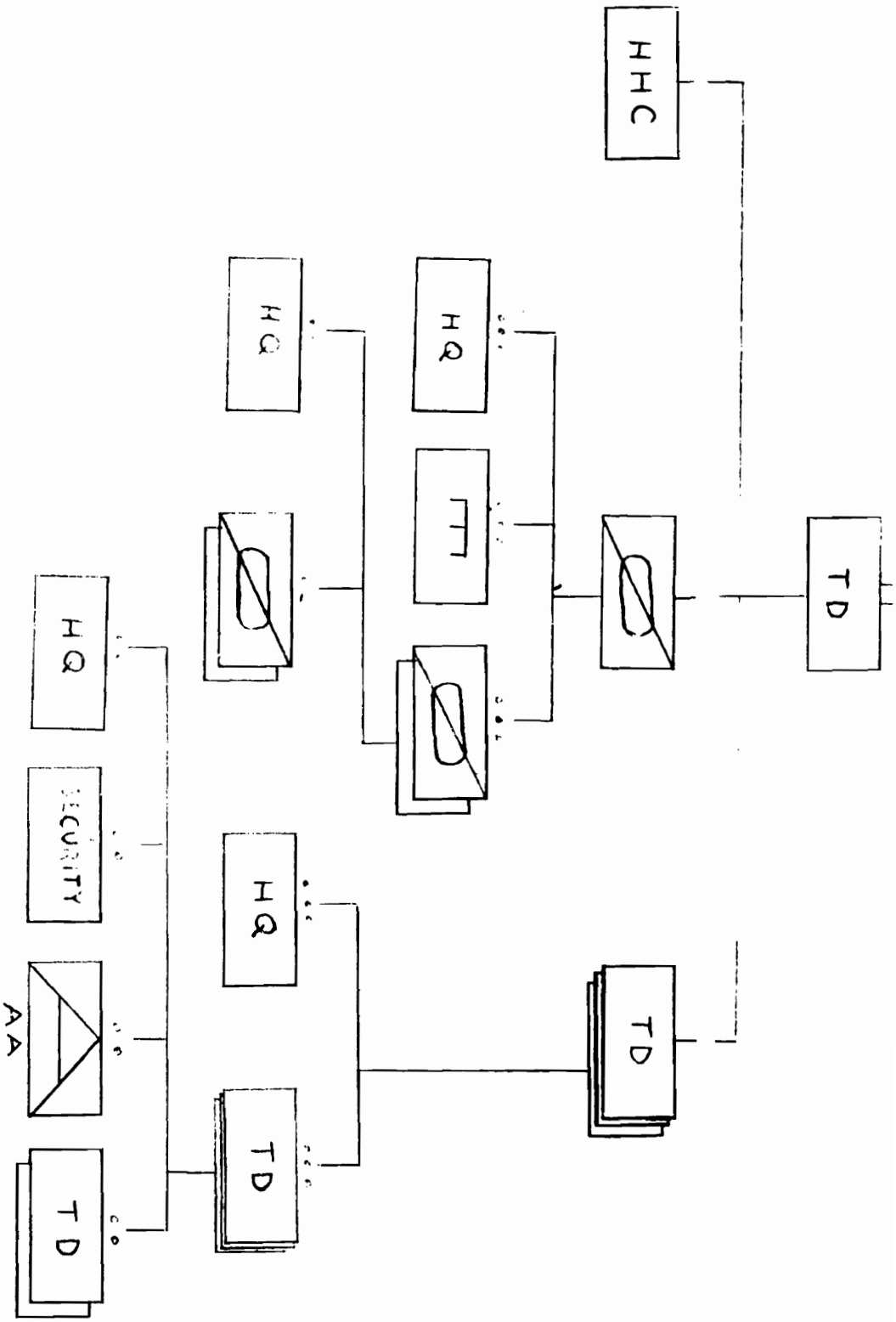
> Although this manual has since been revised, tank destroyer officers most closely associated with the development of tank destroyer doctrine and tactics, some of whom have observed tank destroyer units in action overseas, believe that the basic doctrine set forth in this first edition of Field Manual 18-5 was, and is, correct.[28]

The organization outlined by the FM 18-5 Manual was, in effect, a combined arms team organized as a battalion. The combination of arms extended down to the level of the platoon. Each platoon had four sections. The base of the platoon was formed by two gun sections, each with two guns. A security section protected the flanks of the platoon and, as an additional duty, performed reconnaissance for the platoon. The section was mounted in two armored cars. An antiaircraft section of two vehicles protected the gun sections from enemy aircraft, which reportedly accompanied every German tank attack. The platoon leader rode in his own armored car. The platoon also had an ammunition vehicle (fig 1).[29]

The tank destroyer company was composed of three tank destroyer platoons with a total of 12 guns. Two of the platoons were heavy, while one was light. The only difference between the light and heavy platoons was the fact that the gun sections of the light platoon had light antitank guns. The company also possessed elements for various services including motor maintenance.[30]

The battalion's headquarters company supported the battalion staff and provided the normal battalion services, such as transpor-

Figure 1. Tank Destroyer Battalion



tation. Three similarly organized tank destroyer companies formed the basis of the battalion. However, the battalion also controlled one element whose size was unusual for a battalion, a reconnaissance company.[31]

Organized with three platoons, the reconnaissance company was intended to scout ahead of the battalion to find routes and firing positions and to protect the tank destroyer companies from surprise. Each reconnaissance platoon had two sections, each with an armored car and several light vehicles. In addition, the reconnaissance company had a pioneer platoon whose duties were to aid the movement of the battalion by construction work and removing obstacles. In defense, the pioneer platoon was charged with laying minefields.[32]

Thus, the tank destroyer battalion was a combination of direct fire artillery (antitank guns), mobile infantry (security sections), and cavalry. The only element of combined arms that was missing was indirect firepower. However, FM 18-5 mentions the possibilities of 81-mm mortars being organically assigned or of the use of a battalion chemical platoon to fire smoke.[33]

In addition to the organization of battalions, FM 18-5 also discussed the organization of group headquarters for tank destroyers. The group headquarters was strictly a tactical headquarters of about company size. Its main assets were communications and a group staff. Intended to control several battalions (usually three), the group headquarters was designed for temporary assignment to major maneuver units, such as a corps, to organize tank destroyer forces against a major tank threat.[34]

Aggressiveness was the watchword of tank destroyer tactics. As FM 18-5 described their role, "Tank destroyer units are especially designed for offensive action against hostile armored forces."[35] However, "offensive" as used in tank destroyer tactics must be qualified. It did not mean, as it did in tank or infantry units, to close with the enemy. For tank destroyers, " . . . offensive action consists of vigorous reconnaissance to locate hostile tanks and movement to advantageous positions from which to attack the enemy by fire."[36] The important distinction between attacking and attacking by fire was apparently not understood by some commanders.

Another integral aspect of tank destroyer doctrine was the tank warning net. This net was not a responsibility of the tank destroyers. The major maneuver units such as corps or divisions were expected to establish such nets, and available tank destroyers would react to the information.[37]

A typical scenario might best explain the doctrinal operation of a tank destroyer battalion. The battalion would receive word through the warning net of an enemy tank attack. Operating from a position in the rear, the battalion would dispatch the reconnaissance company to gain contact with the enemy force and inform the battalion of enemy dispositions and locations. Using the information gained by the reconnaissance company, the battalion commander would move the tank destroyer companies to advantageous positions where they could bring the enemy under fire. Doctrinally, the battalion would destroy the enemy armor or delay the enemy until enough tank destroyers could be assembled to annihilate the tank

force. Preferably, a tank destroyer group or groups in sufficient strength to counter the enemy armor would have been assembled prior to the attack.

One important aspect of tank destroyer doctrine was later to prove unacceptable to most division commanders. The tank destroyers were not to be used to defend the frontlines. As FM 18-5 stated, "Organic antitank weapons of front line units are used for this first line of defense; tank destroyer units form the mobile reserve."[38] The foregoing statement assumes a penetration of friendly frontlines, particularly since the bulk of the Army's antitank assets had been concentrated in tank destroyer units. The logic of this was based on the lessons of the European War as perceived in the United States. A massed tank attack could always penetrate a frontline, since it was impossible to make the entire front rich enough in antitank weapons to stop such an attack. Therefore, tank destroyers should not be frittered away to defend against the initial attack but should remain in reserve so they could concentrate to stop the breakthrough.

As a corollary to concentration, tank destroyers oriented on the enemy force rather than on terrain. This was a rather unique aspect of tank destroyer doctrine. Most ground combat units of battalion size habitually spelled out their objectives in terms of terrain. Tank destroyers, however, used terrain as a means and not as a goal.

One idea not specifically mentioned in General McNair's writing or in FM 18-5 was the concept of pooling assets. If a specific type of unit was not needed continuously by a division,

it should not be made an organic part of the division. Such units, if assigned, were wasted when not in use. General McNair believed, therefore, that special units should be pooled and attached to divisions as needed. This enabled the Army to reduce the total number of such units and employ those available more economically. McNair used the concept of force pooling throughout the organization of the Army's ground combat forces, applying it to antiaircraft and separate tank battalions as well as to tank destroyers.

The doctrine of the pooled tank destroyer forces made it vital for tank destroyers to have mobility superior to tanks. Tank destroyers had to be able to move fast enough to intercept the enemy force and then avoid close combat with the tanks or their supporting infantry. In addition, the tank destroyers needed to arrive at the battlefield first in order to select firing positions. FM 18-5 stressed the necessity for tank destroyers to fire while stationary, preferably from covered positions, thus enabling them to fire much more accurately than the moving tank.

The need for mobility had convinced the men of the Tank Destroyer Center to adopt self-propelled rather than towed guns. As FM 18-5 stated, "The primary weapons of tank destroyer units are self-propelled guns . . . ."[39]

There had been a long controversy over the relative benefits of self-propelled versus towed guns. Even as late as the Antitank Conference of July 1941, the matter had not been settled. Colonel Bruce commented at the conference that:

> As to the limbered weapon or the self-propelled weapon controversy suffice it to say that <u>we shall have limbered weapons for some time to come</u> but we shall develop and try out the self-

propelled mount.[40]

However, by the spring of 1942, Brigadier General Bruce (recently promoted) and his men had definitely decided on self-propelled guns.

Significantly, the main supporter of the tank destroyer concept, General McNair, was a firm believer in the towed gun. Early in 1941, General Marshall directed that a study be made of the possibility of developing a self-propelled antitank gun, and he commented that:

> It occurs to me that possibly the best way to combat mechanized force would be to create antimechanized units on self-propelled mounts, with emphasis of visibility (on the part of the gunner), mobility, heavy armament, and very little armor."[41]

General McNair was quick to disagree with General Marshall's point of view.

General McNair had had considerable experience with a self-propelled gun in about 1930 and " . . . felt no hesitation in condemning it."[42] McNair believed that the advantages of self-propelled mounts were few and were far outweighed by their disadvantages. He tabulated the following comparison:

A. Advantages.
   1. Speed of entering action and withdrawing from it. The latter is a doubtful advantage, since such guns should stay, not move.
   2. Protection of cannoneers by armor.

B. Disadvantages.
   1. Vulnerable target due to size.
   2. Concealment in action difficult.
   3. Unstable firing platform.
   4. Probably slower due to weight.
   5. Disability of either gun or motor renders both useless.
   6. Greater weight (bridges).
   7. Probably greater cost and slower production.[43]

Despite this, General McNair did not interfere with the decision to

adopt self-propelled weapons for tank destroyers. However, the controversy was by no means settled in the spring of 1942.

Indeed, the problem of equipment was probably the most uncertain issue of the tank destroyer doctrine as stated in FM 18-5. The manual admitted that:

> It is prepared for the guidance of units that will be equipped with materiel now being developed; units equipped with substitute materiel must interpret and modify the provisions of this manual to fit their particular needs.[44]

Substitute equipment was to be the rule for tank destroyer units for nearly 2 more years.

Despite lingering problems of equipment, the US Army, during the early years of the Second World War, had moved decisively to counter the threat of enemy tanks. While General McNair's early concepts of a pool of mobile antitank guns had been hardened into tactical doctrine and organized units, military technology, as it existed during those early years, could not provide immediately the weapons needed to implement the desired tactics for tank destroyers. The search for the right weapons was to be a matter of diligent effort and heated controversy.

ENDNOTES

[1]There is probably no finer source for this comment than in the words of Maj. Gen. Andrew D. Bruce, first commander of the Tank Destroyer Center. In a letter to Lt. Col. George Dean, dtd. 1 March 1944 (Bruce), Bruce said, " . . . General McNair has been the big man behind antitank or tank destroyer work as he has been in many other things."

[2]The Command and General Staff School, Antimechanized Defense (Tentative) (Fort Leavenworth, Kansas: The Command and General Staff School Press, 1939).

[3]Ibid., p. 13.

[4]Memo from Maj. Gen. George A. Lynch to Asst. Chief of Staff, G-3, dtd. 3 July 1940, RG 337 (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[5]Letter from McNair to The Adjutant General, dtd. 29 July 1940, 2d Ind. to Memo from Lynch to G-3, RG 337 (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[6]Ibid.

[7]Ibid.

[8]Letter from McNair to Lt. Col Earl W. Benson, dtd. 20 June 1940, RG 337 (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[9]Kent Roberts Greenfield and Robert R. Palmer, The Organization of Ground Combat Troops (Washington, D.C.: Hist. Div. U.S. Army, 1947), pp. 1-33.

[10]Memo from Chief of Staff to Asst. Chief of Staff, G-3, dtd. 14 May 1941, quoted in its entirety in "History of the Tank Destroyer Center," RG 337, National Archives, pp. 6-7. This document is in four parts which cover four periods: 1 December 1941 to 15 November 1943, 16 November 1943 to 28 February 1944, 1 March 1944 to 31 October 1944, and 1 November 1944 to 8 May 1945. Hereafter it will be cited, respectively as TDC Hist. I, TDC Hist. II, TDC Hist. III, and TDC Hist. IV.

[11]Ibid.

[12]Ibid., p. 8. This source does not identify the battle which must have been General Sir Archibald P. Wavell's attack of 15 June 1941.

[13]AT Conf., pp. 45-46.

[14]Ibid., p. 7.

[15]Ibid., pp. 76-77.

[16]Ibid., p. 82.

[17]TDC Hist. I, Chap. I, p. 14.

[18]Ibid., p. 15.

[19]Ibid.

[20]Ibid.

[21]Letter from Bruce to Brig. Gen. Earnest J. Dawley, dtd. 13 June 1944, Bruce.

[22]Lt. Col. Emory A. Dunham, Tank Destroyer History, Study No. 29 (Historical Section—Army Ground Forces, 1946), p. 6, hereafter cited as Study No. 29. After March 1942 the Center received the title Command. However, Dunham does not clarify the distinction between Command and Center; both terms were used. To avoid confusion for the reader, this study will use the term Center throughout.

[23]Ibid.

[24]Ibid., pp. 6-7.

[25]Ibid.

[26]Ibid., pp. 10-11.

[27]Ibid., p. 10.

[28]Ibid.

[29]U.S. War Department, Organization and Tactics of Tank Destroyer Units, FM 18-5, dtd. June 16, 1942, pp. 32-48, hereafter cited as FM 18-5, 42.

[30]Ibid., pp. 48-55.

[31]Ibid., pp. 56-67.

[32]Ibid., pp. 65-67.

[33]Ibid., p. 55.

[34]Ibid., pp. 113-122.

[35]Ibid., p. 7.

[36]Ibid., p. 19.

[37]Ibid., pp. 127-128.

[38]Ibid., p. 7.

[39]Ibid., p. 8.

[40]AT Conf., p. 28.

[41]Memo from Col. Orlando War, Secretary, General Staff to Asst. Chief of Staff, G-3, dtd. 8 January 1941, RG 337, (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[42]Letter from McNair to Asst. Chief of Staff, G-3, dtd. 16 January 1941, 1st Ind. to memo from Ward to G-3, RG 337 (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[43]Ibid.

[44]FM 18-5,42, p. iv.

CHAPTER 2

DEVELOPING EQUIPMENT, 1940--1942

As General Twaddle had mentioned at the Antitank Conference, the problem of equipping tank destroyer units involved two phases: first, making use of what was immediately available; and, second, developing weapons to go beyond any foreign developments. Colonel Bruce reinforced General Twaddle's ideas at the conference and emphasized that the two problems should be handled simultaneously rather than successively.

While Colonel Bruce knew that development would take years, he described general characteristics for the "ideal tank destroyer." He commented at the conference:

> What we are after is a fast-moving vehicle armed with a weapon with a powerful punch which can be easily and quickly fired and in the last analysis we would like to get armored protection against small arms fire so that this weapon cannot be put out by a machine gun.[1]

Colonel Bruce noted also that the "super-duper" tank destroyer would have its gun "pointing to the front or in a turret." He expanded his ideas with naval terms by saying:

> The tank destroyer that we have in mind is in reality similiar to the battle cruiser. Its tactics in operating against the tank (the battleship) have to be different from the tactics we would employ in operating the tank (the battleship) against the tank (the battleship). Speed, visibility, and hitting power of the tank destroyer should compensate to some degree /for/ its lack of armor. The tank destroyer must be cheaper in time and material for production than the tank.[2]

Colonel Bruce (and later the officers of the Tank Destroyer Center) realized that the ideal tank destroyer would take years to

develop, but the characteristics mentioned by Colonel Bruce in the summer of 1941 were very important in this development. Doctrine was written for the ideal tank destroyer, and the characteristics he pointed out guided development efforts of the Tank Destroyer Center. Just as important, proposed or expedient weapons were measured against the characteristics that Colonel Bruce stated in July 1941.

During the antitank conference, Colonel Bruce mentioned those weapons that were immediately available in reasonable quantities. Most important were the 37-mm gun, the standard antitank gun, and the 75-mm gun which was to be replaced as the standard field artillery piece. The major problem with both weapons was finding means to make them self-propelled. Colonel Bruce also mentioned efforts being made to mount the 3-inch antiaircraft gun on limbered and self-propelled carriages but noted that none of those weapons would be available before spring of 1942.[3] The early days of the Tank Destroyer Board found that organization trying to bring different versions of the three weapons to completion.

When the Board was established on 1 December 1941, there were eight types of 37-mm gun carriages, two types of 75-mm gun carriages, and three types of 3-inch gun carriages under test or nearing completion.[4] Winnowing out the best of the various carriages was the Board's first major task.

The most complete carriage was the one for the 75-mm gun, the T-12. An example of this vehicle had been completed in time for inspection by the conferees at the Antitank Conference.[5] It

was merely a 75-mm gun mounted on a half-track and finally standardized as the M-3.

Inspiration for the M-3 had come from a French designer who mentioned to Colonel Bruce that the French Army had successfully mounted 75-mm guns on the back of trucks. The idea interested Bruce and other members of the Planning Branch. Viewing the Army's new half-track personnel carrier at Aberdeen a few days later had given further encouragement to the Planning Branch. Soon after that, General Twaddle agreed with ordnance officers to try out the mount.

Despite its hasty beginning, the M-3 was quite successful. By 1 December, 86 had been completed, and 50 of these were immediately sent to the Philippines. The remainder equipped the first provisional tank destroyer unit. However, Colonel Bruce had made it very clear at the Antitank Conference that the weapon was an expedient.[6] It was desirable, since it made use of the 75-mm guns available and offered suitable equipment for training. In fact, the M-3 remained standard equipment for tank destroyer battalions into 1943.

The M-3 only approximated the desired characteristics for a tank destroyer. Its thin sides and gunshield offered protection against only small arms fire and not even then if armor piercing ammunition was used. Exceeding the mobility of tanks only on roads, the M-3 was disappointing when operated across the terrain. Probably the best feature of the weapon was the gun. The venerable 75-mm gun proved to be adequate against virtually all the enemy

tanks that it faced in 1942. In addition, there was a large variety of ammunition available in plentiful supply. Probably the main weakness of the gun was its relatively low velocity (2,000 fps.), which caused some difficulty in obtaining hits in range, particularly against moving targets. Despite its problems, the M-3 was to prove to be the best gun motor carriage available during 1942.

Efforts to provide a carriage for the 37-mm gun were less successful. Most of the carriages under study were merely small trucks that could carry the gun. Light trucks (1/4 ton) proved unable to withstand the firing of the gun, while heavier, armored vehicles required long development periods. The compromise was the Fargo, a shielded 37-mm gun mounted on a pedestal in the back of a Dodge, 3/4-ton truck.

The Tank Destroyer Center intended to use the Fargo, classified as M-6, only in training.[8] However, the first tank destroyer units that arrived in North Africa still had the vehicles. The Fargo's obvious problems were accentuated in combat.

By far the most serious defect in the M-6 was its lack of armor. The vehicle was vulnerable to all types of fire, and the problem was amplified by the short range of the 37-mm gun that made a close approach to the enemy imperative. Moreover, a 4 x 4 truck simply could not match the mobility of tracked vehicles when moving cross-country. Still, the M-6 was cheap and above all available.

Neither the 37-mm gun or the 75-mm gun were to remain as mainstays of tank destroyer firepower. The most important gun soon became the 3-inch, an obsolete antiaircraft weapon.

Originally designed for seacoast defense, the 3-inch gun had

been adapted for antiaircraft use and was employed in that role during the interwar years. By 1940, the 3-inch gun was no longer in production since its replacement, the 90-mm, was already in sight, but production could be quickly resumed since all the necessary tools and dies were in storage. Like the 75-mm gun, 3-inch ammunition was already perfected. The high velocity (2,600 fps.) necessary for fire against aircraft made the 3-inch gun a natural candidate for use against tanks.[9]

Significantly, Colonel Bruce moved toward high-velocity guns more for their flatter trajectory in relation to the 75-mm rather than for their greater penetrative power.[10] As General McNair had pointed out in 1941, "The prime essentials of an antitank gun are unusually clear-cut: first, to hit; second, to penetrate upon hitting."[10] During 1942, the 75-mm seemed to have adequate penetrative qualities. For example, Brigadier General Gladeon M. Barnes, head of the Ordnance Department's research and development, reported after a visit to North Africa that, "The 75-mm gun in the M-4 tank has destroyed the best German tanks at ranges as great as 2,500 yards."[12]

While searching for other means to achieve flatter trajectories, the Tank Destroyer Center also considered the 57-mm antitank gun, which was being produced in the United States during 1942 for British requirements. The 57-mm offered virtually the same penetrative capabilities as the 75-mm but with greater (2,750 fps.) velocity. However, there were reports that the gun's solid shot shattered against the face-hardened armor on German tanks.[13] As a further disadvantage, the English had not designed high-explosive

ammunition for the 57-mm.

Lacking an alternative, the 3-inch gun became the focus for increasing the firepower of tank destroyers. The increased penetrative capabilities of the 3-inch gun were a welcome and fortuitous adjunct to its flatter trajectory.

With admirable foresight, General Barnes had moved to adapt the 3-inch gun for antitank use in the fall of 1940. On 9 September, General Barnes directed the Artillery Division to draw a layout for the gun to be mounted on the carriage of a 105-mm howitzer. General Barnes noted that, " . . . this combination might make a very satisfactory antitank gun of great power."[14]

By 26 December, the Ordnance Technical Committee, the official body in the Army which coordinated ordnance developments, had approved the development of the 3-inch antitank gun. Sharp disagreement came in the form of a nonconcurrence from Fort Benning since:

> In view . . . of the lack of information as to the need for a weapon with the great penetrating ability of the subject gun, the Chief of Infantry cannot agree that there is a need for antitank materiel of such great weight and consequential poor mobility.[15]

Despite opposition from the Infantry, development of the 3-inch gun continued. On 22 October 1941, technicians at Aberdeen fired the first prototype. Less than a month later, 12 November 1941, the Ordnance Technical Committee recommended that the gun be standardized.[16] However, the 3-inch gun on a towed carriage would have to wait for standardization.

In February 1942 the Ordnance Department shipped the gun to Fort Bragg for tests by the Field Artillery Board.[17] That agency was far less enthusiastic than the Ordnance Technical Committee.

Tests at Fort Bragg revealed numerous deficiencies. The most serious problems were the difficulty in traversing the weapon on side slopes and the position of handwheels which made the gunners unable to traverse and elevate the tube while keeping their eyes to the sight.[18] These technical deficiencies were not to be the main problem with the 3-inch gun.

Army Ground Forces (AGF) requested that production of the 3-inch gun be cancelled on 13 May 1942, and this request was approved by Services of Supply (SOS), later renamed Army Service Forces (ASF), on 21 May.[19] Major General Levin H. Campbell, Chief of Ordnance, protested strongly.[20] He was answered by a memorandum from ASF on 26 July that enumerated the technical deficiencies of the weapon. The clinching argument was that, " . . . the Tank Destroyer Center, sole users of the 3" Antitank gun, consider it essential that this gun be self-propelled." Brigadier General Lucius D. Clay, Assistant Chief of Staff for Materiel of SOS, concluded that: " . . . this Headquarters feels that the decision to cancel the project for a towed 3" Antitank Gun was well considered."[21]

The towed 3-inch gun was soon resurrected. Ironically, the failure of a self-propelled version of the 3-inch gun, the Cletrac, breathed new life into the towed weapon.

The Cletrac, the name being derived from its manufacturer, the Cleveland Tractor Company, was a parallel development of the towed 3-inch gun. In appearance and concept, the Cletrac was similar to the 90-mm gun SPAT that equipped American airborne units in the 1950's and 60's. In 1940, the Cleveland Tractor Company sub-

mitted a design for a self-propelled gun based on its high-speed tractor that was used to tow military aircraft. The Ordnance Technical Committee approved the idea on 19 December 1940, specifying that the vehicle would mount the 3-inch gun.[22]

The manufacturer could not deliver a prototype of the carriage, designated T1. until November 1941.[23] Despite numerous problems with the prototype, the Field Artillery Board recommended standardization of the Cletrac. The Ordnance Technical Committee concurred with the Artillery Board's recommendation on 24 November 1941. Significantly, the newly created Tank Destroyer Center was not a signatory of this action. The Adjutant General subsequently approved standardization of the Cletrac as the M-5 and directed procurement of 1,580 vehicles on 7 January 1942.[24]

Numerous modifications failed to correct the original deficiencies of the Cletrac. In addition, its weight grew from the 8 tons originally envisaged to nearly 12 tons. The vehicle's speed fell proportionately. By May 1942, a modified vehicle at Fort Bragg exhibited various faults, including broken tracks and a propensity to catch fire.[25]

Despite the Cletrac's numerous faults, the Ordnance Department went ahead with measures to put the vehicle into production. Increasingly, the M-5 became a vested interest of the Ordnance Department. The completion of a factory to build Cletracs indicated the commitment of ordnance officers to the future of the carriage.[26] However, none of this effort improved the Cletrac in the eyes of the officers of the Tank Destroyer Center.

Even if its mechanical deficiencies disappeared, the Cletrac still fell short of what General Bruce and his men wanted. Lacking armor except for a gunshield, the M-5's vulnerability to all types of fire was its principal fault. This condition was accentuated by carrying ammunition on the fenders and the fact that the gunner and loader rode in front of the shield. In addition, the speed of the Cletrac had fallen to 36 mph, no faster than light tanks of the day. General Bruce derisively referred to the M-5 as the "Cleak track."[27]

Finally, in July 1942, a vehicle incorporating all the repairs deemed necessary was available at Aberdeen. A crew from the Tank Destroyer Board arrived to test the vehicle. After being trained to operate the vehicle, the crew from Camp Hood gave the Cletrac a cross-country test. The results were disastrous. An Ordnance historian commented that "The sides were dished in, the gun supports buckled, the suspensions out of line, the travel lock folded, and the gun mount loosened."[28] General McNair admitted to General Bruce that the M-5 looked "pretty hopeless."[29]

On 23 August 1942, AGF recommended to SOS that production of the M-5 be discontinued because it, " . . . is not a vehicle of sufficient capacity to handle the 3-inch antitank gun . . . [and] . . . it is unsatisfactory for Tank Destroyer use."[30] However, the demise of the Cletrac created another problem for McNair's efforts to improve antitank defense.

On 1 July 1942, AGF had decided to replace all 37-mm or 57-mm guns with self-propelled, 3-inch guns.[31] The failure of the Cletrac left AGF without the desired substitute. The only available

production of the T-35, which was soon standardized as the M-10.[35]

General Bruce's objections to the M-10 were very simple. It " . . . weighs too much and is too slow," he commented.[36] The M-10 was barely faster than the M-4 and was slower than light tanks. Weight also restricted the mobility of the M-10 since it limited the types of bridges that the vehicle could cross. At the conference in May, General Bruce commented that, "At present I am unable to shift a medium tank from several parts of Texas a distance of 20 miles without making a detour of 150 miles to find a bridge that will carry it."[37]

In addition to its weight and speed, the M-10 had other disadvantages. Probably the most important technical fault of the M-10 was the lack of power traverse. The overall imperfection of the design was exemplified by the necessity to hang counterweights on the rear of the turret to achieve balance. Despite its many faults, the M-10 would become, numerically, the most important tank destroyer in the Army's inventory. Fears revealed by Bruce during the conference at Aberdeen were realized.

The conference at Aberdeen on 2 May 1942 exposed an increasingly acrimonious relationship between General Bruce and the Ordnance Department. General Bruce fought standardization of the M-10 mainly because it was an expedient and partially because it was untested. He feared that accepting the M-10 might delay, or stop, his efforts to get an ideal tank destroyer. As General Bruce explained to General Richard C. Moore of the AGF's Requirements Section:

> This standardization thing gets my goat. When that is done they might suddenly order 3000 guns on me. They might order those and stop seeking a better weapon.[38]

General Bruce's misgivings were at least partially prophetic, the Ordnance Department ultimately built over 6,000 M-10's.

As revealed at the conference, the main objective of the ordnance officers was to produce enough 3-inch gun carriages to satisfy the requirements handed down from the War Department, with little regard for the quality of those carriages. When General Bruce complained, "We have enough expedient weapons," Colonel John K. Christmas of the Tank-Automotive Command retorted, "We do not have enough expedient weapons to finish up the S.O.S. objective that we were given."[39] Apparently agreeing with the Ordnance Department, Moore cleared the way for production of the M-10 despite General Bruce's objections.

The controversy between General Bruce and the Ordnance Department continued until General Bruce finally left the Tank Destroyer Center. During the remainder of 1942, the dispute was especially bitter. General Bruce later wrote of a "terrific battle with Ordnance."[40]

The Ordnance Department argued that General Bruce did not make his requirements clear and asked for so many changes that development was delayed. Ordnance officers were not without support for their opinions. On 10 December, during a telephone conversation with General Bruce, Major General Jacob L. Devers of the Armored Force (who outranked General Bruce) chastised him for not telling the Ordnance Department what the Tank Destroyer Center wanted.

General Bruce argued that his desires had remained the same since 1941, but General Devers countered that characteristics were not enough, and General Bruce needed to follow up on development efforts.[41] Further support for the Ordnance Department's point of view came from General Moore, who commented to General McNair in reference to one development project, "I do not see how Bruce can ever expect to get any kind of mount for his 3" gun if he keeps asking for changes in design."[42]

General Bruce remained disgruntled with the Ordnance Department. He was later to remark bitterly, "The biggest obstacle to the creation of Tank Destroyers was found within the Ordnance Department."[43]

Helping to clear the air, the Palmer Board eliminated several experimental vehicles that might have become matters of controversy. The Palmer Board was the popular name for the Special Armored Vehicle Board which was in session from October to December 1942. Headed by Brigadier General William B. Palmer, the board considered some 15 armored vehicles in order to recommend those vehicles for service use, development, or termination.[44] Several of the vehicles were of interest to the Tank Destroyer Center.

The Board pared some nine armored cars down to one, the T-22 which had been standardized as the M-8.[45] The Tank Destroyer Center had been interested in this vehicle since the Center viewed it as a replacement for the M-6, Fargo, as a light tank destroyer.[46] However, the M-8 was to be far more important as the standard armored car for American Cavalry units than for the tank destroyers.

Most important, the Board narrowed a field of three gun motor carriages down to one, the T-49. The two eliminated vehicles were a wheeled 3-inch gun carriage called the "Cook Interceptor" and a 3-inch gun mounted on an M-3 light tank chassis.[47] Both had great potential to arouse General Bruce's ire as further expedients. On the other hand, the T-49 promised to become the ideal tank destroyer.

The T-49 had originated in February 1942 when Bruce's review of some 200 vehicles under test by the Ordnance Department did not reveal a single vehicle satisfactory for tank destroyer use. This made it necessary to develop the ideal tank destroyer from scratch.

The driving force behind the decision to start afresh was the need for mobility. Volute spring and bogie suspension common to most of the Army's tracked vehicles would not permit enough speed, since vibration became destructive at high speeds.[48]

General Bruce conferred with a representative of General Motors, and the two agreed that a Christie suspension was the answer. General Motors designed a track-laying vehicle with a Christie-type suspension. It was not a true Christie suspension, since the independent road wheels used coil springs rather than a roadwheel arm. The vehicle was to be designated the T-42 and was planned to carry a 37-mm gun, but the gun was changed to a 57-mm and the designation changed to T-49 on 3 April 1942.[49]

Since the T-49 appeared to offer all of the characteristics desired for tank destroyers, General Bruce continued close coordination with Buick Motors. By 2 July 1942, he recommended that the armament be changed to a 75-mm gun. This vehicle was designated

the T-67.[50]

On 3 September 1942, an example of the vehicle was available at Aberdeen for tests. During the test, General Barnes called General Bruce's attention to the new 76-mm gun.[51]

This gun was a minor coup for ordnance engineers. They had designed a new gun to fire 3-inch projectiles with the same external ballistics as the 3-inch gun. The new gun was lighter, smaller, and used shorter, space-saving ammunition. Even more beneficial to US tanks and tank destroyers, the 76-mm gun used the same breech block and recoil system as the 75-mm, thus making substitution relatively simple.[52] General Bruce quickly perceived the advantages of the new gun.

Shortly after the Palmer Board, General Bruce met with representatives of industry and the Ordnance Department in Detroit, and they agreed on characteristics of a T-67 armed with the 76-mm gun. Included in the decision was a move from the Christie-type suspension to torsion bars. The Ordnance Technical Committee approved the new development project, the T-70, on 4 January 1943. Development of the ideal tank destroyer was underway after long months of effort and dispute during 1942.[53]

During its first 18 months of existence, the Tank Destroyer Center had made great progress towards equipping its unique, new units. The two weapons that were immediately available, the 37-mm and 75-mm guns, had been adapted to self-propelled mounts. Although expedients, the M-3 and M-6 were useful for training, and the M-3 would prove surprisingly effective in combat. Other development projects were slower and more controversial.

The efforts to complete an antitank version of the 3-inch gun exposed the technical problems inherent in development. Despite an early start, mid-1942 still found the Ordnance Department struggling with the task of mounting the 3-inch gun on two wheels. The ultimate decision to build the towed 3-inch gun also surfaced other problems for the Tank Destroyer Center.

Despite General Bruce's objections concerning towed guns, AGF overruled him and ordered production of the weapon. This indicated that the Tank Destroyer Center would not unilaterally make decisions concerning the development of its equipment. AGF's decision to produce the M-10 over General Bruce's objections was further evidence of this fact.

The dispute over the other self-propelled 3-inch gun, the Cletrac, reveals much about the relationship between the developer, the Ordnance Department, and the user, the Tank Destroyer Center. Theoretically, the Ordnance Department would be expected to respond to the requirements of the Tank Destroyer Center. However, the Ordnance Department pressed ahead with the Cletrac despite General Bruce's vehement objections. For its own reasons, the Ordnance Department supported a project despite the user's views that the weapon was unsuitable for combat. Clearly, the Ordnance Department had independent views about the suitability of equipment and did not hesitate to support those views. Its refusal to passively accept requirements made the Ordnance Department another independent voice in the development process. General Barnes would not settle for merely expressing the technician's viewpoint. Furthermore,

General Bruce had to make direct contact with a manufacturer to instigate the development of the weapon that he desired, the T-70. General Bruce's action points out the lack of cooperation between the user and developer.

Despite the acrimony concerning development during 1942, the US Army had made great progress toward equipping the tank destroyer units. The 3-inch gun of the M-10 would provide greater firepower in a short time. The development of the T-70 was well advanced, and this weapon promised to be ideal for employing tank destroyer doctrine. Despite this progress, the first tank destroyer units in combat would have to fight with expedients, the M-3 and M-6.

ENDNOTES

[1]AT Conf., pp. 29 and 32.

[2]Ibid.

[3]Ibid., p. 28.

[4]TDC Hist. I, Chap. VI, pp. 3-4.

[5]Ibid., p. 3, and AT Conf., pp. 28-29.

[6]Study No. 29, pp. 2-3, and AT Conf., pp. 28-29.

[7]TDC Hist. I, Chap. VI, pp. 3-4.

[8]Study No. 29, p. 9.

[9]TDC Hist. I, Chap. IV, pp. 8-9.

[10]Letter from Bruce to Brig. Gen. W. B. Palmer, dtd. 26 January 1943, Bruce.

[11]Letter from CHQ (/s/ McNair) to the Adjutant General, dtd. 6 January 1941, RG 337 (HQ, AGF), file no. 470.8 to 680.3, National Archives.

[12]"Ordnance Annex," dtd. 18 January 1943 to "Report of the mission headed by Lieutenant General Jacob L. Devers to examine the problems of Armored Force units in the European Theater of Operations," RG 337 (HQ, AGF), file no. 320.2/26 (Armd C), National Archives, hereafter cited as Devers Rept.

[13]TDC Hist. I, Chap. IV, p. 10, and memo from McNair to Chief of Staff, US Army (Attn: G-3), dtd. 5 January 1943, RG 337, file no. 472, National Archives. Hereafter, the AGF records containing sources from file numbers 470.8 to 473 for the years 1942 to 1945, inclusive, will be cited as AGF followed by the file number of the particular document, e.g. AGF (472). The memo gives the following useful comparison of the 57-mm, 75-mm, and 3-inch guns:

57-mm

weight--3,060 lbs. (with shield)
penetration at 1000 yds.--2.9" (homogenous armor); 2.6" (face hardened armor)
MV--2,750 fps.

75-mm

weight--3,450 lbs.
penetration at 1,000 yds. (AP/APC)--2.9"/3.3" (homogenous armor); 2.6"/3.3" (face hardened armor)
MV--2,050 fps.

3-inch

weight--5,240 lbs.
penetration at 1,000 yds. (AP/APC)--4.0"/4.6" (homogenous armor); 3.75"/4.51" (face hardened armor)
MV--2,600 fps.

[14]Memo from Col. Barnes to Capt. Weyher, dtd. 9 September 1940, History of 3-Inch Gun Carriage M1, M1A1, and M6 (hereafter cited as 3-Inch Hist.), Ordnance Historical Files, RG 156, National Archives, hereafter cited as OHF.

[15]Ordnance Committee Minutes, Item 16368, dtd. 27 December 1940, RG 156, National Archives, hereafter cited as OCM.

[16]Chronology, 3-Inch Hist., entries for 22 October 1941 and 12 November 1941.

[17]Chronology, 3-Inch Hist., entry for 28 February 1942.

[18]Letter from HQ, SOS to Chief of Ordnance, dtd. 26 July 1942, 1st Ind. to Memo from Chief of Ordnance to CG, SOS, dtd. 17 July 1942, 3-Inch Hist.

[19]Memo from Chief of Ordnance to CG, SOS, op. cit. mentions a letter from AGF and its indorsement by SOS.

[20]Ibid.

[21]Letter from HQ, SOS to Chief of Ordnance, dtd. 26 July 1942, op. cit.

[22]Mrs. Anne B. Jones, 3-Inch Gun Motor Carriages, unpublished manuscript in OHF, "3-Inch Gun Motor Carriage M5 (T1)," p. 1 (All references to the Cletrac will be from the chapter above.), hereafter cited as Jones, Carriages.

[23]Ibid., p. 2.

[24]OCM, Item 17642, dtd. 24 November 1941 with indorsements.

[25]Jones, Carriages, pp. 2 and 7.

[26]Ibid., p. 8. Jones only mentions the fact that a factory had been constructed.

[27]Letter from Bruce to Col. Wendell Westover, Asst. Chief of Staff, G-2, Tank Destroyer Center, dtd. 24 November 1943, Bruce.

[28]Jones, Carriages, pp. 7-8.

[29]Letter from McNair to Bruce, dtd. 10 July 1942, Bruce.

[30]Letter from HQ, AGF to CG, SOS, dtd. 23 August 1942, 3-Inch Hist.

[31]Memo from HQ, AGF to CG, SOS, dtd. 1 July 1942, AGF (472).

[32]Letter from HQ, AGF to CG, SOS, dtd. 23 August 1942, op. cit.

[33]Jones, Carriages, "3-Inch Gun Motor Carriages M-10 M-10A1 (T35, T35E1)," pp. 1-2.

[34]"Notes Taken at Conference at Aberdeen Proving Ground, Md. on May 2, 1942," Bruce, p. 1, hereafter cited as May 42 Conf.

[35]"Statement of Colonel G. M. Dean," dtd. 18 October 1945, AGF (470.8).

[36]Letter from Bruce to Brig. Gen. W. B. Palmer, 26 January 1942, op. cit.

[37]May 42 Conf., p. 6.

[38]Ibid., p. 13.

[39]Ibid., p. 4.

[40]Letter from Bruce to Westover, dtd. 24 November 1943, Bruce.

[41]"Rough Draft, Conversation between General Bruce and General Devers," undated, Bruce. From other documents the date of this conversation can be established as 10 December 1942.

[42]Memo from RQT 1 (Moore) to McNair, 22 February 1943, AGF 473.1).

[43]Letter from Bruce to Westover, undated, Bruce. From other documents the date of this letter can be established as generally

November 1943 to January 1944.

[44]Letter from Brig. Gen. W. B. Palmer to the Chief of Staff, U.S. Army, Subject: "Final Report of Special Armored Vehicle Board," dtd. 5 December 1942, hereafter cited as Palmer Report, AGF (470.8).

[45]Ibid.

[46]TDC Hist. I, Chap. VI, p. 2.

[47]Palmer Report.

[48]TDC Hist. I, Chap. VI, pp. 15-16.

[49]Study No. 29, p. 60.

[50]Ibid.

[51]Ibid.

[52]Ibid.

[53]TDC Hist. I, Chap. VI, p. 17.

CHAPTER 3

COMBAT IN NORTH AFRICA

The tank destroyer units that participated in America's first land battle against the Germans, in North Africa, failed to prove the concepts expressed in FM 18-5. More important than the inadequacies of expedient equipment, senior commanders failed to use tank destroyer doctrine. Continual misemployment made the performance of tank destroyer units unimpressive. In contrast, the British and Germans seemed to have discovered an antidote to tanks--concealed, towed guns. The lack of success from US tank destroyers forced the Tank Destroyer Center to change doctrine, organization, and equipment. Tactical employment, not weapons, would be the main concern of tank destroyer units in North Africa.

The most serious malady of the tank destroyer battalions deployed to North Africa was their continuous misuse in relation to the tactical doctrine that governed their training and equipment. Tank destroyer concepts were strongly criticized by senior officers during the campaign in Tunisia, but there is little evidence that the concepts had been given a fair test. Shortcomings of TD equipment only added to the criticism. Missions given to tank destroyer units were often far outside the scope of their equipment or training. The doctrine for tank destroyer units, as reflected in FM 18-5, was never employed in North Africa.

Tank destroyer battalions were rarely employed as units.

As a rule, the tank destroyer companies were dispersed among larger units such as infantry regiments. The reconnaissance companies proved to be convenient assets for guarding the headquarters of corps commanders who seemed to be overly concerned with their own safety. The experiences of the first tank destroyer battalions to reach North Africa illustrate this point.

There were only two tank destroyer battalions, the 601st and 701st, in action in North Africa until mid-February 1943.[1] Of the two, the 601st was probably the first tank destroyer unit to be misused.

Originally deployed to England, the 601st quickly lost its reconnaissance company to guard the headquarters of II Corps, thus hampering the ability of the battalion to continue training. The 601st was subsequently deployed to North Africa without its reconnaissance company. On arriving in North Africa, the 601st was assigned to the British First Army which dispersed the battalion among subordinate units. By early 1943, an observer from AGF was able to locate one company of the 601st with an American task force and another company with Combat Command B (a brigade-size unit) of the 1st Armored Division. The observer was unable to locate the remainder of the battalion.[2]

A dispersed TD battalion could not fulfill the tank destroyer doctrine as discussed in chapter one. Even if the 601st had been allowed to retain control of its TD companies, it would have been difficult to deploy those companies properly without its organic reconnaissance company. Proper reconnaissance was an

imperative in FM 18-5. Of course, breaking down the battalion into its TD companies made it totally impossible to use tank destroyer concepts.

Suffering a similar fate, the 701st was part of the initial landing forces in Africa. It, too, was to lose its reconnaissance company to guard a corps headquarters, and the remainder of the battalion was dispersed.[3] Later arrivals suffered the same fate. For example, the 805th was available at the Battle of Kassarine in February 1943 but " . . . was split up into companies which were destroyed in detail."[4]

The tank destroyers faced other problems as well. The missions assigned to the battalions or their detached companies rarely included the one mission that they were designed to accomplish, i.e. being a mobile reserve intended to fight a tank penetration. Tank destroyer units received missions better suited to tanks, cavalry, or artillery. One observer commented that a company of the 701st was used as, " . . . attacking tanks and subsequently as supporting artillery."[5] Another witness affirmed that:

> . . . they [the 601st and 701st] were generally used in roles for which they were not designed, such as infantry accompanying guns, assault artillery operating with tanks, and in cordon defense of areas instead of in depth.[6]

The Army's official history notes that the 601st was used as a screening force as Kassarine Pass where the battalion was nearly overrun.[7] The narrative of the North African Campaign is replete with examples of ill-used tank destroyers.

One example, perhaps an extreme one, illustrates the misuse

of a tank destroyer unit. With an attached reconnaissance platoon, B Company, 701st Tank Destroyer Battalion, operated as an independent unit during November 1942. After an overland march from Oran, B Company was ordered to attack the town of Gafsa (See Map 1). Supported only by two antiquated, French armored cars, the company managed to secure the town from scattered German infantry by using tank destroyers like tanks. Warned of approaching armor, the company commander Captain Gilbert A. Ellman, elected to meet the enemy at El Guettar where the terrain was more suitable for maneuver. In a meeting engagement, B Company managed to destroy four tanks and drive off the enemy force.

Returning to Gafsa, the company was immediately directed to respond to an enemy attack at Sbeitla. Captain Ellman received an order to " . . . go up there and do something about it." Surprising the enemy at Sbeitla, Captain Ellman fixed the force by fire with one platoon and flanked with another. After losing 11 tanks, the Italians retreated from the town.[8]

B Company had received missions far outside the intent of FM 18-5. Aggressive leadership, good tactics, and poor enemy performance enabled the unit to accomplish its missions successfully. It should be noted that the reconnaissance platoon was instrumental to success in all of the actions. However, such offensive missions against a more determined enemy were far less successful. As a witness of later actions commented:

> The tank destroyer is definitely a defensive weapon. Wherever destroyers have bulged out on their own and tried to fight German tanks they have been knocked out.[9]

Their equipment and doctrine made tank destroyer units defensive organizations. As one action in North Africa demonstrated, when employed properly, tank destroyers were effective at their intended task--killing tanks.

During March 1943, the 1st Infantry Division was advancing into northern Tunisia near El Guettar. The Germans dispatched the 10th Panzer Division to counterattack the American advance.[10] Major General Terry Allen, commander of the 1st Infantry, had ordered the 601st TD Battalion, finally assembled, to deploy into positions protecting the division artillery (See Map 2).[11]

When the German attack with some 100 tanks began in the early, dark hours of 23 March, it was detected by reconnaissance elements of the 601st that had been placed well forward. Warned of the approaching armor, the 601st was able to adjust its positions which had been intended to oppose infantry. Two Tigers were among the 30 tanks knocked out by the 601st during the battle. Although the 601st lost 21 of 31 M-3's, the German attack was repulsed.[12]

El Guettar was almost a classic example of proper employment of tank destroyers. Massing the battalion on excellent terrain had enabled it to counter a German force that out-numbered the Americans three to one. The tactics of the battalion were excellent. Shifting positions had avoided both artillery and tank fire, and the use of covered positions prior to firing had kept losses from soaring higher.[13]

The only criticisms of the action in relation to tank destroyer doctrine were that the battalion was unduly exposed since there were no divisional units between the TD's and the enemy, and

that the unit was too far forward. Preferably, the tank destroyers would have been behind the division's artillery, where they could have maneuvered to counter the tanks, but being tied to the mission of protecting artillery restricted their ability to maneuver. Neither criticism outweighed the overall advantages of a massed tank destroyer battalion screened by its own reconnaissance. The saddest thing about the tactics of El Guettar was that they were not used at Kassarine.

Despite success at El Guettar, the tank destroyer concept did not prove itself in North Africa. The failure of tank destroyermen to prove their doctrine to senior commanders was largely due to the failure of those same commanders to use the units properly. Several factors were involved in the misemployment of tank destroyer battalions.

One observer believed that the dispersal of tank destroyer units was due " . . . to the necessity of holding a wide front with little means."[14] While there is some logic in spreading assets along a wide front, it would have been just as logical to keep the tank destroyers in reserve locations to react to German penetrations on critical avenues. The desire of the commanders for a piece of the TD pie must have been strong. This tendency is common to armies and other bureaucracies.

In defense of the dispersal of tank destroyers it must be pointed out that the American forces in North Africa did not face German tank attacks on a daily basis. Quite reasonably, generals are loath to leave an important asset sitting in reserve when it

could be firing on the enemy. In this light, the failure of American commanders was the refusal or inability to concentrate tank destroyers when a German tank attack was imminent or actually underway.

Contributing to the misuse of tank destroyers was the simple fact that many officers were unaware of tank destroyer doctrine. Bruce had recognized this problem, and the Tank Destroyer Center started conducting indoctrination courses for senior officers on 30 November 1942.[15] By then, many of the commanders who participated in the North African campaign had already departed the United States. In the final analysis, the sudden establishment of the tank destroyers in late 1941 did not allow time to disseminate the radical new doctrine throughout a rapidly expanding army.

However, ignorance of tank destroyer doctrine was not as important as the fact that many important commanders simply did not agree with the concept of tank destroyers. The Army had not reached a doctrinal consensus concerning antitank warfare. Although the Antitank Conference of 1941 had demonstrated that the bureaucracy was willing to accept the mobile tank-killers, the agreement of chiefs of branches and other important bureaucrats did not necessarily represent the views of the men who would command forces in the field. The chiefs of branches in 1941, generally an elderly lot, were never to command theaters or army groups. Misunderstanding of tank destroyer doctrine contributed to the opposition against tank destroyers. By 1943, General Bruce was " . . . distressed over the attitude of Generals Patton, Devers, Bradley, and

now Lucas."[16]

General Patton's objection to tank destroyers was simple: they should have been tanks. He would have preferred to replace tank destroyers with tanks.[17] A good offense was always the best defense to Patton, and the tank destroyer was simply a poor tank. He believed that tanks could fill the need for mobile antitank guns while retaining the offensive capability of tanks.

Far more adamant than General Patton, General Devers disagreed with the whole concept of tank destroyers, disinterring the argument that had been institutionally buried by General Marshall in 1941. After his trip to North Africa, General Devers concluded that:

> The separate tank destroyer arm is not a practical concept on the battlefield. Defensive antitank weapons are essentially artillery. Offensively, the weapon to beat a tank is a better tank. Sooner or later the issue between ground forces is settled in an armored battle--tank against tank. The concept of tank destroyer groups and brigades attempting to overcome equal numbers of hostile tanks is faulty unless the tank destroyers are actually better tanks than those of the enemy.[18]

General Devers represented a significant body of opinion within the US Army. In later years, his view would become doctrine.

Although their disagreement was less fundamental, the views of Generals Bradley and Lucas had a more direct impact on the tank destroyers. Although the idea of separate antitank battalions was palatable, they disagreed with self-propelled guns.

General Bradley was undoubtedly impressed by the effectiveness of the Germans' dug-in antitank guns in North Africa. The readily concealed German guns were effective and difficult to pry

out of their positions. By January 1943, General Bradley complained about the high silhouette of the self-propelled TD's and stated his preference for towed guns that could be dug in with only their muzzles above the ground.[19]

While generally in the same vein, the views of Major General J. P. Lucas were more adamant than General Bradley's. After observing the Sicilian Campaign, General Lucas commented in a report that:

> The Tank Destroyer has, in my opinion, failed to prove its usefullness. I make this statement not only because of the results of this campaign but also after study of the campaign in TUNISIA. I believe that the doctrine of an offensive weapon to "slug it out" with the tank is unsound. I think that the only successful anti-tank weapon is one which has a purely defensive role, has high penetrating power and, such a low silhouette that it can be concealed, dug in, and hidden by camouflage. . . . I am of the opinion that the anti-tank weapon should be a towed gun of great power and low silhouette.[20]

General Lucas' report was very influential and widely distributed in AGF. For example, while discussing a proposed rearmament of the M-10, Brigadier General John M. Lentz, the G-3 of AGF, recommended informing the Ordnance Department that "The trend is toward towed guns (quote Seventh Army Report . . .)."[21]

Successful use of towed antitank guns by both Allied and Axis forces in North Africa contributed to the pressure for American adoption of those weapons. German tactical skill with their antitank guns and the legendary "88" provided ample demonstration of the effectiveness of such weapons. British success with towed weapons was probably just as influential. Soon after the American Army's debacle at Kassarine, the British soundly defeated a German

thrust at Médenine. English 6-pounder antitank guns thwarted the German attack and destroyed over 40 Panzers.[22] One American observer in North Africa commented that it was "The best job of tank destroying that has occurred in Africa . . . ."[23] Successful use of towed antitank guns generated pressure on the US Army to incorporate those weapons into its antitank system. Ironically, the failure of America's only towed antitank gun, the 37-mm, contributed to the pressure for improved guns and to the misuse of tank destroyers.

The doctrine of the tank destroyers assumed that infantry units could protect themselves from tanks and allow the TD's to remain in reserve, available to counter major penetrations. However, the ineffectiveness of the infantry's organic antitank gun, the 37-mm, meant that the foot soldiers could not protect themselves from tanks and morale sank. This put great pressure on commanders to allot tank destroyer units among the infantry units in order to give those units some protection from tanks.

There is no shortage of criticism of the 37-mm gun. A typical comment from Colonel Robert S. Miller, an observer, noted that:

> Two general officers condemned this gun as useless as an anti-tank weapon and strongly recommended that it be discarded. They stated that it would not penetrate the turret or front of the German medium tank, that the projectiles bounced off like marbles, and the German tanks over-run the gun positions.[24]

However, the same observer commented that the problems of the 37-mm gun were not all due to the gun's performance. After investigating, Colonel Miller discovered that infantry units were

not placing the weapons in concealed positions where they could engage the vulnerable flanks of German tanks. Thus the 37-mm was forced to fight the frontal armor of German tanks--something that no one had ever claimed it could do. Miller, an infantryman, recommended that the gun be retained in infantry battalions while training should stress proper employment.[25]

Also contributing to the general disgust with the 37-mm, many units were using the wrong ammunition. General Barnes, who accompanied General Devers to North Africa, discovered that about 50 percent of the 37-mm ammunition was old, semiarmor-piercing (SAP) shot. Further, he found that the men of the units could not tell the difference between SAP rounds and capped ammunition, which was far superior. In addition, Barnes was unable to find any of the latest 37-mm ammunition in Africa--the new M-51 rounds that had increased velocity (from 2,600 fps to 2,900 fps), which made them much more potent.[26]

Attempting to refurbish the image of the 37-mm, ordnance officers tested the gun with M-51 rounds against two captured German tanks. They found that the Mark III's front could be penetrated at 800 yards while its flanks were vulnerable at 1,000 yards. The Mark IV's front was penetrated at 400 yards and its flanks at 850 yards.[27] However, tests could not change opinions cemented by experience on the battlefield. As an observer concluded, "Confidence in the 37-mm gun as an antitank gun has been lost."[28]

Dissatisfaction with the 37-mm gun led to a request from

General Eisenhower for the American version of the 6-pounder.[29] In production in the United States to meet British and Russian requirements, the 6-pounder, designated the 57-mm by the US Army, was readily available.[30] General McNair disagreed with issuing the 57-mm because it was less mobile than the 37-mm.[31] Hoping to replace regimental antitank companies with a TD battalion equipped with 3-inch guns, McNair believed that 37-mm guns supplemented by bazookas would offer sufficient close-range protection for infantry battalions.[32] However, the War Department disagreed and the 57-mm antitank gun became standard equipment for infantry divisions.[33]

The 37-mm gun had been no more successful in the tank destroyer units than it had been in infantry units. Indeed, the weaknesses of the 37-mm was accentuated in the Fargo, because it was more obvious and was vulnerable to enemy fire. As one observer concluded, "The sending of such a patently inadequate destroyer into combat can at best be termed a tragic mistake."[34]

Although far more successful than the Fargo, the M-3 received mixed reviews. One observer reported that the "Heartiest possible praise was given to the 75-mm gun SP as an effective antitank, or tank destroying weapon."[35] On the other hand, General Lucas condemned the M-3 because of its vulnerability.[36] Reports concerning the M-3's immediate replacement, the M-10, were more encouraging.

Combat revealed that the M-10 was clearly superior to the M-3, and the troops were satisfied with the new vehicle. Increased firepower and greater cross-country mobility were the main sources

for praise for the M-10.[37] The heavier armor and 360-degree traverse for the main gun also built confidence in the M-10, although the M-10 lacked the mobility to outrun medium tanks.

The effectiveness of their equipment proved to be the brightest aspect of the first experiences of the tank destroyer units in combat. With the exception of the Fargo, the guns of the TD battalions proved capable of destroying German tanks, but the advent of heavier German tanks would spur the development of heavier guns for tank destroyers.

The tactical employment of tank destroyers presented a less happy picture for the new units. Never given a fair test, the tactical doctrine of the tank destroyers was condemned nonetheless by important military figures such as Generals Bradley and Devers. Success at El Guettar could not outweigh the lack of success at Kassarine and other places. In contrast, the experiences of the British and the effectiveness of German antitank weapons generated pressure to change tank destroyer doctrine, organization, and equipment.

ENDNOTES

[1]Final report of Major Allerton Cushman, dtd. 15 April 1943 (hereafter cited as Cushman Report), Intelligence Reports, Foreign Observer Reports, Folder 48, AGF files, RG 337, National Archives, p. 19, hereafter cited as AGF Obs.

[2]Report of Colonel Thomas J. Heavey, dtd. 19 February 1943, AGF Obs., Folder 1, p. 24, hereafter cited as Heavey Report.

[3]Ibid., p. 23.

[4]Cushman Report, p. 19.

[5]Heavey Report, p. 23.

[6]Cushman Report, p. 19.

[7]George F. Howe. Northwest Africa: Seizing the Initiative in the West (Washington, D.C.: OCMH), 1957, p. 434.

[8]The entire narrative of B/701st TD is extracted from Captain Gilbert A. Ellman, "Gafsa and Sbeitla," TD Combat in Tunisia, dtd. January 1944, Bruce, pp. 1-16.

[9]Report of Maj. Gen. C. P. Hall dtd. 7 May 1943, AGF Obs., Folder 49, p. 4.

[10]Howe, Africa, pp. 557-560 describes the general situation and has some details of the action.

[11]Lt. Col. H. D. Baker, CO, 601st TD Bn., "El Guettar," TD Combat in Tunisia, dtd. January 1944, Bruce, pp. 17-18.

[12]Ibid., pp. 17-30. There is some confusion about the battle. Howe, Africa, claims that the 899th TD Bn. was involved but Baker does not mention this. The Cushman Report only says that a company of the 899th was sent to help.

[13]Ibid.

[14]Letter from Col. H. J. McChrystal to Bruce, dtd. 30 October 1943, Bruce.

[15]Study No. 29, p. 26.

[16]Letter from Bruce to Pinky (Maj. Gen. Orlando Ward), dtd. 1 October 1943, Bruce.

[17]George S. Patton, Jr., War as I Knew It (Boston: Houghton Mifflin Co., 1947), p. 220.

[18]Devers Report.

[19]Kent Roberts Greenfield, Robert R. Greenfield, and Bell I. Wiley, The Organization of Ground Combat Troops (Washington, D.C.: OCMH, 1947), p. 427.

[20]Memo from Maj. Gen. J. P. Lucas to the Commander-in-Chief, dtd. 26 August 1943, AG 370.2, RG 407, National Archives, pp. 2-3, hereafter cited as Seventh Army Report. This report was widely distributed in AGF and sometimes referred to as Seventh Army Report.

[21]Memo from G-3 to CG, dtd. 15 October 1943, AGF.

[22]Howe, Africa, pp. 514-519.

[23]Cushman Report, p. 14.

[24]Report of Col. Robert S. Miller, dtd. 5 March 1943, AGF Obs., Folder 17.

[25]Ibid.

[26]"Ordnance Annex," Devers Report, p. 12.

[27]Letter from Col. D. J. Crawford to the Chief of Ordnance, dtd. 9 April 1943, OHF.

[28]Report of Maj. Gen. C. P. Hall, dtd. 7 May 1943, op. cit.

[29]Robert R. Palmer, Reorganization of Ground Troops for Combat, Study No. 8 (Historical Section, AGF, 1946), pp. 22, 32, hereafter cited as Study No. 8.

[30]Memo from Brig. Gen. I. H. Edwards to CG, AGF dtd. 26 January 1943 and memo from G-4 to RQTS dtd. 5 February 1943, both in AGF (472).

[31]Study No. 8, p. 22.

[32]Letter from McNair to Bruce, dtd. 2 January 1943, Bruce.

[33]Study No. 8, p. 32.

[34]Cushman Report, p. 6.

[35]Heavey Report, p. 25.

[36]Seventh Army Report, p. 3.

[37]Cushman Report, pp. 1, 3.