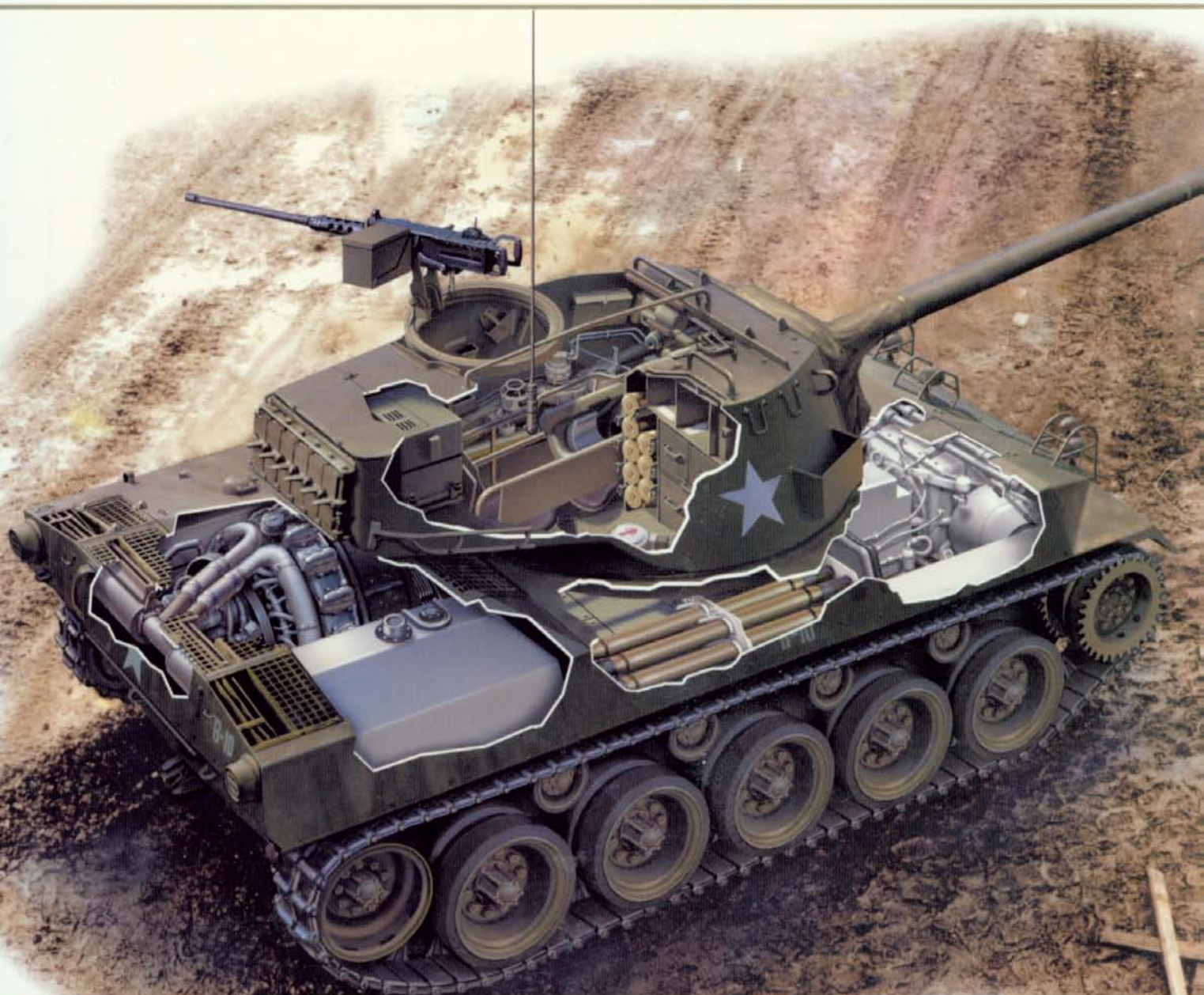


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# M18 Hellcat Tank Destroyer 1943–97

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Steven J Zaloga • Illustrated by Jim Laurier

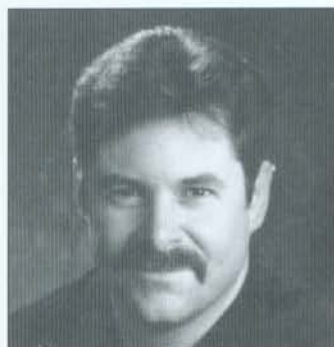
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# M18 Hellcat Tank Destroyer 1943–97



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## Artist's note

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# M18 HELLCAT TANK DESTROYER 1943–1997

## BUILDING THE PERFECT TANK DESTROYER

In 1943–44, the M18 76mm Gun Motor Carriage (GMC) was viewed by the US Army's Tank Destroyer command as the ideal tank hunter – fast, hard-hitting, and maneuverable. It was the fastest tracked armored vehicle of World War II, capable of road speeds up to 60 miles per hour. In actual combat conditions in 1944–45, the advantages of such high speed proved an illusion, however, and the M18's gun proved inadequate against the heavily armored German Panthers and Tigers. Yet it served with distinction in several of the largest battles fought by the US Army, a tribute to the training and tenacity of its crews. But more often than not, it was employed to provide direct fire support for infantry and other combat units, rather than its intended anti-tank role. By 1945, the US Army recognized that the tank destroyer concept was a technical and tactical dead-end. Although the M18 quickly disappeared from US Army service, several hundred were transferred to other armies. Some fought in the Yugoslav civil war in the 1990s, and a handful were still in service more than a half-century after their manufacture.

The US Army did not have the budget for a significant tank force until the start of the war in Europe in 1939. There was considerable debate



The M18 76mm GMC was viewed by the Tank Destroyer command as the ideal tank destroyer of the war. This is a GMC of Co. B, 827th Tank Destroyer Battalion, manufactured in the initial contract run in December 1943 and is fairly typical of the M18 tank destroyers that saw combat in France in the summer of 1944. (NARA)

within the army over the best way to deal with the enemy tank threat, whether tanks were the ideal opponent of other tanks, or whether anti-tank guns were a more practical and economical alternative. The defeat of France in June 1940 sent shockwaves through the US Army and led to the formation of the Armored Force. Nevertheless, influential generals were still skeptical of the need 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." The strongest advocate of the anti-tank gun alternative was General Lesley McNair, an artilleryman who commanded the Army Ground Forces (AGF).

US Army tactical doctrine until 1940 had favored a thin cordon of towed anti-tank guns to defend against tank attack. The lessons from the battle of France suggested that such a traditional approach was inadequate when dealing with a massed panzer attack. When these outdated tactics were used in the US Army maneuvers of August 1940, they proved to be a failure. The War Department issued a new training circular in September 1940 instructing the infantry to place a minimum number of their anti-tank guns in a forward cordon defense, but to retain most in a mobile reserve. This was difficult to implement in practice, since the anti-tank guns were scattered in an anti-tank company in each infantry regiment which tended to dole out a platoon to each of its forward deployed battalions. If the anti-tank guns were kept in reserve, the infantry would have no effective protection at all against tanks during the initial encounter. There was ample evidence from recent conflicts that infantry without anti-tank weapons tended to panic when subjected to a panzer attack. To solve this problem, in April 1941 the Army Chief of Staff, General George C. Marshall, instructed his subordinates to consider how to deploy additional, mobile anti-tank units in special corps formations. Under this concept, the infantry would keep their anti-tank guns to provide a basic defensive shield against tanks. But when the enemy concentrated large numbers of tanks against a narrow penetration point, the mobile anti-tank reserve would be moved forward to reinforce the defense and to seal any penetration. Several ensuing conferences by senior officers concluded that mobile,

**The T49 57mm GMC was the original ancestor of the M18 and was more similar in appearance to a light tank than the tank destroyers with a fully enclosed roof. It was doomed by its use of a 57mm gun at a time when the Tank Destroyer Command was shifting to 3-in. (76.2mm) guns as the minimum acceptable caliber. (Patton Museum)**

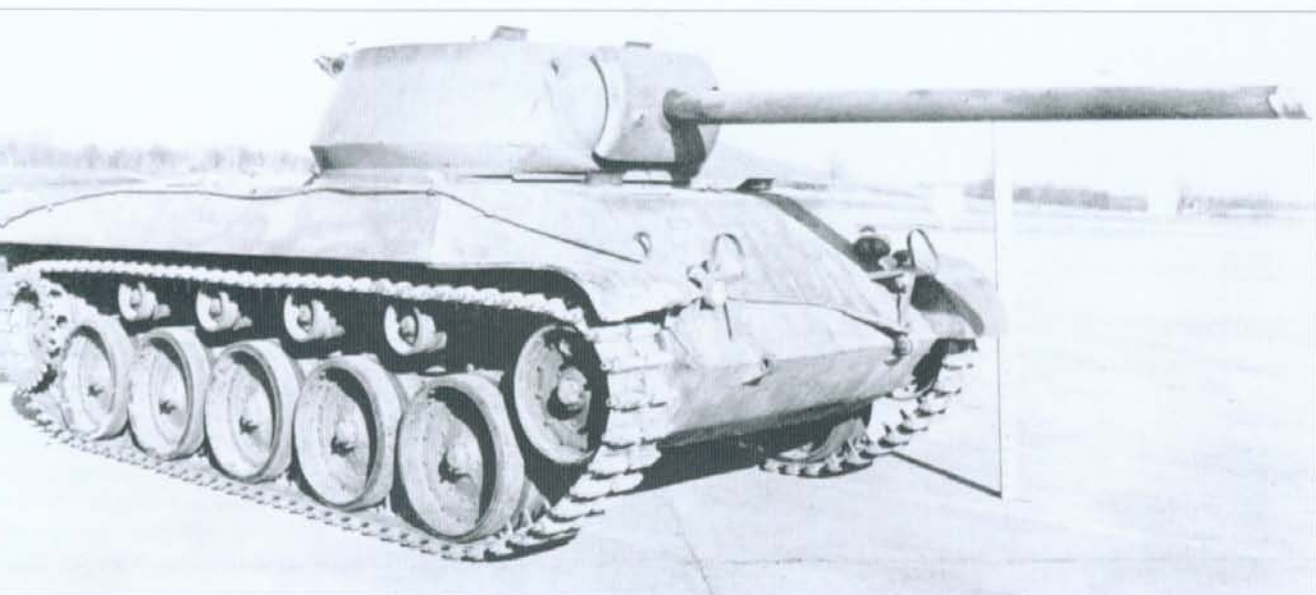


offensive anti-tank tactics were the proper approach, but the Infantry, Cavalry, and Artillery all insisted that their branch was the ideal candidate to direct the new anti-tank units. To end this squabbling, Marshall ordered Lieutenant Colonel Andrew D. Bruce from the planning branch of the War Department G-3 office to take over the project.

The Army latched on to the mistaken idea that the French Army had successfully used anti-tank guns mounted on the rear of trucks as a successful anti-tank weapon in the 1940 campaign. An article about their use appeared in US Army journals, but it failed to note that such vehicles were few in number and their actual accomplishments were far less impressive than suggested. Nevertheless, this idea served as the seed for a novel US Army approach to the panzer threat. Instead of a thin cordon of towed guns, the guns would be mounted on fast vehicles that could be held in reserve behind the front lines. When the enemy threat developed, the anti-tank force could be rapidly massed and moved forward to staunch the flow of panzers. Due to the urgency of the situation and the Army's lack of suitable equipment, two expedient anti-tank vehicles were rapidly developed, the M6 37mm gun motor carriage (GMC) and the M3 75mm GMC. The M6 37mm GMC consisted of a standard Fargo ½-ton truck with a 37mm gun firing over the rear. The M3 75mm GMC consisted of a M3 half-track with a World War I-vintage French 75mm gun firing over the front. The M3 75mm GMC was the first to be ready and was accepted for US Army use on October 31 1941 in time for participation in the autumn wargames. The vehicles' first use in the fall 1941 wargames seemed to suggest that they were a better alternative than earlier tactics which relied on towed anti-tank guns. As a result, on December 1 1941, the Army formed the Tank Destroyer Tactical and Firing Center, headed by Colonel Bruce. The term "anti-tank" was dropped in favor of the more aggressive sounding "Tank Destroyer" to symbolize the change in tactical doctrine.

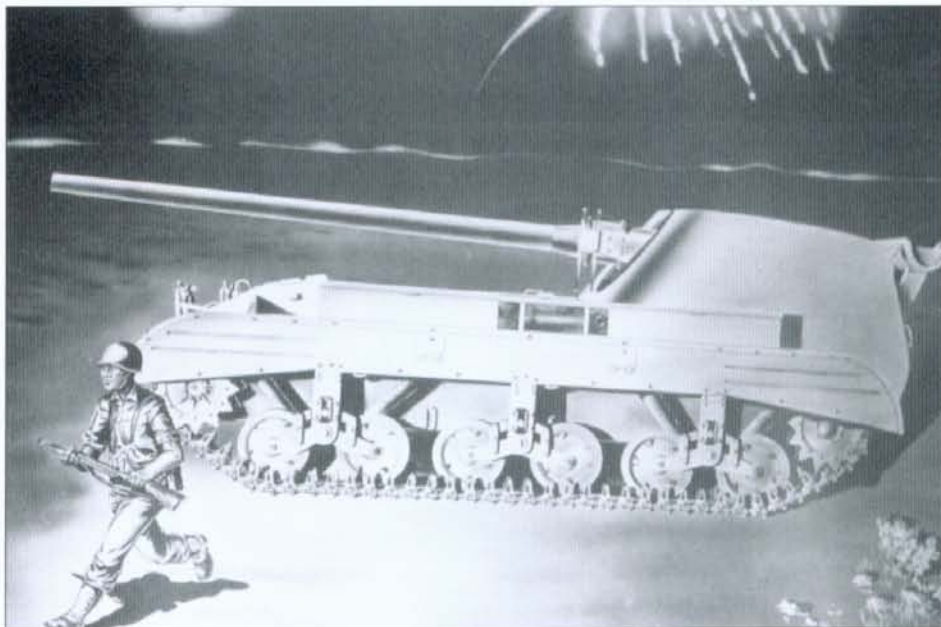
Colonel Bruce likened the ideal tank destroyer to a fast cruiser rather than a battleship, which is how he regarded contemporary tanks. His idea was for a vehicle that was faster than a tank but with a more powerful gun and less armor. To epitomize these tactics, the Tank Destroyer motto was "Seek, Strike, Destroy!". The Tank Destroyer Board began to examine

The T49 57mm GMC was quickly superceded by the T67. Although briefly fitted with a 76mm gun, it was quickly reconfigured with a 76mm gun. Automotive shortcomings led to its demise in favor of the T70. (Cotton Museum)



some 200 different design proposals for its 3-in. (76.2mm) gun tank destroyer. The eventual route to the M18 76mm GMC was quite circuitous. It began in the autumn of 1941 with a scheme to mount an open turret with 37mm gun on the chassis of the experimental T9 light airborne tank. Colonel Bruce was not happy with the design, and fastened on to the idea of using a Christie-type suspension as part of his effort to field a very fast tank destroyer. Many army officers associated Christie suspensions with high speed, but this required a redesign of the vehicle, resulting in the 37mm GMC T42. However, before any fabrication work began, the Ordnance Committee recommended that the 37mm gun be dropped in favor of a more potent 57mm gun. The combination of the larger gun and new suspension mandated a new chassis as the T9 light tank was simply too small. The result was the 57mm GMC T49 and in April 1942, the Buick Motor Car Division of General Motors Corporation was given a contract for two pilots. The Christie suspension idea was unceremoniously dropped as archaic and wasteful of space, and a torsion bar suspension was substituted. The first T49 pilot was completed in July 1942, but tests showed that problems with the transmission limited the speed of the vehicle to 38mph instead of the desired 55mph.

On April 23, 1942, after experimenting with light and heavy tank destroyers, the Army decided to settle on a single type of tank destroyer battalion based around a new 3-in. GMC design. It had become apparent that the 37mm gun was already obsolete and that a larger gun would be necessary to defeat the future threat. So, in October 1942 the Ordnance Committee recommended fitting the second pilot of the T49 with a larger 75mm gun, the M3. Due to the need for a larger turret and turret ring, as well as the greater weight and size of the 75mm gun, it was fitted in an open-topped turret. This second pilot was designated as 75mm GMC T67. With the decision to use a 3-in. gun on tank destroyers, the design was doomed from the outset. However, the light chassis precluded the use of the 3-in. M7 gun which was the type currently being employed on the second generation of tank destroyers, the M10 3-in. GMC (for further details on the M10 tank destroyer, see *New Vanguard* 57, *The M10 and M36*



As an alternative to the fast, but weakly armed tank destroyers favored by General Bruce, Ordnance offered this concept of the T4 105mm GMC consisting of a new 105mm high velocity gun on a new universal chassis based on M5A1 light tank components. It was rejected by the Tank Destroyer Command before reaching the pilot stage. (NARA)



The T70 76mm GMC was configured from the T67 with the transmission in front and the addition of a bustle to the turret. This is the third pilot during trials at Aberdeen Proving Ground in 1943. (Patton Museum)

*Tank Destroyers 1942–53*). By the time that the second pilot arrived for trials at Aberdeen Proving Ground in November 1942, Ordnance had begun to develop a new lightweight 3-in. gun, the M1. This used the same projectiles as the M7 3-in. gun, but a different propellant casing. To avoid confusion with ammunition supply, the M1 gun was reclassified as a 76mm gun, though it was in fact in the same 3in. (76.2mm) caliber as the M7 gun. With the new gun on the horizon, Tank Destroyer Command indicated it would prefer the new 76mm gun M1 on the T67. The pilot was modified to accommodate the 76mm gun, but automotive trials indicated the need for a more powerful engine than the two 165hp Buick 60 engines used on the T67. As a result, the T67 project was closed in January 1943, and Buick was authorized to build six pilots of a suitably modified derivative, the T70 76mm GMC.

The Tank Destroyer Command, which was downgraded to the Tank Destroyer Center in August 1942, wanted the T70 to serve as the basis for a family of high speed vehicles to accompany the tank destroyer into battle including a command car, armored personnel carrier, anti-aircraft vehicle and a cargo carrier. The AGF rejected this concept, although development of a derivative armored utility vehicle was later authorized as will be related below. The AGF had a string of fights with the Tank Destroyer Center over the conduct of T70 development. The Tank Destroyer Center wanted to continue improving the design, while AGF wished to complete it at the earliest possible date to allow the start of series production. The AGF insisted that the first 1,000 vehicles be completed by the end of 1943 in order to be available for use in the 1944 campaigns.

The Tank Destroyer Center's obsession with speed blinded it to the shortcomings of its anti-tank weapons. While the 3-in. guns in service in 1942 were able to deal with contemporary German tanks such as the PzKpfw III and PzKpfw IV, Tank Destroyer Center seemed oblivious to the likelihood that German armor protection would continue to improve. Compared to other guns being developed at this time, the M1A1 76mm gun offered mediocre anti-armor performance. The British Army at the time was developing its own 76.2mm tank gun, better known as the 17-pdr.

This gun had a barrel length of 55 calibers compared to the 52 calibers of the US 76mm gun. The biggest difference was in the ammunition. The 17-pdr armor-piercing round weighed 37.5lb compared to 24.8lb for the American 76mm round. Although both projectiles weighed about the same, the 17-pdr round contained almost 9lb of propellant compared to only 3.6lb of propellant for the 76mm round. As a result, the 17-pdr could fire its projectiles at a higher velocity, significantly improving their armor penetration capability. German tank gun development was similar to the British, opting for a high velocity 75mm KwK 42 gun with an extremely long 70-cal. barrel. Like the British gun, the German weapon had very high chamber pressures of about 48,000psi compared to only 38,000psi on the US 76mm gun, and the German ammunition featured a large 8.1lb propellant charge ensuring a very high velocity for the projectile.

### COMPARATIVE GUN PERFORMANCE

*Penetration in mm against armor at 0 degrees*

<b>Ammunition</b>	<b>500m</b>	<b>1,000m</b>
<i>Initial anti-tank ammunition</i>		
76mm M62 APC	116	106
17-pdr APCBC	163	150
75mm Pzgr. 39/43 APCBC	168	149
<i>Improved 1944 ammunition</i>		
76mm T4 HVAP	208	175
17-pdr APDS	256	233
75mm Pzgr. 40/43 HVAP	234	199

While development of this high speed tank destroyer was underway, the new M10 3in. GMC had already appeared and had been type classified as standard in the summer of 1942 over the objections of General Bruce and the Tank Destroyer Board. Bruce argued that the M10 was simply another expedient design, and he was especially unhappy about the fact that it was only as fast as the existing M4 medium tank, since they both shared the same chassis and power plant. The Tank Destroyer Center remained

The T70 76mm GMC was significantly smaller and lower than the standard tank destroyer the M10 3-in. GMC as seen in this publicity photo. As will be seen on the hull front, Buick has painted on the Tank Destroyer insignia, a black panther on an orange disc, and below it, the corporate publicity name, "Hellcat". (MHI)

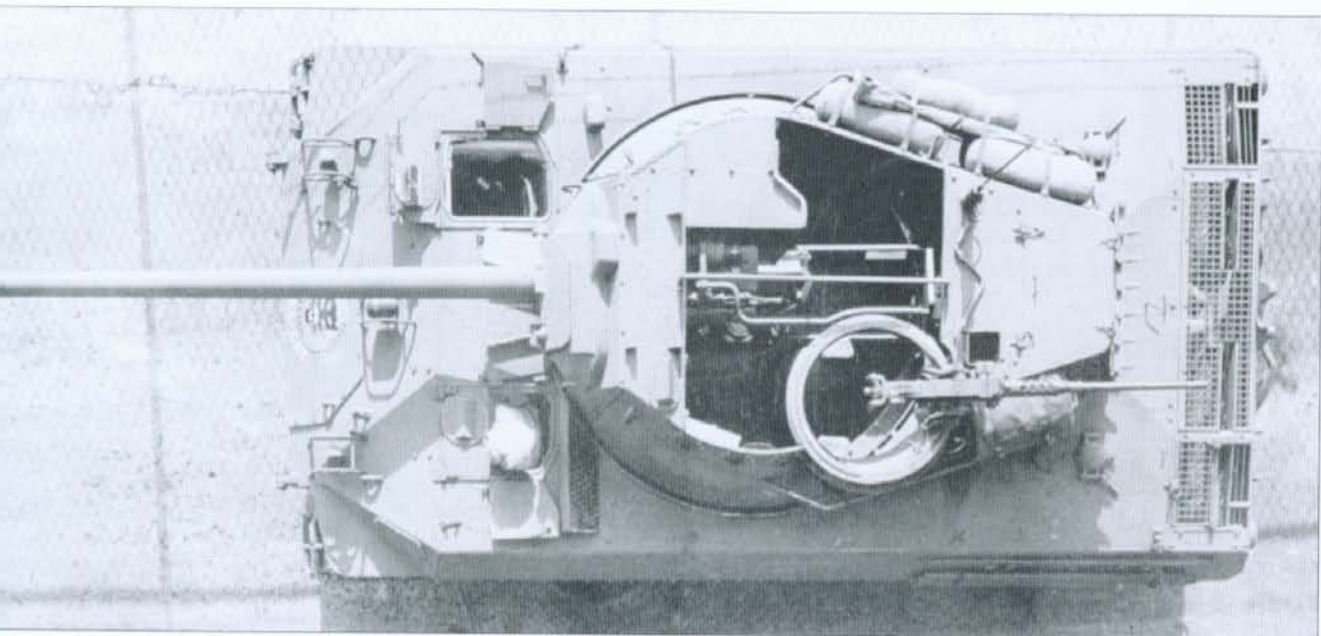


fixated on the idea that speed was an essential requirement of tank destroyer doctrine. The Army had ignored Bruce's protests since it was necessary to place a tank destroyer in production by the summer of 1942 in order to equip the growing number of tank destroyer battalions that were being formed. The head of the War Department's Special Armored Board, Brigadier General W. B. Palmer, was very critical of Bruce's exorbitant expectations for a future tank destroyer and the tendency of the Tank Destroyer Board to compromise on the mobility and firepower issues. He argued that a vehicle that was as fast and heavily armed as Bruce proposed would have to sacrifice other features. Palmer was especially concerned that the Tank Destroyer Board's objections would prevent their ideal tank destroyer from being available to fight in the current conflict. Palmer also let his views be known to the AGF, which began to apply pressure on the Tank Destroyer branch to settle on a design and push it into production.

By the spring of 1943, the first tank destroyer battalions had been committed to combat in Tunisia using the expedient M6 37mm GMC and M3 75mm GMC as well as a small number of M10 3-in. GMCs. It was quite clear that the 37mm gun on the M6 was completely obsolete and this vehicle was quickly retired from service. The M3 75mm GMC performed somewhat better in terms of firepower, but it was far from satisfactory in terms of the limited traverse of its gun, its poor layout, weak armor protection, and mediocre automotive performance. It was replaced as the M10 3-in. GMC became available in larger numbers in 1943. The performance of the M10 3-in. GMC was far more satisfactory, though the tactical effectiveness of separate tank destroyer battalions was still very controversial.

A study by the Tank Destroyer School of the actions of one of the battalions in Tunisia concluded that the tank destroyers had "destroyed three times our own losses by outmaneuvering and out shooting a superior force." The rest of the army had a far less favorable view of tank destroyer doctrine, and McNair's AGF headquarters was particularly critical of the emphasis on offensive tactics that seemed to suggest that the tank

is overhead view of the pilot  
 0 76mm GMC shows some of  
 e features peculiar to the first  
 w vehicles, including the  
 er's hatches split front and  
 ck rather than side-to-side as  
 the standard production  
 nicle. It also lacks the gun  
 vel lock mounted above  
 e ammunition bin on the  
 oduction vehicles.  
 atton Museum)

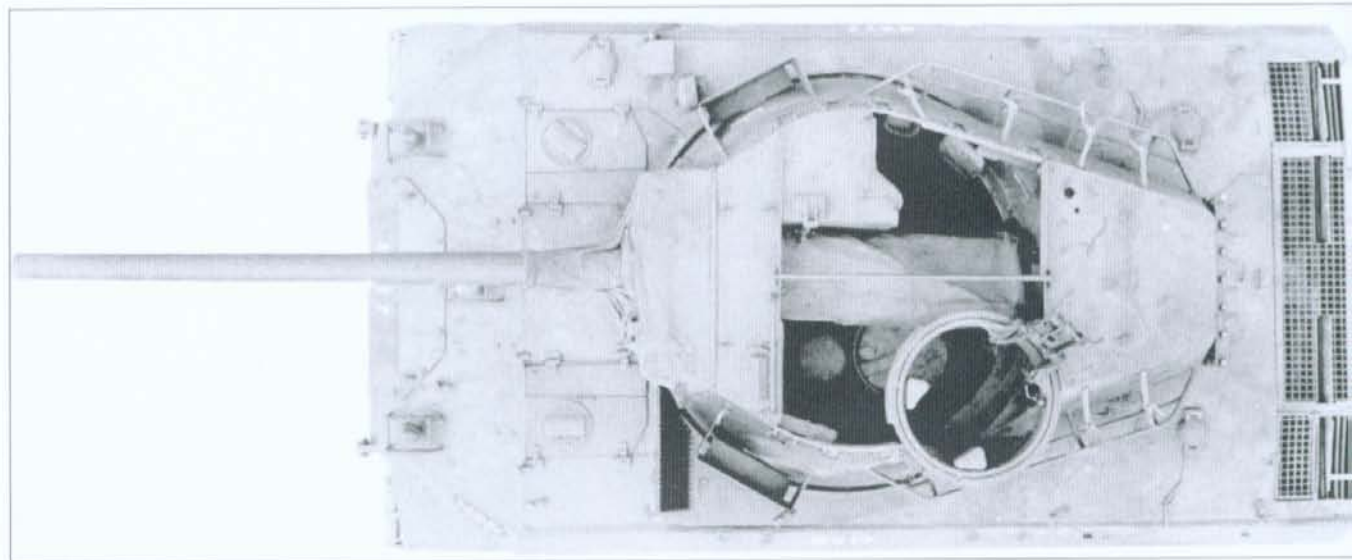


destroyers would chase around the battlefield looking for enemy tanks. The AGF forced the Tank Destroyer Center to rewrite their basic field manual on tactics, *FM 18-5*, but the issue was so contentious that a year passed before the edition completed in May 1943 was accepted for publication. McNair remained convinced that towed anti-tank guns were a better solution to the tank threat, and fastened upon reports of British success with towed 6-pdr anti-tank guns in North Africa to force a reorganization of the tank destroyer force. On March 31 1943, the AGF ordered the Tank Destroyer Center to convert 15 tank destroyer battalions still in training to a new towed-gun configuration using the 3-in. anti-tank gun. In December 1943, the decision was made to convert half of the tank destroyer battalions to the towed configuration. Unfortunately, the towed battalions proved to be far less effective when finally deployed in combat in 1944. The impact of this debate on the development of the M18 76mm GMC was that it drastically reduced the number of new self-propelled tank destroyers required by the army and shifted its focus away from consideration of the future panzer threat. Instead, the Center became preoccupied with creating and training the new towed tank destroyer battalions.

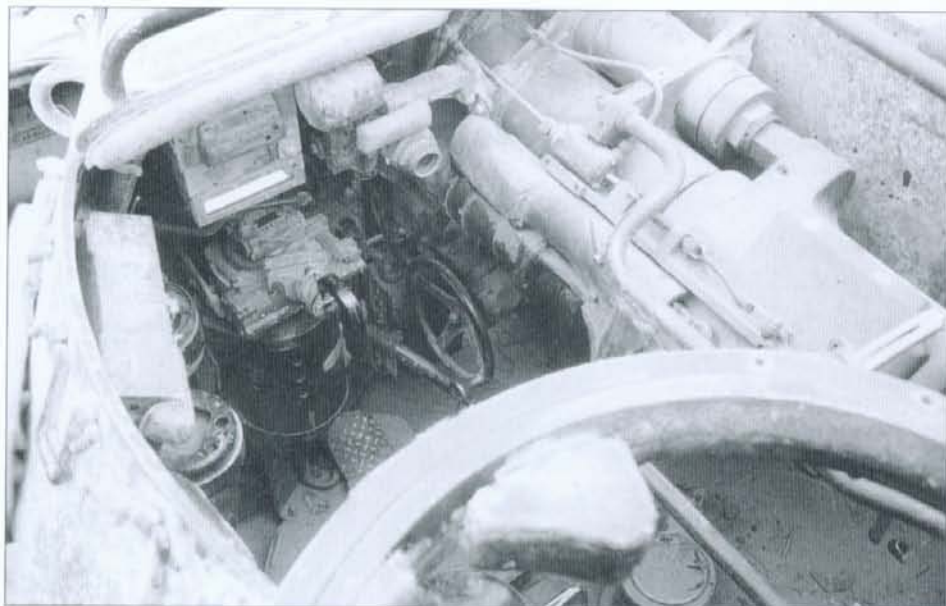
The first T70 pilot was completed in April 1943 and all six pilots began tests in June 1943 at the Milford Proving Ground at Camp Hood, Texas and at Aberdeen Proving Ground. Buick prepared an outstanding design in a very short space of time, and the T70 pilots proved to be relatively mature in terms of their automotive performance. The T70 contained many innovations that earned it special praise. It was the first US armored vehicle to use torsion bar suspension, a significant improvement over the previous vertical volute spring suspensions so characteristic of earlier US tank designs. The engine was mounted on a special frame that could be extended behind the vehicle to make repair or replacement in the field far easier than on existing designs.

McNair and the AGF insisted that production start as soon as possible in order to provide enough time to train the units that would be deployed in Europe for the summer 1944 campaign. T70 production began in July 1943 even though testing had only just started. No matter how good the design, testing inevitably uncovered many small engineering problems and

**This overhead view of T70 serial number 7, the first production vehicle, shows the features of the series production vehicles manufactured in July 1943. Notice that by this time, the hull crew doors are the standard style, split down the center with a periscope in the outer portion. By this stage, a gun travel lock is fitted on the top of the ammunition bin on the right side of the turret. (Patton Museum)**



This photo shows a M18 during trials with a view into the gunner's station in the front left side of the turret. This shows the turret traverse system, the gunner's periscopic and telescopic sights, the azimuth indicator, and other controls. The 76mm gun configuration is unusual in that it is canted to provide easier access by the loader. (NARA)



the T70 was no exception. As a result, the initial production batches of T70 tank destroyers were hobbled by a number of technical problems, especially in the power-train. Problems with the engine combined with a high gear ratio in the transmission meant that the T70 could not negotiate a 60 percent slope and it stalled on steep, sandy slopes. This led to the development of lower gear ratios in the transmission. There were numerous other minor problems including a poor engine starter, short track life, and weak shock absorbers.

As design flaws were uncovered, changes were made on the production vehicles at Buick where the first serial production vehicles were completed in July 1943. The transmission problems led to the first modification program. By October 1943, most of the initial defects had been corrected in the new production vehicles, though testing continued to reveal other minor problems. When the T70 was accepted for standardization as the M18 76mm GMC in March 1944, the Ordnance Committee recommended that the first batch of 684 vehicles in the original configuration built through December 1943 be returned to Buick for upgrade; those from serial number 685 to 1096, manufactured through early February 1944, were to be modified with the redesigned gear ratio before being deployed overseas. In fact, of the first batch of 684 vehicles sent back to Buick, 650 were later converted to M39 and T41E1 armored utility vehicles from October 1944. The Tank Destroyer Board tested four late production T70s in January 1944 finding that the modifications that had been effected since the autumn of 1943 were successful, but that there were lingering though less serious problems with other components. These included further transmission improvements, reinforcement of the drive sprocket, and further shock absorber improvements. Lieutenant Colonel W. A. Wood Jr. of the Tank Destroyer Board was later awarded the Legion of Merit for his exemplary work on the M18 tank destroyer. The M18 proved to be a relatively expensive vehicle to manufacture, with a cost of \$55,230 compared to \$47,900 for the M10 tank destroyer and \$66,900 for a M4A2 (76mm) tank.

The initial production plans for the M18 under the November 1943 program was for 1,000 in 1943, 3,600 in 1944 and 4,386 in 1945 (of which

7,386 were for the US Army and 1,600 for Lend-Lease recipients). Ultimately, the program was substantially trimmed back from the original objective of 8,986 to a mere 2,507. There were three principal reasons for this. First, the AGF's insistence that half of all tank destroyer battalions use towed anti-tank guns dramatically reduced the need for self-propelled tank destroyers. Second, Lend-Lease recipients such as the Soviet Union and Britain showed little interest in the design. Third, by the time it reached combat in the summer of 1944, it became evident that the 76mm gun was inadequate to deal with the German Panther tank, and the emphasis shifted to rushing the M36 90mm GMC into service as quickly as possible. Of the 2,507 M18 tank destroyers manufactured for the US Army, less than 1,850 remained in the tank destroyer configuration after 650 were converted into M39 and T41E1 armored utility vehicles.



This is a good example of a production M18 76mm GMC manufactured in December 1943 from the original contract batch of 1,000 vehicles. It is seen here serving with Co. B, 827th Tank Destroyer Battalion. The extensive external crew stowage was necessary since so little could be carried inside the cramped hull interior. This is typical of service vehicles which often had the fragile front and rear mudguard removed due to their tendency to get in the way during routine track maintenance. (NARA)

Bruce was convinced that the T70 would make an excellent light tank, and so he pressed one of the pilots on a reluctant Armored Force Board at Fort Knox for evaluation. The Armored Forces Board rejected its use as a light tank in January 1944 arguing that it lacked sufficient overhead armored protection. The real reason was that a new light tank sponsored by the Armored Force, the M24, was already reaching production and a second type would have been redundant.

During the manufacture of the M18, the publicity department at Buick came up with an advertising campaign highlighting the firm's war production record, and decided that "Hellcat" was a more exciting name than Gun Motor Carriage 76mm M18. However, the Hellcat name was purely an invention of Buick, and was never officially approved by the Army.

### M18 76MM GMC PRODUCTION

Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
43						44									
6	83	112	150	267	194	250	218	170	150	150	150	150	150	150	157

## IMPROVING THE M18

The initial requirement for M18 tank destroyers was pegged at 1,000 vehicles, and when these were completed in January 1944, a second contract was awarded to Buick to manufacture a further 1,800. As mentioned earlier, there was a continual string of modification orders to correct defects uncovered during the Tank Destroyer Board trials. While most of these had been included by the time that the second production contract was awarded, changes continued until the time that production ended. The first 1,350 vehicles were fitted with the R-975-C1 engine rated at 350hp. Starting in March 1944 with serial number 1351, the subsequent



late production M18 76mm GMC, accepted in September 1944. Roughly the last 700 of the M18 were fitted with the M1A2 76mm gun and muzzle brake as seen here. This also provides a good view of the standard mudguards, a feature seldom seen on vehicles in combat. (Patton Museum)

M18 76mm GMC were fitted with the more powerful R-975-C4 which had an output of 400hp. A more modest change was introduced beginning with vehicle number 1858 in June 1944: the original gun traveling lock with the swinging lock arm was replaced by a new design using a sliding handle and ball retainer clamp. The initial production batches of the M18 were fitted with the M1A1 gun which could be distinguished by the smooth barrel. There had been repeated complaints about the excessive blast of the 76mm gun, and tests of a double baffle design were completed in January 1944. Adoption of the muzzle brake was approved on February 11 1944. Production of the new muzzle brakes did not take place until June 1944. In the interim, the improved M1A1C 76mm gun entered production which was threaded at the end to accept a muzzle brake. The M1A1C gun can be distinguished by a thread-protecting ring at the front of the gun barrel which was added to prevent damage to the threads. The appropriate maintenance work order was approved in October 1944. Besides adding the muzzle brake, the conversion required the addition of three lead counterweights on the end of the gun recoil guard to compensate for the weight added at the front end of the gun barrel. In the event, few of these vehicles appear to have been retrofitted with the muzzle brake during the war. The 76mm guns manufactured with the muzzle brake were designated as 76mm gun M1A2 and these were fitted to new M18 tank destroyers during the final few months of production in the summer of 1944, totaling less than 700 vehicles.

There were a number of small changes introduced in the gunner's controls during the production run. For example, the later production vehicles had a M20 azimuth indicator added behind the hand-traversing mechanism which led to the repositioning of the turret lock further forward on the turret ring. One of the lingering problems with the M18 was the shock absorber configuration and in October 1944, there was yet another effort to introduce heavy-duty shock absorbers. The final production batch of M18 76mm GMC in the autumn of 1944 had the wider 21-in. T82 track, along with widened dust-guards and a new dust-guard strip along the lower lip of the hull.



This is M18 serial 2507 (registration number 40146389), the last M18 manufactured in October 1944. It shows the final configuration of the vehicle including the wider 21-in. tracks and the additional dust-guard running along the length of the hull. This also shows the official stowage, including the drivers' foul weather hood stowed in the special rectangular pannier on the front of the turret. (MHI)

Complaints about the poor armor protection on the M18 led to a series of tests to examine various options to protect it. The study was completed in August 1944 and concluded that supplementary selective armor up to a ton would not adversely affect mobility. A kit was designed which added an armored roof over the turret, but there was no production to retrofit vehicles in service.

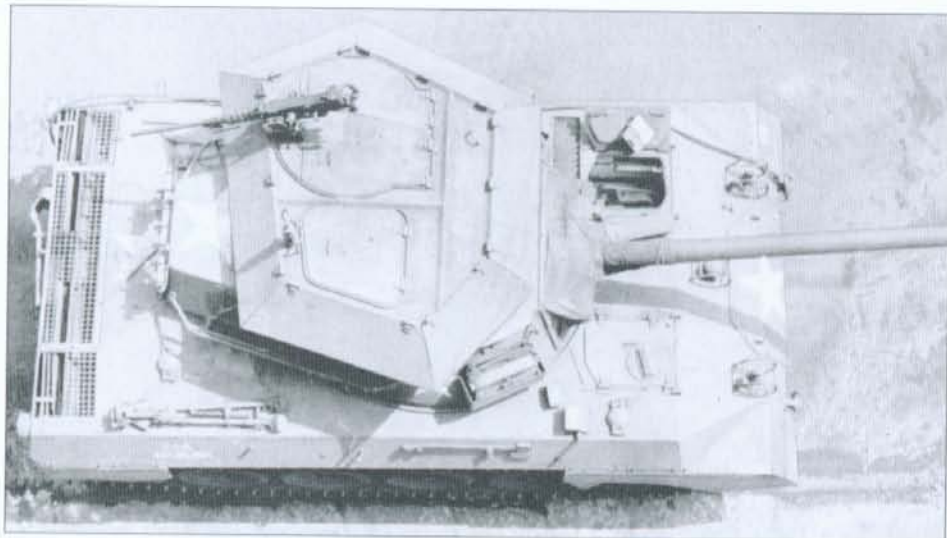
## INTO COMBAT

The Tank Destroyer Center wished to deploy the T70 76mm GMC into combat as soon as possible to get feedback about its performance, so two T70 vehicles were shipped to the 601st Tank Destroyer Battalion and three to the 894th which were operating in the Anzio beachhead. The new vehicles arrived at the beginning of May 1944 and their crews were quickly trained by Ordnance personnel in time to take part in the break-out operations which began on 23 May 1944. After inspecting the T70 76mm GMC, the 894th Tank Destroyer Battalion commander decided against deploying them alongside the M10 3-in. GMC, believing that their weak armor would make them too vulnerable. Instead, they were deployed in the battalion's reconnaissance company, where their high speed was felt to be more useful.

In general, the battalion was very happy with the M18's excellent automotive performance, despite the poor hill-climbing of early vehicles, and its difficulties in mud due to low ground clearance. The battalion found that the M18 could be driven at speeds up to 60 miles per hour and that the high speed "enables the vehicle to cross exposed ground quickly and gain cover without offering a good target. It eliminates wastage of time getting into firing positions." The battalion was also impressed with the performance of the 76mm gun, though there was some concern that its construction was not as durable as the M7 3-in. gun in the M10. The light armor of the M18 bothered the battalion to the extent that "the crews have much less confidence in the T70 than they do in the M10 and this might easily be reflected in the efficiency and determination with which the crew functions in a firefight."

The battalion was also concerned about the relatively small interior space of the M18 compared to the M10 noting that, "the space inside the T70 is so limited that the crew cannot live in it as they have had to do many

complaints from tank destroyer units about the vulnerability of the open turret design led to some belated efforts to develop a roof armor kit seen here during trials on a late production M18 (40146280). This came too late and was never authorized for production. (Patton Museum)



times in the M10. Furthermore, the limited space inside the fighting compartment allows only a very small clearance between the base of the (ammunition) round and the back of the turret while loading the piece, making loading more difficult and of necessity much slower than in the M10. Less ammunition can be carried on the T70 and the ammunition is stowed in such a way that only nine rounds are readily available and after firing nine rounds the remainder must be taken from less accessible compartments in the sponsons. Because of the confined space the gunner himself has to get out some of the ammunition on his side of the vehicle."

The battalion concluded in its report that the T70 was an excellent reconnaissance vehicle, "but it is believed to be not as good a weapon for use as a tank destroyer against enemy tanks as is the M10 because of the many limitations pointed out above." In many respects, this evaluation echoed the earlier comments by General Palmer of the Special Armored Vehicles Board who had warned Bruce and the Tank Destroyer Center about the impact that the focus on speed and mobility would have on other aspects of the vehicle's performance.

In January, Bradley's First US Army headquarters in England were informed that the M18 would be available in time for operations in France. At first they refused them, stating that they saw no advantage in replacing the M10, and expressing concerns over the additional logistical burden of a new type. Instead, they wanted to wait until the M36 90mm GMC became available. In the event, some battalions arrived in the European theater equipped with the M18, earmarked for Patton's new Third Army. But their reluctance to accept the M18 meant that fewer entered combat service in Europe than might otherwise had done so.

At the time of the D-Day landings in Normandy, there were 30 tank destroyer battalions in England, of which 11 were towed and 19 self-propelled. Of the self-propelled battalions, three were equipped with the M18 76mm GMC: the 603rd, 704th and 705th Tank Destroyer Battalions, all attached to Patton's Third Army. The M18 tank destroyers were concentrated in Patton's units as the First Army had been deployed in Britain longer and so had received tank destroyer battalions equipped with the older M10 3-in. GMC. The M18 battalions were first committed to action in late July when the Third Army joined Operation Cobra. Patton's mission at this time was to rapidly exploit the First Army's breakthrough

and to race into Brittany to seize the key port cities such as Brest. Of these three battalions, two were attached to armored divisions, the 603rd with the 6th Armored Division and the 704th with the 4th Armored Division. The remaining battalion, the 705th, was attached to Task Force X, a battle group intended to race along the northern Brittany coast and seize several of the key ports. (For further details of these battles, see Campaign 88, *Operation Cobra: The Breakout from Normandy*)

During their first month of combat, the new M18 tank destroyers saw very little tank fighting, and were often used in roles for which they were not intended. The 704th Tank Destroyer Battalion with the 4th Armored Division reported that, "the battalion has had no opportunity to 'Seek, strike, and destroy' since they encountered no tanks since the beginning of their campaign at Avranches. In the recent road march type advance, the battalion has been split up and one lettered company has been attached to each combat command and the headquarters company to the combat command reserve. In the advance, the TD company has been placed in column behind the main infantry elements. This provides the infantry with some over-watching and a feeling of security and locates the TDs where they can be regularly employed against



The M18 first entered active service in May 1944 when a small number of vehicles were sent to tank destroyer battalion in the Anzio beachhead in Italy. These vehicles were still called T70 by the troops even though the M18 had been type-classified by this time. This is an example with the 894th Tank Destroyer Battalion in May 1944. (NARA)

LEFT The combat debut of the M18 in the European theater was with Patton's Third Army in July 1944. This was one of the first M18 tank destroyers knocked out, the vehicle of Sgt. Roger Turcan of Co. A, 704th Tank Destroyer Battalion, 4th Armored Division. While advancing north of Rennes in early August 1944, Turcan's vehicle was engaged by an emplaced German anti-tank gun which hit the M18 no fewer than seven times, killing three of the crew. Turcan remained with the vehicle, loading and firing the gun until he ran out of ammunition. He was later decorated with the Silver Star for his bravery. This photo highlights the vulnerability of the M18 due to its very thin armor. (Patton Museum)





Two of the three M18 battalions of Patton's Third Army took part in the fighting for the port of Brest: this is "Big Gee" from the 1st Battalion, 705th Tank Destroyer Battalion which was supporting the 2nd Infantry Division during the fighting. It is from the second contract batch, accepted in February 1944. The set of "rhino" hedgerow cutters has been fitted to the tank. (NARA)

hostile enemy armor. At night, the TD units are used for local security and outpost."

The 6th Armored Division made a very rapid advance into Brittany, covering over 200 miles, which created some unique tactical problems. A report on the use of the M18 by the 6th Armored Division in this campaign noted that, "Gen. Grow was very much enthused about the M18, but was not speaking of it in its role as a tank destroyer as we had previously conceived that role to be. He has placed the M18 with his trains to afford them necessary protection. After the advance elements had moved through an area, the Germans would move back in and engage the supply elements which were following. Due to the mobility of the M18, it made an ideal weapon for a truck column - they had no difficulty keeping up with supply columns. The junior officers mumbled to the effect that the M18 and other TDs were incapable of performing their role due to their thin armor; that tanks were always called upon to perform the function of TDs."

The 705th Tank Destroyer Battalion was primarily used to provide direct fire support to the infantry elements of Task Force A, especially during the fighting around the outer defensive fortifications of the port of Brest. Curiously enough, a lack of M18 in-theater reserves during the summer and early autumn led to substitution of M4A3 (76mm) tanks to replace combat losses of M18s. The battalion commanders pointedly noted that the M4A3 (76mm) had no problems keeping up with the fleetier M18 tank destroyers, underlining the difference between high road speed and actual battlefield mobility.

The first major encounter in which the M18 tank destroyers were employed in their intended role occurred in mid-September 1944. The 4th Armored Division served as the spearhead of Patton's advance through Lorraine towards the Saar, and Hitler ordered a panzer counteroffensive to trap the Third Army using newly created panzer brigades. (For further details of these battles, see Campaign 75, *Lorraine 1944: Patton vs. Manteuffel*) The 704th Tank Destroyer Battalion was



attached to the 4th Armored Division and played a central role in the tank fighting around Arracourt. Contrary to tank destroyer doctrine, the 704th Tank Destroyer Battalion was seldom used as intended as a concentrated force to repel enemy tank attacks. Instead, its three line companies were usually split up, each being assigned to one of the division's three combat commands. The first significant tank fighting occurred around Luneville when Company B from the 704th TD Battalion supported a task force from the 4th Armored Division in defending the city against a German tank attack on September 18. Curiously enough, Patton also ordered the 6th Armored Division to assist in defending the city, and the M18 tank destroyers of their 603rd Tank Destroyer Battalion took part in the fighting as well. The M18 crews soon learned that the Panther could not be safely engaged frontally using the 76mm gun except against the mantlet at ranges of 300 yards or less, but that it was vulnerable to flank shots. The glacis plate of the Panther was so thick and so steeply angled that armor-piercing rounds simply bounced off, even at point-blank ranges. The Panther Ausf. A had a semicircular gun mantlet, and if the 76mm round struck the lower surfaces of the mantlet, it tended to ricochet downward into the thin roof armor over the driver's compartment, often disabling the Panther in the process. The Germans remedied this defect on later production Panther Ausf. G tanks by adding a "chin" to the mantlet to block this shot-trap. During the Luneville fighting, the 704th TD Battalion was credited with knocking out eight German tanks. Although no M18s were lost, the battalion commander, Lieutenant Colonel Bill Bailey, was killed by a mortar round during the fighting.

Shortly after dawn on September 19 1944, the Panther tanks of Panzer Brigade 113 began to emerge from the fog near the outposts of the 4th Armored Division. A platoon of M18 tank destroyers from Company C were sent to deal with the German panzers and encountered the western spearhead of Panzer Brigade 113 near Bezange-la-Petite. Unnoticed in the thick fog, the Hellcats deployed in a shallow depression and began engaging the German tanks at a range of only 150 yards from hull-down positions. In the sharp firefight that ensued, seven German tanks were

**Another M18 from Co. A, 705th Tank Destroyer Battalion during the Brest fighting in August 1944 while supporting Task Force A. The vehicle name, "I Don't Want A," is a joke based on the instructions that vehicles would be named starting with the company letter. This vehicle also has an improvised "rhino" hedge cutter welded to the bow, a local improvisation designed to permit the vehicle to plow through the thick bocage hedges of Normandy. (NARA)**



M18 tank destroyer from the 3rd Tank Destroyer Battalion, 6th Armored Division, facing towards the intersection at Rue [unclear] in Luneville facing towards Frambois on September 18, 1944. Vehicles from this unit took part in the tank fighting in Luneville with Pz. Brig. 111 on September 18. (NARA)

knocked out, but three of the four M18 Hellcats were put out of action as well. The German column retreated back into the mist.

Panzer Brigade 113 continued its attack towards Réchicourt-la-Petite. Company C of the 704th TD Battalion was at the time covering the Combat Command A headquarters, and was ordered to defend the command post. Capt. Tom Evans deployed his three platoons along a ridge line overlooking a shallow valley. As the fog lifted, it exposed over 30 German tanks and supporting infantry moving forward. Evans later described the ensuing firefight as a "turkey shoot". As the German panzer

column advanced towards one platoon, they exposed their flank to the other two platoons. The two lead panzers were knocked out, and in confusion, two tanks turned and exposed their flanks to other M18s which quickly put them out of action. The company of M18s pulled back to more defensible positions, and after the Germans began withdrawing, followed on their heels. One M18 was hit and set on fire, and another was disabled with its track blown off. Evans ran over to the abandoned M18, and loading and aiming the gun himself, knocked out two more panzers. He evacuated the M18 moments before it was hit again and exploded. Evans was later decorated with the Distinguished Service Cross for his bravery that day. By mid-afternoon, the Company C had knocked out 19 tanks, and by the time that the fighting petered out several days later, the battalion was credited with 39 panzers for a loss of four M18s destroyed and three more damaged.

An Army team collecting information on weapons performance later interviewed one of the Hellcat commanders who had taken part in the Arracourt fighting while he was recuperating from wounds. Sergeant Joseph Tetreault had served in the North African campaign on one of the original M3 75mm GMC, so his comments received special attention from the Tank Destroyer Center. Tetreault reported that "operating under combat conditions and averaging 80 to 100 miles a day during the Third Army drive from St Lô to the German border near Strasbourg, my M18 Hellcat was driven 1,870 miles. No repairs were necessary either to the vehicle or engine; only minimum attention was paid to moving parts . . . M18 engine performance was excellent under the most trying conditions and was highly thought of by all men in my and other M18 tank destroyer outfits. [The suspension] gave excellent results and was superior to the suspensions of other track systems now being used on all other US vehicles."

Tetreault had some particularly interesting remarks about tank fighting that are especially valuable as his unit was involved in the most intense tank-vs.-tank battle fought by the US Army in Europe until that time. However, it should be noted that like many GIs, he referred to the larger German tanks as "Tigers" when in fact the type encountered in the Lorraine battles was the Panther. He noted that, "When first given the M18 Hellcat, men of my unit felt that it was plain suicide to drive into battle because of the TD's light armor. My battalion commander, however, pointed out to the men



A white-washed M18 76mm GMC supporting the 2nd Infantry Division during operations in Krinkelt, Belgium in late January 1945 during the Ardennes counter-offensive. The village had earlier been the scene of an intense house to house fight which had deflected the initial 12.SS-Panzer Division attack. (NARA)

that the light armor, speed, and maneuverability of the M18 gave them a decided advantage in action against the enemy which the American tank destroyer men did not have with the M10 TD. Unless we have at least ten inches of armor on our tanks, we may just as well not have any armor of more than two inches. That is because the German tank and anti-tank guns penetrate anything we have on the field today. The point was brought out on the battlefield. One direct hit on heavily armored vehicles knocked them out by killing the crew. This was caused by fragmentation not only from the shell but from pieces of armor blown off by the force of the shell. Shells hitting the Hellcat, on the other hand, in many instances went through the hull like a hot knife through butter, killing possibly one or two men, but not disabling the vehicle. This was like a heavy bomber when shells pass right through the fuselage without knocking the plane out of action."

"Our most effective vehicle that I've seen to combat the German tank is the M18 Hellcat. Tiger tanks, while heavy armored, are very slow. They must come to a full stop to fire their big 88mm gun effectively. To knock them out, a gunner must remain cool and not fire until they stop. He then must aim directly under the tube. If a gunner is on a Tiger's flank, then he should aim directly at the top of the bogie wheels. If two or more German tanks approach, wait for them. Then fire at the tank that stops first, disregarding if it is the one furthest away. A moving German tank is not dangerous. It must stop to be effective."

One of his most bitter complaints was about the configuration of the .50-cal. machine gun, an endemic weakness in most US armored vehicle designs. "The .50-caliber machine gun as mounted on the M18 TD Hellcat is so constructed that the tank commander is compelled to expose himself unduly to enemy small arms fire and shell fragmentation. Many tank commanders were wounded or killed because of the inadequate protection. On several occasions tank commanders were broken from the rank of sergeant because of their refusal to man the .50-caliber machine gun when under enemy fire as they considered it sheer suicide." He noted that when he fired at advancing enemy foot troops he "got down as far as possible and fired away more or less at random." Tetreault was critical of



M18 of the 603rd Tank Destroyer Battalion of the 1st Armored Division in Arnach, Luxembourg on February 21 1945 following the Ardennes fighting. This battalion was the highest scoring M18 Battalion in the ETO during the war. An interesting detail on this photo is the white counter-shading under the main exhaust tube, a standard engineer camouflage suggestion, but one seldom used in the ETO. (MHI)

the lack of a co-axial .30-cal. machine gun to deal with enemy infantry like that fitted to US tanks. As a result "attacking enemy foot troops had to be shot at with the 76mm gun. If the tank had been equipped with a [co-axial] machine gun attacking enemy foot soldiers could have been picked off like clay pigeons. These extra machine guns would have helped conserve the 76mm shells for use against more important targets."

The number of M18 Hellcats in the European Theater of Operations (ETO) remained modest through the autumn, finally reaching five battalions in October and nine at the time of the Battle of the Bulge in December 1944. The slow growth in M18 battalions was due to their firepower problems. The

76mm gun on the M18 was no better in anti-tank performance than the 3-in. gun on the M10, so there was little point in converting the M10 battalions, especially when many units preferred the advantages of the M10 such as its more functional fighting compartment. The main advantages of the M18, its greater speed and mobility, were not in great demand in the tank destroyer battalions and did not compensate for its liabilities. A postwar study by the General Board on tank destroyer employment concluded that, "In a very large percent of its employment in this theater, its road speed of sixty miles an hour and its great cross country speed were never needed." When planning the development of the M18, the Tank Destroyer Center had failed to recognize the difference between speed in reaching an objective, and speed in close combat. While the M18 was, indeed, very fast and mobile, its speed in reaching the battle area was often limited by the available road net. Once in range of the enemy, the weak armor of the M18 and its open turret led experienced crews to move cautiously to limit their exposure to enemy fire. In such circumstances, the high speed of the M18 was of little value.

M18 of the 704th Tank Destroyer Battalion, crosses the Moselle River over a trestle bridge during the "line rat race" through the Saar-Palatinate on March 15 1945. This battalion was permanently attached to the 1st Armored Division during the 1944-45 fighting. (NARA)





A M18 of the 661st Tank Destroyer Battalion loaded with V Corps infantry passes through a German town in April 1945 as a pair of German women look on. By this stage of the war, some of the late production M18 fitted with the double baffle muzzle brake had begun to appear in service as seen here. (NARA)

The battalions already equipped with the M18 were generally happy with their performance in terms of mobility, but were critical of its poor armor protection and the growing inadequacies of its 76mm gun when facing the newer German tanks such as the Panther. On the positive side, some of its design features were highly regarded, such as the use of a large access door and extending rail system for removing the engine, and the equally accessible door on the bow for removing the transmission. These features greatly facilitated field maintenance. In addition, the M18's light weight and high power-to-weight ratio gave it excellent floatation in mud and snow compared to heavier vehicles such as the M10 tank destroyers. The M18 used hydraulic turret traverse, which was significantly better than the manual turret traverse of the M10.

During a tour of the tank battalions in France in August 1944, an ordnance officer reported that the crews would "like to have more armor plate for protection. Destroyer commanders state that a cover over the turret is necessary to keep snipers from throwing hand grenades in the turrets. Any kind of lid that will fold back is suitable. In many cases, they have been using canvas covers." The track shields fitted over the front of the suspension proved to be poorly designed and "ninety-five percent of the track shields were damaged and broken off in shipment. Battalions have removed all shields from vehicles." As was also found during initial testing in the United States, the M18 metal track was not sufficiently durable and tended to show excessive wear. The other feature that was widely criticized on the M18 was the poor configuration of the .50-cal. heavy machine gun mount, which forced the commander to needlessly expose himself when firing the weapon. "There was a general complaint as to the excessive flash of the 76mm gun and some of their losses were attributed to this features. A muzzle brake was considered to be an essential item." Since production of the M18 with the M1A2 gun with muzzle brakes did not begin until the summer of 1944, they did not begin to appear in the ETO until the autumn of 1944.

The crew configuration of the M18 was poorly conceived, with the assistant driver in the right side of the hull being redundant. In combat, some battalions removed the assistant driver rather than risk needless casualties. There was a widespread feeling that if the assistant driver was retained, a hull-mounted machine gun should have been provided to give



This is another example of a late production M18 with muzzle brake in service in Germany in April 1945, this time passing through Dusseldorf. This unit has attached a plank along the front to carry additional stowage. (ARA)

him something to do in combat. The M18 lacked a co-axial machine gun, which reduced its effectiveness when encountering enemy infantry. Due to the shortcomings of the .50-cal. machine gun station, some units used improvised means to deal with enemy infantry, such as obtaining a BAR automatic rifle, and using it to provide suppressive fire. There are also written accounts, though no photographic evidence, of units welding a .30-cal. machine gun to the hull for this purpose.

Evaluation of reports from the tank destroyer battalions in the autumn of 1944 led to a formal request for improvements on the M18 with special attention to additional armor, a turret cover, a co-axial machine gun, a muzzle brake, heavier shock absorbers, increased ammunition stowage, decreased ground pressure, and an improved travel lock. In fact, many of these improvements had

already been planned earlier in 1944 before the Normandy fighting, but were not incorporated into the design until late in 1944 during the final production run.

### **Ammunition**

The inadequacy of the 76mm gun against the Panther led to urgent requests for better anti-tank ammunition. Ordnance had been working on a new generation of HVAP (high-velocity armor-piercing) ammunition since 1943. These rounds used a core made of heavy and dense tungsten carbide surrounded by an aluminum shell. As a result, the shell was relatively light, yet had high velocity and very good armor penetration. On impact, the outer shell was peeled away, and the smaller tungsten carbide core penetrated the armor. The concept of such rounds had been around for some time, and were used in Polish anti-tank rifles in the 1939 campaign, and in later German anti-tank projectiles. The main problem with these rounds was the scarcity of tungsten, a critical war material that was in short supply. A shipment of 2,000 rounds of the experimental T4 76mm HVAP ammunition was airlifted to France in August 1944. Its performance in trials against actual Panthers was poorer than that predicted from stateside tests against test armor plate, but it still was significantly better than the standard M62 APC round. It could not penetrate the Panther glacis, but it punched the Panther mantlet at 800 to 1000 yards compared to only 100 to 300 yards for the normal M62 APC (armor-piercing-capped).

A production order for 20,000 HVAP rounds was issued in the late summer, but production never kept up with demand because of shortages of tungsten carbide. The production requirement for the new HVAP ammunition was 43,000 rounds by January 1945 and 10,000 rounds monthly after that. This production was to be equally divided between 76mm and 3in., the later for the M10 3-in. GMC tank destroyer. The HVAP ammunition underwent continual refinement through the autumn. The original T4 had the tungsten carbide core enclosed in a steel jacket within the aluminum body and windshield. The modified T4E17 removed the steel jacket and became the next production standard in the fall of 1944.

The third and final version of the ammunition was the T4E20 which used an unground tungsten carbide core which offered about five percent better penetration, and also introduced an adjustable nose plug. This variant was finally type-classified as the M93 76mm fixed shot HVAP-T in February 1945 and became the standard production type during 1945.

The first distribution of HVAP ammunition to tank units took place in Belgium on September 11 1944 based on the first airlifted batch of 2,000 rounds. Tank and tank destroyer crews were very enthusiastic about the performance of the new ammunition, but it was never available in adequate quantities. The AFV&W Section of the 12th Army Group decided to issue it on an equal basis to all units equipped with the M4 (76mm) and the M18 76mm GMC tank destroyer, which used the same ammunition. But this usually meant only one round per vehicle per month. By the end of February 1945, each 76mm tank and tank destroyer had received, on average, only five rounds of HVAP. By early March 1945, a total of about 18,000 rounds of HVAP had been delivered to the ETO of which about 7,550 were 76mm rounds (42 percent) and the rest 3-in. ammunition for the M10 tank destroyers. The 6th Army Group, fighting in Alsace in December 1944–January 1945, received little or no 76mm HVAP ammunition. These units faced far fewer German tank units than did 12th Army Group, but nonetheless there were numerous encounters with supporting armor such as StuG III and various types of tank destroyers. This led to requests for better anti-armor ammunition from these units.

The German counteroffensive in the Ardennes in December 1944 put the tank destroyers to the test. The only M18 battalion to see extensive combat in the initial defensive phase of the fighting was the 705th TD Battalion which was attached to the 101st Airborne Division during the defense of Bastogne. Its most intense action occurred on Christmas Day when a major attack was launched by the newly arrived 15. Panzer Grenadier Division. The M18s were widely scattered in platoon-sized

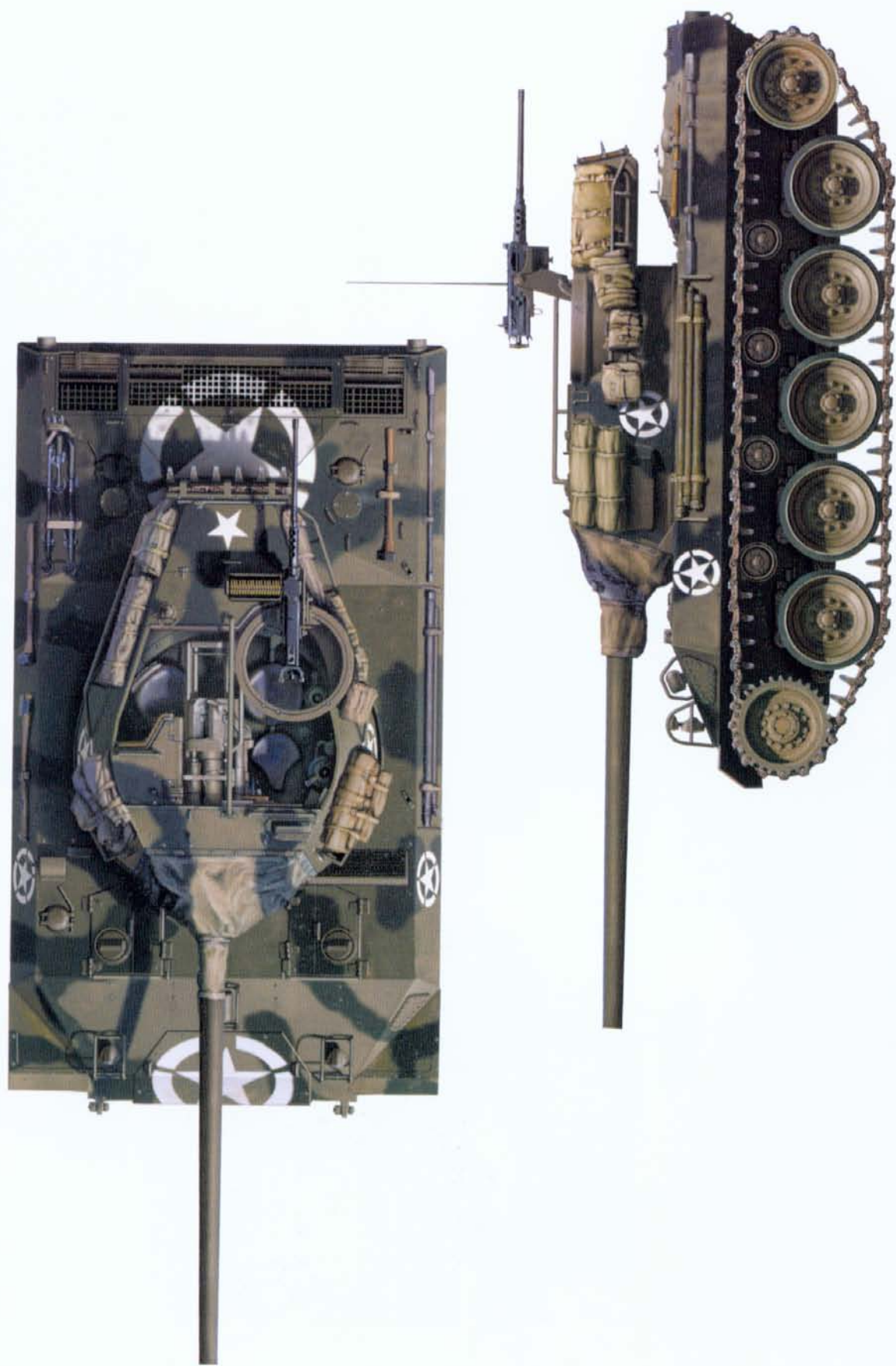


**A M18 tank destroyer with the 602nd Tank Destroyer Battalion supporting the 89th Division during operations in the Lossnit forest in May 1945. The crew has mounted an additional .30-cal. machine gun on the right side of the turret near the loader typical of efforts to improve the self-defense capability of these vehicles. The use of BAR automatic rifles for close-in defense was popular in some units. (NARA)**

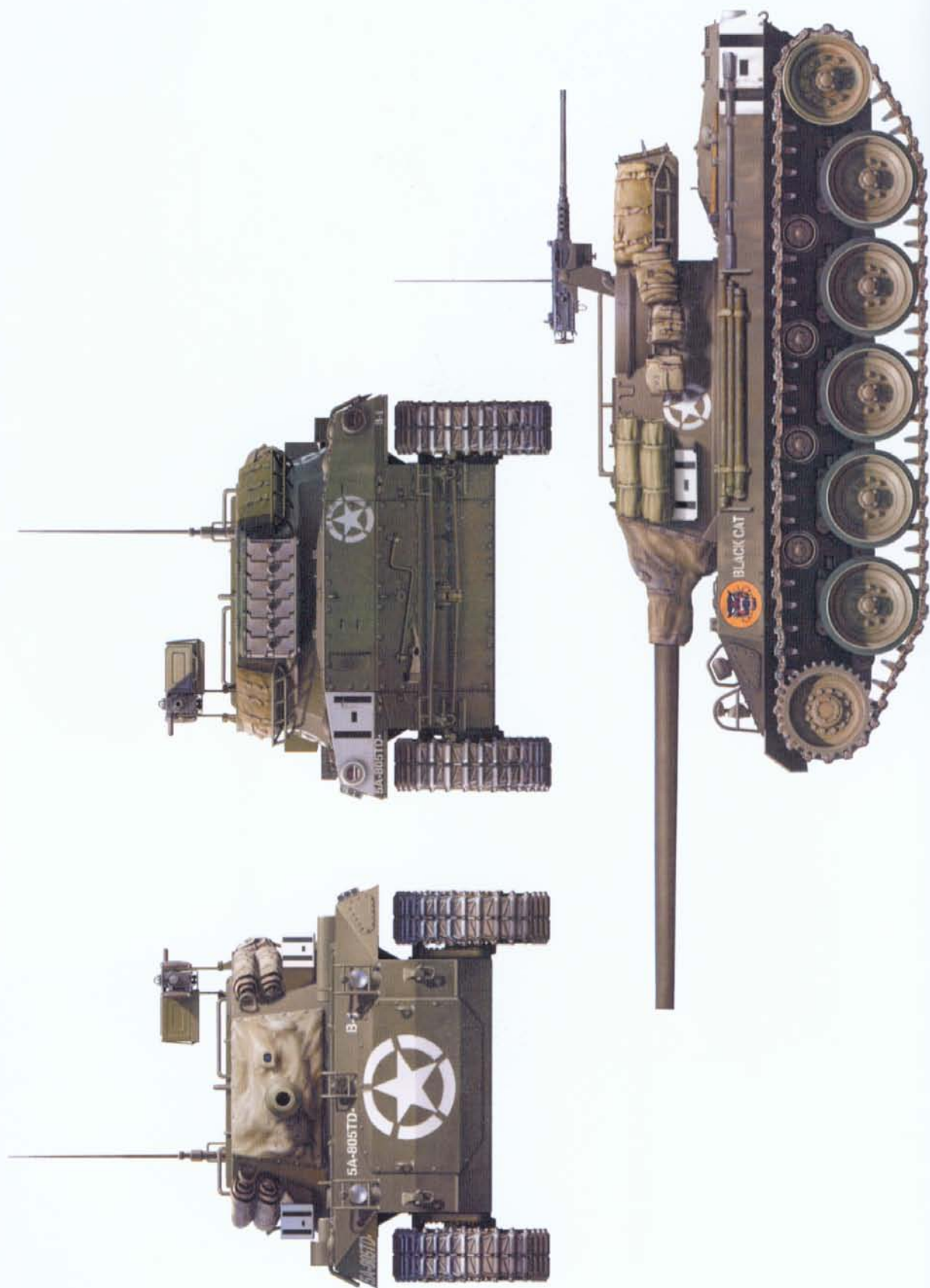


**The sole M18 battalion in Italy was the 805th Tank Destroyer Battalion, seen here during operations outside Florence in 1945. The battalion had very distinctive markings including the tank destroyer emblem on the front sides, and large tactical numbers painted on a white rectangle on the hull rear. (NARA)**

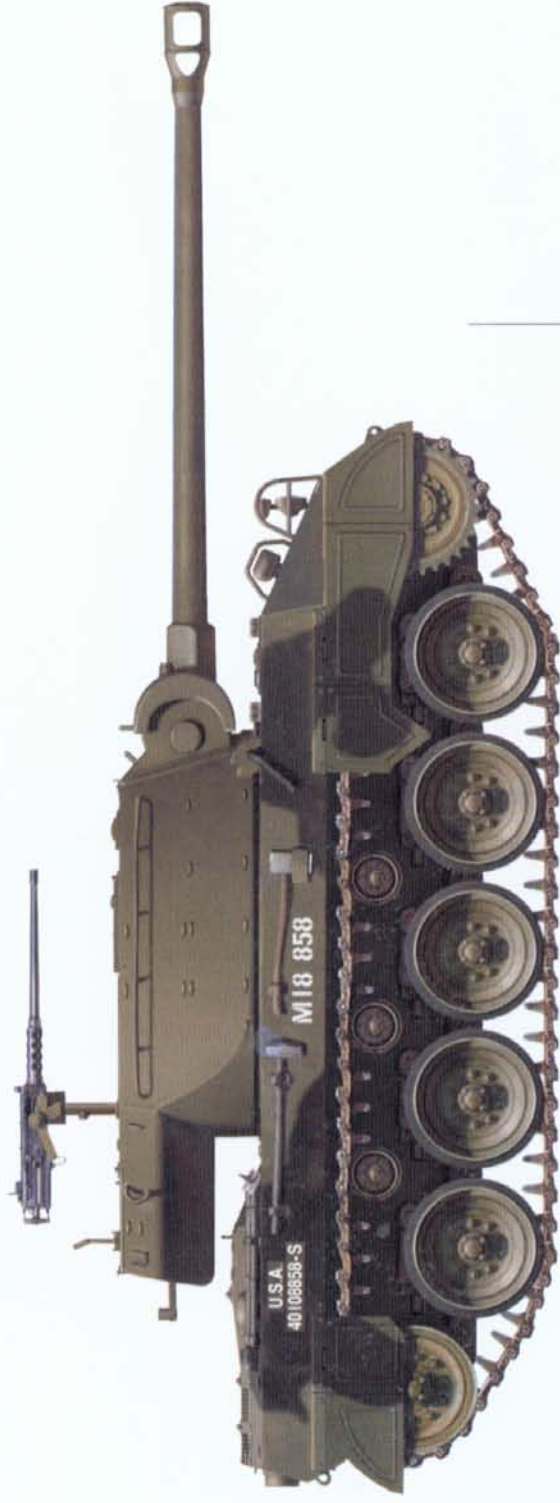
A: 170 76mm GMC, 894th Tank Destroyer Battalion, Anzio beachhead, May 1944



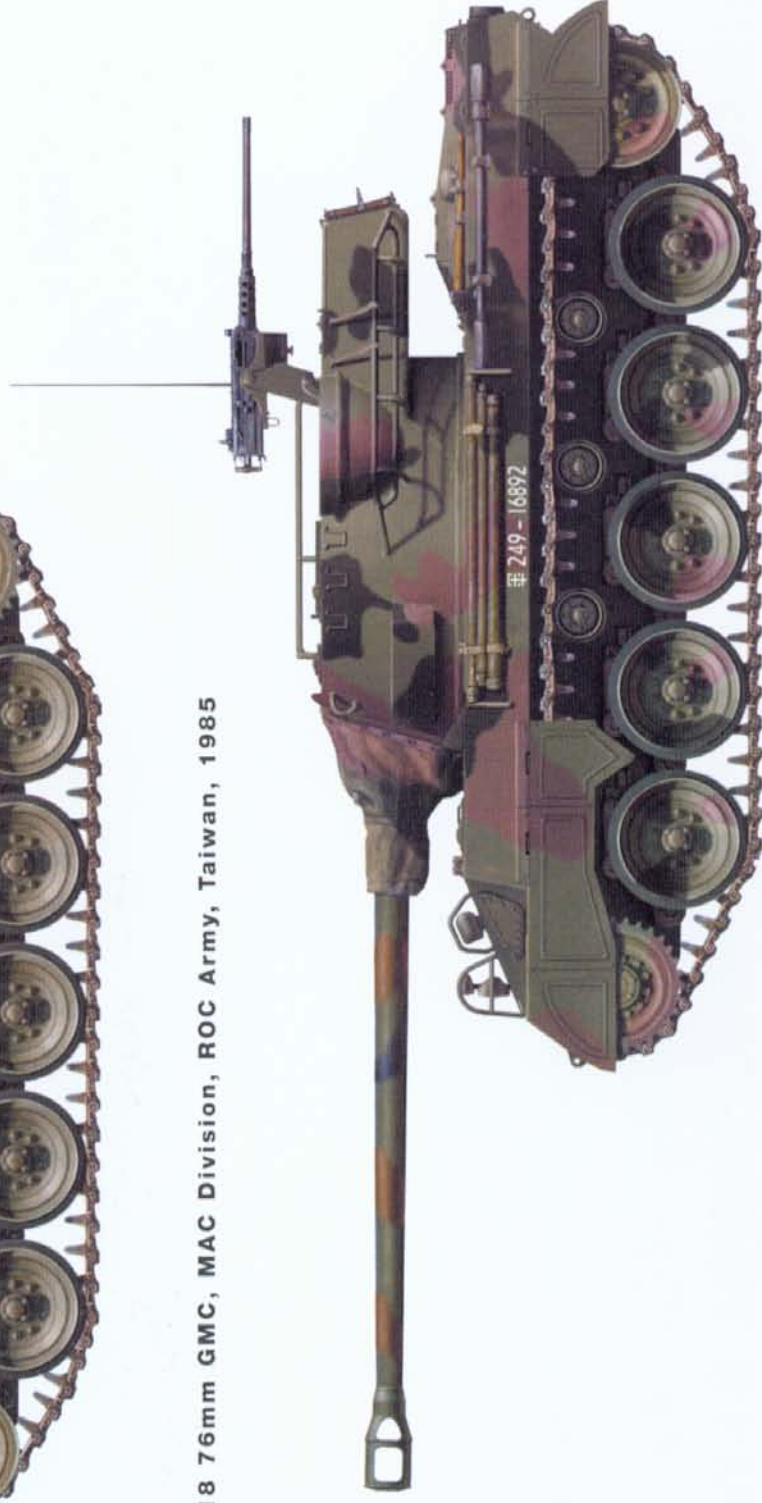
B: M18 76mm GMC, 805th Tank Destroyer Battalion, northern Italy, April 1945



C1: M18 90mm GMC, Aberdeen Proving Ground, June 1945



C2: M18 76mm GMC, MAC Division, ROC Army, Taiwan, 1985



# D: M18 76MM GMC, 704TH TANK DESTROYER BATTALION, FRANCE 1944

## KEY

- 1 Rear light
- 2 Muffler
- 3 Engine exhaust hose
- 4 Continental R-975-C2 9-cylinder air-cooled radial engine
- 5 Armored fuel cap
- 6 Spare track
- 7 Vehicle radio receiver
- 8 .50-cal. heavy machine gun
- 9 Turret azimuth indicator
- 10 Turret traverse
- 11 M1A1 76mm gun in M62 combination mount
- 12 Gun travel lock
- 13 Canvas mantlet dust cover
- 14 Main gun barrel
- 15 Left headlight
- 16 Siren
- 17 Torqmatic transmission
- 18 Right night driving light
- 19 Right headlight
- 20 Final drive
- 21 Co-driver's seat
- 22 Drive sprocket
- 23 Road wheel
- 24 Ammunition stowage
- 25 Loader's ready ammo rack

- 26 Gun breech protective frame
- 27 Track return roller
- 28 Right fuel tank
- 29 Idler wheel
- 30 Right rear light
- 31 Towing pintle

**Fuel consumption:** 1 gallon per mile

**Ground pressure:** 12.3psi

**Armament:** M1A1 76mm gun in M62 combination mount + one .50-cal. Browning M2 HB heavy machine gun on turret

**Main gun Ammunition:** 45 rounds 76mm

ammunition; M42A1 high explosive; M62

armor-piercing capped; M93 HVAP; M88 smoke

**Muzzle velocity:** 2,600ft/s (M62 APC); 3,400ft/s (M93 HVAP)

**Penetration (@500 yards @ 30 degrees):** 93mm (M62); 157mm (M93)

**Max. effective range:** 16,100 yards

**Gun depression/elevation:** -10 +19 degrees

**Armor:** 13mm (front); 13mm (side); 13mm (rear), 8mm (top); 6mm (floor)

## SPECIFICATION

**Crew:** 5 (commander, gunner, loader, driver, co-driver)

**Combat weight:** 20 tons

**Power-to-weight ratio:** 20hp/T

**Overall length:** 21ft 10in.

**Width:** 9ft 5in.

**Height:** 7ft 9in.

**Engine:** Continental R-975-C2 9-cylinder air-cooled radial engine; 400hp at 2,400rpm

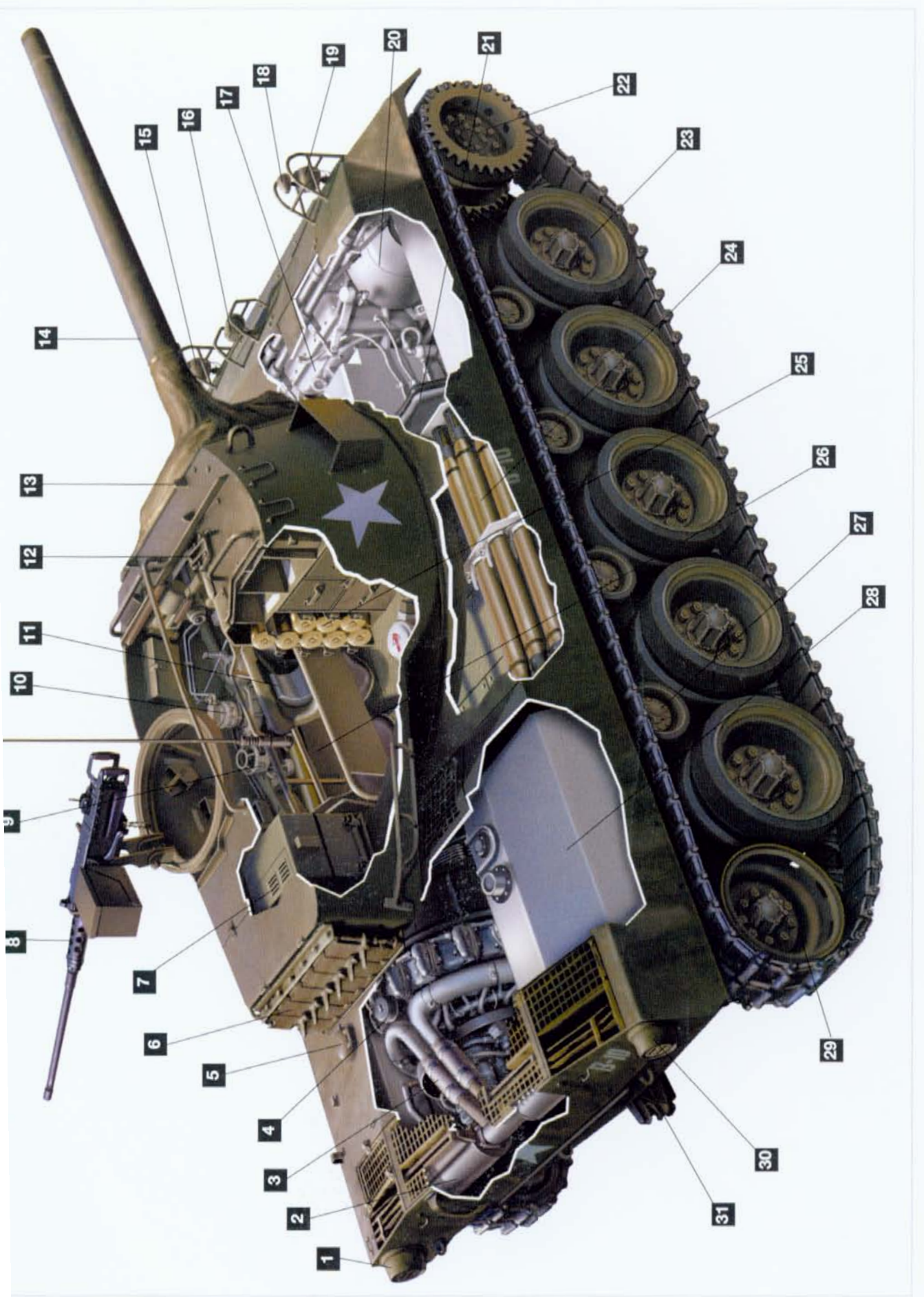
**Transmission:** Torqmatic with 3 forward, 1 reverse speed with controlled differential

**Fuel capacity:** 165 gallons

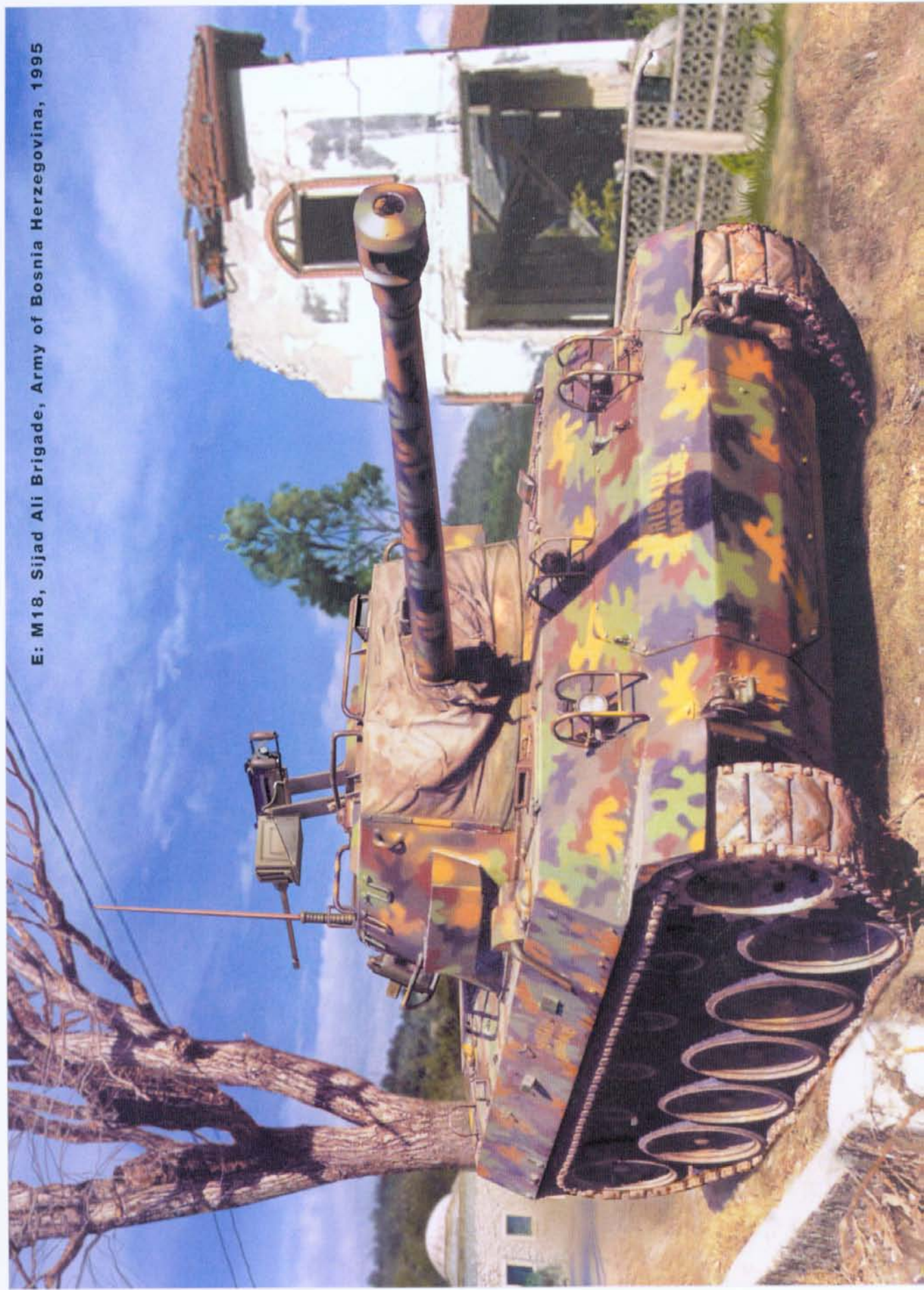
**Max. speed (road):** 50mph

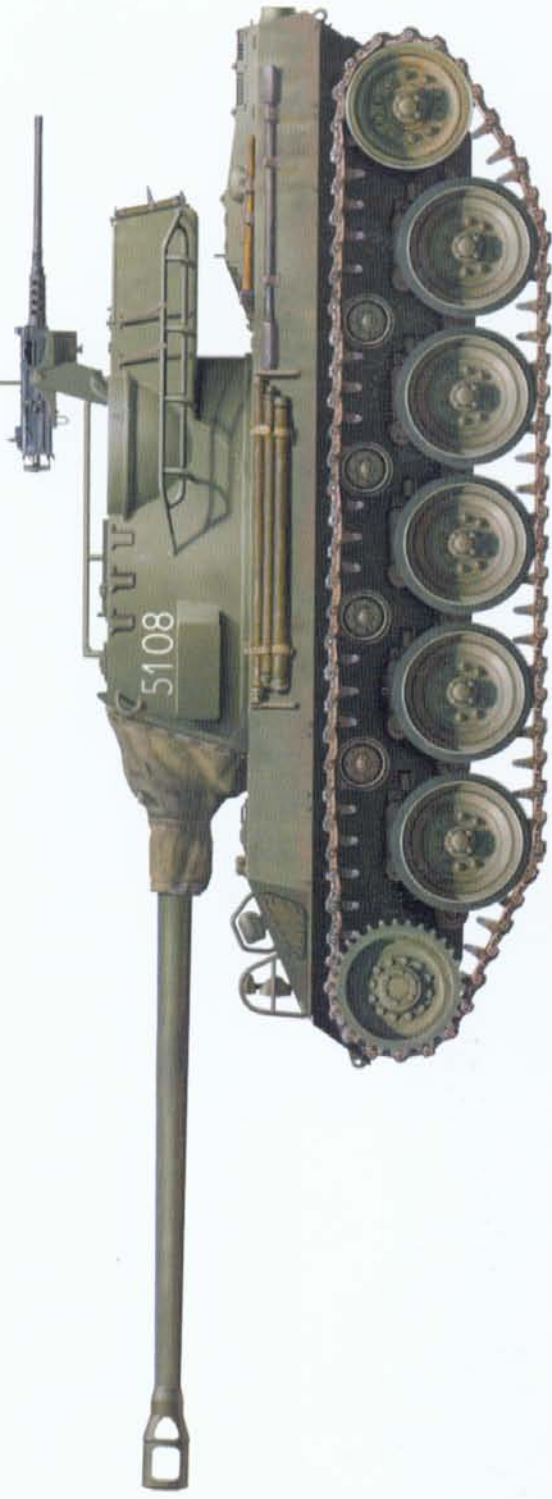
**Max. speed (cross-country):** 25mph

**Max. range:** 150 miles



E: M18, Sijad Ali Brigade, Army of Bosnia Herzegovina, 1995





F2: T-55/M18, Army of Bosnia-Herzegovina (ARBiH), 1997





G: Upgraded M18 76mm GMC, Batalion Blindada Bermudez No. 411, Venezuela, 1995



M18 named "Black Cat" of Co. B, 805th Tank Battalion prowls the streets of Bologna while supporting the 34th Division after the capture of the city on April 21 1945.

The T88 105mm HMC was an attempt to develop a more satisfactory assault gun for cavalry units than the existing M3 75mm HMC on the M5A1 tank chassis. This shows one of the T88 pilots at Fort Knox during trials in early 1945. The program ended before the type could be put into production. This particular vehicle has been modified with adapter plates on the bow to permit attachment of the Ritchie T7 device. (Patton Museum)



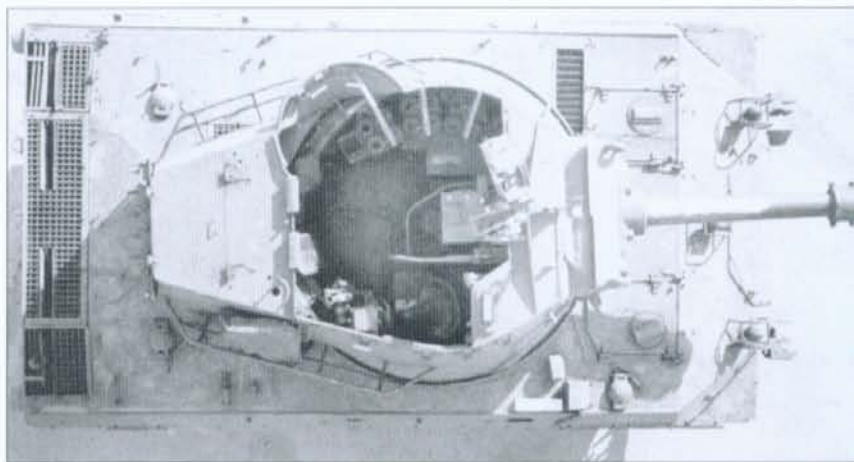
battalion claimed to have knocked out 27 panzers for a loss of six of its own Hellcats, the only M18s lost during the Bastogne defense. The battalion was also instrumental in repulsing another tank-infantry attack in early January in which it claimed to have knocked out 14 panzers. By the end of the Battle of the Bulge, the 705th Tank Destroyer Battalion claimed 43 panzers. Several other M18 battalions later saw action in the Battle of the Bulge including the 704th TD Battalion of the 4th Armored Division and the 603rd of the 6th Armored Division which arrived with Patton's Third Army in the attempt to relieve the siege of Bastogne. These three battalions were the most experienced Hellcat units in the ETO, having debuted with Patton's Third Army in Brittany in July.

The Ardennes fighting revealed the complete inadequacy of the new towed anti-tank gun battalions. In an assessment of tank destroyer actions conducted after the fighting, it was found that self-propelled tank destroyers were successful in defensive actions in 14 of 16 attacks, while towed guns were successful on only two occasions out of nine. In terms of combat effectiveness, the exchange ratio of enemy losses to friendly losses was only 1.3 for towed guns (31 panzers destroyed for 24 guns lost) while for the self-propelled battalions the exchange ratio was five times better at 6.0 (132 panzers destroyed for 23 tank destroyers lost). This result came as no surprise to veteran infantry division commanders who had been complaining about the severe limitations of towed tank destroyer battalions since the summer campaign in Normandy. However, the ineffectiveness of the towed tank destroyers in the initial defensive failures around St Vith forced the US Army to finally take action. As a result, a plan was drawn up to re-equip the towed battalions as quickly as possible.

Commanders especially wanted more of the M36 90mm GMC since this was the only tank destroyer that had a reasonably good chance of success against the German Panther tank. But with shortages of M36s likely, and a surplus of unused M18 tank destroyers, the army decided to use the M18 to modernize some battalions. The short term plans in January 1945 were to re-equip two M10 battalions in the Sixth Army Group in Alsace with the M18, and to replace three towed

formations to provide anti-tank firepower to the paratroopers. An initial German battle-group spear-headed by 15 PzKpfw IV tanks with grenadiers riding on them penetrated into the defenses of the 327th Glider Infantry but was wiped out by the M18 tank destroyers and paratrooper bazooka fire. Intense fighting elsewhere around the Bastogne perimeter on Christmas Day included numerous encounters with German panzers, and by the end of the day, the scattered M18

battalions in 12th Army Group with the M18 by March/April 1945. There was some thought given to converting at least one of the French tank destroyer battalions in the 6th Army Group with the M18 due to French complaints about M10 performance, but since the M18 had no firepower advantages, this idea was quickly rejected. By early April 1945, 12 tank destroyer battalions in the 12th Army Group were serving with the M18, and by the end of the war, this had increased to 13 battalions. During the final month of fighting, a few M18 tank destroyer battalions including the 704th, 705th, and 809th began receiving a small number of M36 90mm GMC to supplement their firepower. The 6th Army Group received far fewer M18 battalions, numbering only one in January 1945, which increased to four by the end of the war. The M18 reached peak strength in March 1945, actually declining in the final month of the war as increasing numbers of M36 90mm GMC arrived.



This overhead view of a T88 pilot's turret shows the reconfiguration of the turret with the short 105mm howitzer. The gunner has been shifted to the right side of the turret with the ammunition stowage to the left, and the turret machine gun ring removed. (Patton Museum)

#### M18 76MM GMC IN THE ETO 1944-45

	Strength	Losses
June 44	146	0
July	141	0
August	176	6
September	170	6
October	189	14
November	252	7
December	306	44
January 45	312	27
February	448	16
March	540	21
April	427	55
May	427	21

## THE M18 TANK DESTROYER IN THE PACIFIC THEATER

There was far less demand for tank destroyer battalions in the Pacific Theater of Operations (PTO) partly because the Japanese tank threat was minimal, and also because their inadequate armor protection meant that it was hard to employ tank destroyers in other roles. In general, the tank destroyers were not well received in the Pacific, as their open turrets exposed them to the ferocious Japanese close-in anti-armor tactics. Of the seven tank destroyer battalions to see combat in the Pacific, only one was equipped with the M18. Tank destroyer tactics in the Pacific stressed the use of the tank destroyers from stand-off distances, with adequate infantry protection to compensate for the vehicles vulnerability.

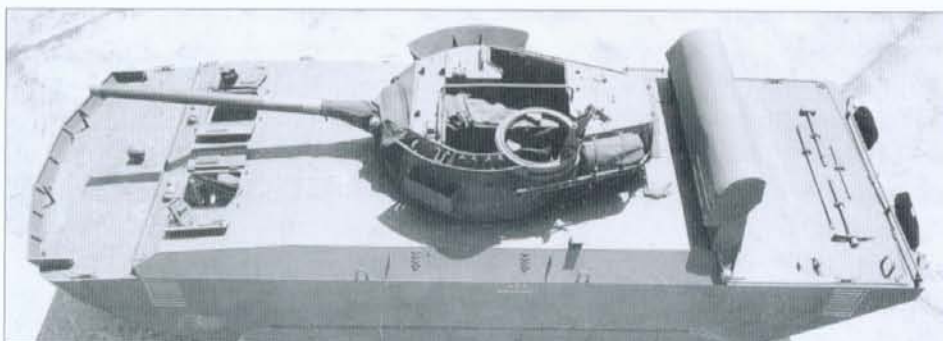
One of the attempts to adapt the M18 for amphibious operations was the development of the Ritchie T7 swimming device, a set of pontoons and associated trunks. This shows the cumbersome affair attached to one of the T88 pilots. A total of 250 sets of this kit were manufactured, but they were never used in combat. (NARA)



The first unit with the M18 in the Pacific was the 637th Tank Destroyer Battalion, which deployed on Espiritu Santo in the New Hebrides in July 1944. This unit went into combat in January 1945 in the Philippines, taking part in the operations on Luzon. They were involved in the fighting for Manila, and were primarily used to provide direct fire support for the infantry during the savage street fighting. For its role in the Manila fighting, the battalion was awarded the Presidential Unit Citation. The accurate gunfire from the M18 tank destroyers was especially useful when assisting in clearing Fort McKinley, which was defended by emplaced guns. The 671st Tank Destroyer Battalion landed in the Philippines in July 1945 but saw little fighting. A third M18 battalion, the 670th, was committed to the Pacific theater, but ended the war in Hawaii before being committed to combat.

One of the most curious applications of M18 tank destroyers was with the 77th Division on Leyte in the Philippines. The commander of the division was none other than Major General A. D. Bruce, former commander of the Tank Destroyer Center. The M18 had been Bruce's pet project, and he was determined to find new missions for it. Bruce had managed to secure eight M18 tank destroyers to re-equip one of the division's three anti-tank companies, the 306th Anti-tank Company, to examine whether these would be a more suitable weapon than towed 37mm or 57mm anti-tank guns. The M18s saw very little use on Leyte, but were used with some success during the Ie Shima operation during the Okinawa campaign later in the spring of 1945. Bruce was enthusiastic in experimenting with the M18 for infantry anti-tank support, and recommended substituting tank destroyers for towed anti-tank guns in all infantry divisions in anticipation of forthcoming operations against Japan. In addition, he laid out extensive plans for the Tenth Army to use the M39 Armored Utility vehicle as a scout and re-supply vehicle. In the event, the war ended before these recommendations could take place.

The T86 76mm amphibian gun motor carriage was an attempt to develop a more seaworthy alternative to the T7 device. Although this vehicle proved reasonably buoyant, it was difficult to operate in the sea and no serial production took place. (NARA)



It was anticipated that the fight for the Japanese Home Islands would involve considerable action against Japanese bunkers, and Project Sphinx was initiated at the Tank Destroyer School to study tactics and equipment to overcome such defenses. In the event, this did not prove necessary, and the tests concluded that the M36 90mm GMC was a better choice than the M18 due to its superior firepower.

### M18 TANK DESTROYER BATTALIONS

<i>Battalion</i>	<i>Combat debut</i>	<i>Army Group</i>	<i>Attachment</i>	<i>Enemy AFV's claimed</i>
<b>European Theater of Operations</b>				
602	Sep 44	12th	non-divisional	54
603	Aug 44	12th	6th AD	115
609	Oct 44	12th	non-divisional	4
612*	Jan 45	12th	non-divisional	13
633	May 45	12th	16th AD	0
638	Nov 44	12th	non-divisional	15
643*	Mar 45	12th	non-divisional	26
656	Mar 45	6th	9th AD	3
661	Feb 45	12th	non-divisional	1
704	Jul 44	12th	4th AD	90
705	Aug 44	12th	non-divisional	49
801*	Apr 45	12th	non-divisional	21
807*	Apr 45	6th	non-divisional	4
809	Feb 45	12th	8th AD	9
811	Nov 44	12th	non-divisional	82
817*	Apr 45	12th	non-divisional	1
820*	Apr 45	12th	non-divisional	10
822*	Apr 45	6th	non-divisional	?
824*	Mar 45	6th	non-divisional	1
827	Dec 44	6th	12th AD	?
<b>Mediterranean Theater of Operations</b>				
805*	Jun 44	5th	non-divisional	17
<b>Pacific Theater of Operations</b>				
637	Jan 45	10th	non-divisional	11
670	unknown	n/a	non-divisional	0
671	Jul 45	n/a	non-divisional	0

\*converted from towed battalion; combat debut indicates re-entry into combat as M18 battalion

## ASSESSING THE M18 76MM GMC

In retrospect, the M18 76mm GMC design was a bitter disappointment. Tank engineering involves compromises between firepower, speed, and protection. This was especially the case with US tank destroyers since the weight constraints placed on the designs forced even greater compromises in terms of firepower or protection. The primary role of a tank destroyer was its ability to knock out enemy tanks and in 1944, the M18 did not have enough firepower to effectively carry out this mission without exposing its crew to extreme risk. General Bruce's obsession with speed distorted the design and resulted in a poorly balanced tank destroyer. By focusing on a fanciful tactical doctrine and ignoring the likely evolution of the enemy threat, Bruce and the Tank Destroyer Command concentrated on the

**RIGHT** Only one M18 battalion saw extensive fighting in the Pacific, the 637th Tank Destroyer Battalion which is seen here in action near Baguio, Luzon in support of the 129th Infantry, 37th Division during the fighting for the Philippines on April 24 1945. Two other M18 battalions were earmarked for the Pacific but arrived later in the summer. (NARA)



**BELOW** The only unit other than tank destroyer battalions equipped with the M18 was the 306th Anti-tank Company of the 77th Division which received them on an experimental basis after the efforts of the divisional commander, Major General A. D. Bruce, the former head of the Tank Destroyer Command. The M18 was Bruce's pet project, and even after leaving the tank destroyer force, he continued to agitate for the wider distribution of the M18 and M39 to other army missions. This dramatic shot shows one engaging a Japanese bunker near Shuri during the Okinawa campaign on May 11 1945. (NARA)



wrong balance. At the time it entered service in the summer of 1944, the M18 was not capable of defeating standard German tanks like the Panther under normal combat conditions. Tank destroyer crews were obliged to perform extraordinary maneuvers to effectively engage the Panther. The M18 Hellcat had no firepower advantages over the M4 (76mm) tank, which enjoyed better armor protection and a larger ammunition supply than the M18. Although many of the young crewmen enjoyed the M18's high road speed, there is no evidence that such high speeds translated into significant combat value on the battlefield. Bruce confused high road speed with battlefield mobility. Although the M18 could race forward at high speed on roads, speeds near the forward edge of battle were restricted by the usual constraints of road congestion and slower speeds in cross-country travel. Furthermore, the thin armor and open turret roof of the M18 did not encourage experienced crews to speed forward when in close combat range, but rather to move forward in a slower and more wary fashion to avoid exposure to enemy sniper fire and artillery fire. These design shortcomings combined with an unrealistic tactical doctrine meant that the M18 battalions were not primarily used for tank fighting, but were

committed more often to improvised roles, usually direct fire support for infantry units. They were not ideally suited to this mission either. Compared to tanks, their poor armor protection meant that they could not be used in close terrain such as woods or urban areas due to their vulnerability to enemy infantry. Their firepower was inferior to the normal M4 tank with 75mm gun, since the 75mm gun fired a high-explosive round with twice the high explosive content of the 76mm projectile. The excellent combat record of many M18 tank destroyer battalions during World War II occurred in spite of its design features, not because of them. The Hellcat's combat record is attributable to the training and dedication of its crews, not to its ill-conceived design.



## M18 GUN VARIANTS

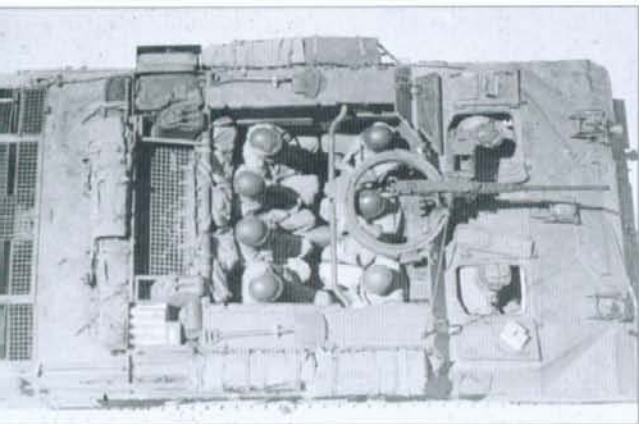
The cavalry showed some interest in fielding an assault gun more capable than the existing M8 75mm howitzer motor carriage (HMC) then in use, so in August 1944 Ordnance initiated a program to develop one based on the M18 chassis, designated as T88 105mm HMC. Two different howitzers were considered for this application, the M4 105mm howitzer used in the M4 (105mm) assault gun and the 105mm T12 howitzer (later T51) developed for aircraft use. The pilot with the later type of howitzer was designated the T88E1 105mm HMC. Two M18 turrets were modified with the M4 105mm gun in the new T20 mount, one for the T88 and the other for the T87 105mm amphibian howitzer motor carriage, which is covered below. Once completed, the T88 pilot was shipped to Aberdeen Proving Ground for trials, followed by tests at the Tank Destroyer Board at Fort Knox. The T88E1 was partially complete when the project was cancelled in the autumn of 1945 after the end of the war.

The inadequate performance of the 76mm gun against the German Panther tank and the greater demand for the M36 90mm GMC led to a short-lived program to adapt the M36 turret to the M18 hull as a possible method of extending the useful life of the M18 fleet. In June 1945, a M36 turret was mounted on a M18 at Aberdeen Proving Ground. Tests of the M18 90mm GMC without the muzzle brake found that the vehicle was pushed back 22 inches when firing, and that it rocked violently when firing over the side. Firing tests with the muzzle brake were much more satisfactory. Later during the trials, 21-in. wide T82 track was added to compensate for the increased weight of the vehicle. Although the tests showed that the combi-

The M18 90mm GMC was a short-lived attempt to increase the firepower of the M18 by replacing the normal turret with that from the M36 90mm GMC. The war ended before any serious conversion program was contemplated. (NARA)

An army infantry squad riding on a M39 AUV provides an escort for a 1st Marine Division M7 105mm HMC field artillery battery during operations on the central front on April 23 1951. (USMC)





The principal derivative of the M18 was the M39 armored utility vehicle which was converted from the original production batch of M18s sent back to Buick for rebuilding. This is one of the T41 pilots and shows the seating arrangement in the center of the hull. (Patton Museum)

nation was feasible, the Japanese surrender in August 1945 brought an end to the program since there was no immediate need for such a conversion effort.

### Amphibious tank destroyers

The need for a tank destroyer capable of amphibious operations had been raised in May 1943. The first effort was to install the T7 Ritchie swimming device to the T70 76mm GMC, which consisted of a pair of rigid steel pontoons and associated equipment. Buick was given a contract in November 1943 to construct a pilot. The two pontoons weighed 7,700lb and were jettisoned after landing by a switch inside the vehicle that triggered an electrically fired cartridge to remove a clevis pin. The T7/T70 combination was first tested on December 29 1943 at the boat slip of the Ford River Rouge Plant. The combination had a swimming speed of 4.2 miles per hour. The tests prompted various improvements, such as a mechanical float release, and so on New Years Day 1944, Buick was authorized to construct four improved sets. The trials also revealed the need for a gyrostabilizer on the gun to assist in firing accurately from the water, and a Westinghouse unit was fitted to the last two pilots. Trials of the improved T7 Ritchie devices were conducted in February 1944 and on March 16 1944, authorization was approved for the manufacture of 250 T7 conversion kits, although none were ever used in combat.

The Ritchie device was an adequate but less than perfect solution for amphibious operations, and in February 1944 the Ordnance Committee initiated the T86 76mm amphibian gun motor carriage project. This was essentially a M18 76mm GMC with the upper hull replaced by a light-weight amphibious hull and a water propulsion system. Two variations were built, the basic T86, which used track propulsion, and the T86E1 which was fitted with two conventional propellers in the rear for water propulsion. Ordnance also recommended that a third pilot be built with a 105mm howitzer as the T87, but pilot construction was delayed until it was determined which propulsion system was preferable. The T86 pilot was completed and turned over for trials in mid-June 1944. Performance on both land and in water was deemed satisfactory and a more rigorous

The vulnerability of the open troop compartment in the M39 AUV led to experiments with one of the T41 pilots at Fort Knox. A simple roof was added over the hull opening, but this was not accepted for production. (Patton Museum)



test was conducted later in the Pacific by the Landing Vehicle Board at Fort Ord California. These trials concluded that the vehicle was seaworthy but that it was not suitable for military use in its existing configuration as its handling characteristics in water were markedly inferior to other alternatives such as the LVT amtraks. The T86E1 was completed in November 1944, and water trials near Indianapolis proved disappointing as the propeller propulsion added little speed in the water. The propeller tunnel was blamed and the vehicle was modified for subsequent tests at Aberdeen Proving Ground in July 1945. These trials revealed that the speed had been increased to six miles per hour, about one and a half miles per hour below the requirement. However, water handling remained unsatisfactory due to difficulties in steering. The third pilot, the T87 105mm AHMC was completed in 1945. Plans to conduct further tests of the T86 pilots at Fort Ord were cancelled in January 1946 and the program terminated due to declining funding and lack of interest after the end of the war in the Pacific.

In 1951 the Navy's Bureau of Ships sponsored the development of the LVT 76mm Gun Carrier by the Marmon-Herrington Company. The design incorporated a M18 turret, but the vehicle was never fully completed before the program was cancelled due to technical difficulties with the fabrication of its aluminum hull.

### **Armored Utility Vehicle M39**

As mentioned earlier, in 1943 the Tank Destroyer Board had advocated the use of the M18 chassis to serve as the basis for a family of tracked support vehicles. This request had been denied by AGF. There were complaints from tank destroyer battalions that existing support vehicles, especially M3 half-tracks, could not keep up with the M18 during training operations and were not entirely satisfactory in the new towed anti-tank gun battalions. As a result, in early 1944, the Tank Destroyer Board at Fort Hood modified a M18 by removing the turret and repositioning some of the stowage. The conversion was successful enough that on March 7 1944, Army Service Forces authorized the conversion of two M18s, one as the T41 prime mover for the 3-in. anti-tank gun to replace the M3 half-track, and the other as the T41E1 command and reconnaissance vehicle to be used in tank destroyer battalions in lieu of the M20 armored utility cars. Testing of the two pilots demonstrated that the T41E1 configuration was superior, and it was decided to employ this configuration for the prime mover requirement as well, now consolidated as the T41 armored utility vehicle. On June 26 1944, approval was granted to convert 650 of the early production M18 tank destroyers still located at the Buick plant for rebuilding to the T41 configuration instead. These were later standardized as the M39 armored utility vehicle, and 640 were completed from October 1944 to March 1945. The AFV&W Section requested that ten be completed in the T41E1 command and reconnaissance vehicle configuration, and although these were completed, this version was never standardized.



Very few M39 AUV reached the ETO before the end of the war in Europe. The plan was to use them in place of existing command and reconnaissance vehicles, and here one is seen in use in May 1945. (MHI)

Complaints from the ETO about the lack of overhead armor coverage on the M18 tank destroyer led to a study of an armored cover for the M39 AUV in March 1945. A mock-up was completed, but no production ensued due to the end of the war in Europe. The M39 was delivered to the ETO in very modest numbers in the spring of 1945 since the decision after the Ardennes fighting to convert the towed tank destroyer battalions into self-propelled battalions reduced the need for a prime mover.

### M39 ARMORED UTILITY VEHICLE CONVERSION

Oct 1944 10	November 60	December 163	Jan 45 150	February 150	March 107
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## THE M18 IN POSTWAR SERVICE

The M18 tank destroyer was not exported under the Lend-Lease program in any significant numbers compared to most other US armored vehicle types. In 1943 Britain received two for trial purposes, and the Soviet Union received five, but neither country used the type in combat. As mentioned earlier, the US 6th Army Group considered re-equipping at least one French unit with the M18, but decided against it as it had no significant advantages over the M10.

A similar situation occurred after the war, with exports of the M18 via the Military Defense Assistance Program (MDAP) being rather modest. The largest recipient was Yugoslavia, which took delivery of 240 M18 tank destroyers in the early 1950s. They were sometimes called SO-76 (Self-propelled Gun 76) in Yugoslav service. By the time of the Yugoslav civil war in 1991–95, the M18 had been retired from service with the regular units of the Yugoslav People's Army (JNA), but the vehicles were still kept in war reserve for the "Partizan" reserve formations. They were in varying condition, with many still operational, but others in a poor automotive state. The M18 was used in combat by Serbian forces in the conflict, both the JNA itself, and the Bosnian Serb Army (BSA). Some vehicles had improvised armor added around the turret machine gun to protect the commander. The M18 was also used by Croatia and Bosnia-Herzegovina. The Bosnian forces were particularly hard-pressed for vehicles, and so made greater efforts to repair the old Hellcats for combat use. As a result



Another view of a M39 AUV in service in Germany in May 1945. This vehicle does not appear to have been issued to a unit yet, as it lacks the usual stowage and paraphernalia common on combat vehicles. (NARA)

there were several odd hybrids prepared in Bosnian workshops. At least one M18 with a non-functioning Continental radial engine had the original power-plant removed and replaced with a Magirus Deutz truck engine, complete with the unarmored civilian radiator poking out the back. In another case, a M18 turret was fitted to a T-55 tank hull, presumably to compensate for the lack of a functioning T-55 turret. During the NATO air campaign against Yugoslav forces in Kosovo in the late 1990s, Serbian forces often used derelict M18 tank destroyers as decoys to distract NATO aircraft away from functional and more modern tanks.

Only two NATO countries received any significant number of M18s: Italy with 107 and Greece with 127. Taiwan (Republic of China) received 214 M18s and was the only significant export recipient in Asia. These M18s tended to be used in tank battalions rather than specialized tank destroyer units, and they were in service in both the 1st Armored Division near Hokou and the 2nd Armored Division near Taichung in the 1950s. Besides their use by the republic of China (ROC) Army, they were also used by the ROC Marines. During the 1958 Taiwan Straits crisis, some were deployed on Kinmen. Due to arms embargoes against Taiwan, older armored vehicles tended to be kept in service much longer than might otherwise have been expected. When the chassis of some M18s wore out, the turrets were fitted to surplus M42 "Duster" chassis. The only significant export of M18 tank destroyers to the Middle East was to Iran which received 55 M18 tank destroyers in the 1950s.

Venezuela purchased 40 M18 tank destroyers in 1954. They were refurbished in army workshops in 1983/84 and served primarily with Batalion Blindada Bermudez No. 411 in Maracay, part of 41a Brigada Blindada, headquartered in Valencia. In the 1990s at least one of the M18s was extensively modernized under a contract with the Yugoslav SPDR arms export firm, but it is unclear how many of these conversions were ever completed. The conversion involved the replacement of the power plant with a diesel engine, a Luna-2 infrared search-light and night vision equipment, a thermal sleeve for the gun, and other upgrades.

After the war, the M39 armored utility vehicles remained in US Army service as personnel carriers and command/reconnaissance vehicles, seeing some service in the Korean War. In Korea, the M39 was the subject of a number of local modification efforts, including its use as a platform for mortars and anti-aircraft machine gun mounts.

The M39 also served as the basis for the experimental T65 mechanized flame thrower. This consisted of a Canadian Iroquois flame-thrower mounted in a new casemate added to the front of two



**The most secret version of the M18 was the "Sonic M39" one of a number of vehicles configured with a large retractable loud-speaker for broadcasting tank sounds to deceive enemy forces about the location of US units. The vehicles in the background are Sonic M10 tank destroyers, which were used in combat in 1944-45 in Italy and the ETO on these deception missions. (Patton Museum)**





The 72nd Tank Battalion, 2nd Infantry Division converted some of their M39 AUVs into self-propelled 81mm mortar vehicles seen here in action in Korea on March 21 1952. (NARA)

LEFT The M39 was the last conversion of the M18 to remain in army service after the war once the tank destroyer battalions had been disbanded. It was useful in helping the army determine the features preferred for postwar armored infantry carriers. Here a IX Corps reconnaissance squad leaps from a M39 during a training exercise. If anything, the M39 design convinced the army of the need for overhead armor protection and a more practical rear access door. (NARA)

pilot vehicles at Detroit Arsenal in 1952. The vehicles underwent trials at Aberdeen Proving Ground in the autumn of 1952, but no production or conversion ensued as the light armor of the vehicle would have made it very vulnerable to catastrophic destruction. The M39 remained in US Army service a decade longer than the M18, finally being declared obsolete on February 14 1957 with the advent of more modern armored personnel carriers and prime movers. Japan received 10 M39 armored utility vehicles, and small numbers were provided to several NATO armies including Germany and the Netherlands.

## BIBLIOGRAPHY

There is no published history of the M18, though there is coverage in many survey accounts of US tank destroyers and light armored vehicles such as Richard Hunnicutt's "Stuart: A History of the US Light Tank" (Presidio, 1992). There are several very good accounts of the trials and tribulations of the Tank Destroyer force including Charles Baily's "Faint Praise: American Tanks and Tank Destroyers during World War II" (Archon, 1983); Christopher Gabel's "Seek, Strike and Destroy: US Army Tank Destroyer Doctrine in World War II" (US Army CGSC, 1985); and Lonnie Gill's "Tank Destroyer Forces-WWII" (Turner, 1992). This account was based primarily on original reports and unpublished Ordnance histories. These included the post-war Ordnance Department history "Record of Army Ordnance R&D: 76mm Gun Motor Carriages"; numerous reports of the Tank Destroyer Board; Tank-Automotive Center; Ordnance Department; Requirements Division, US Army Ground Forces; and various Army Service Forces reports. The US Army Military History Institute (MHI) at the US Army War College, Carlisle Barracks, Pennsylvania has the papers of General A. D. Bruce, and these contain a significant amount of information about the M18 program. Sources on the service history of these vehicles were found in reports of the Observers Groups sent to the Mediterranean and European Theater of Operations, as well as post-war studies such as Lieutenant Colonel Emory Dunham's "Tank Destroyer History" for the AGF Historical Section in 1946, and the 1945 General Board report "Study of Organization, Equipment, and Tactical Employment of Tank Destroyer Units" which led to the disbandment of the tank destroyer force. Other operational records that were consulted included those of the AFV&W Section of the 6th Army Group, and various headquarters records of ETOUSA and the US 12th Army Group. These records were found primarily at the US National Archives and Records Administration (NARA) in College Park, Maryland, and the US Army Military History Institute (MHI).

## COLOR PLATE COMMENTARY



### **A: T70 76MM GMC, 894TH TANK DESTROYER BATTALION, ANZIO BEACHHEAD, MAY 1944**

The first group of M18 76mm GMC sent to the Anzio beachhead in early 1944 were locally called the T70 even though the type had already been standardized as the M18 76mm GMC. This also led to the occasional designation "M70" appearing in some unit accounts. These vehicles arrived in the usual overall US Army lusterless Olive Drab. Since the Sicily landings in 1943, US tanks and other armored vehicles in the Mediterranean Theater of Operations (MTO) were marked with Allied stars with a circle around them. This was often quite prominent as on this vehicle. The 894th Tank Destroyer Battalion spray-painted bands of black over the olive drab, a style they called "tiger stripes". Vehicle registration numbers are not evident on this vehicle and may have been submerged by the camouflage. The six pilots carried the registration numbers 40128384 to 40128389; the first production run was numbered 40108110 to 40109109; and the second production contract batch was numbered 40144883 to 40146389. This was usually carried on the rear hull side in white.

### **B: M18 76MM GMC, 805TH TANK DESTROYER BATTALION, NORTHERN ITALY, APRIL 1945**

The M18 tank destroyers of the 805th Tank Destroyer Battalion were among the most colorfully marked. The battalion had the practice of marking their vehicles with tactical numbers painted in black on a white background. This was painted on the stowage boxes on the turret front, the rear hull sides, and the left hull rear plate. The tactical numbers indicated platoon-vehicle. This particular vehicle is B-1: Company B, 1st platoon,

The M39 served in some numbers during the Korean War, being frequently used as an improvised infantry carrier as here with the 7th Infantry during Operation Thunderbolt on February 10 1951 southeast of Seoul. Two of the GIs on the back have South Korean flags stuck in the rifle barrels. (MHI)

1st vehicle. Another colorful addition on these vehicles was the use of the Tank Destroyer emblem, a black panther crushing a tank on an orange disc. The bumper codes are the standard style, 5A-805TD indicating Fifth Army, 805th Tank Destroyer Battalion, and B-1, indicating Company B, first vehicle. The usual naming practice in units was to begin the name with the company letter, so in this case, it's Black Cat. The vehicle interior was the same olive drab as the exterior on any surfaces exposed to view, meaning the turret interior and the hull floor. Other surfaces in the hull were finished in gloss white, including the interior hull sides and the entire front driver's compartment.

### **C1: M18 90MM GMC, ABERDEEN PROVING GROUND, JUNE 1945**

The "Super Hellcat" was converted at Aberdeen Proving Ground (not by Buick), and had this unusual camouflage scheme, where the lower hull is pattern painted in the common black over olive drab finish, while the turret is plain olive drab. The hull is from a standard production M18 accepted in December 1943 from the original first production contract. During proving ground trials, it was common to repeat the last few digits of the registration numbers in larger format on the hull side to make it more legible to observers. So the large numbers on the hull side are M18 858, the 858 referring to the

registration number. The registration number, preceded by the usual "USA" can also be seen in the usual location at the rear of the hull side. In this case, it was masked off when the black camouflage color was sprayed on, leaving the registration number on an olive drab rectangle.

**C2: M18 76MM GMC, MAC DIVISION, ROC ARMY, TAIWAN, 1985**

The Republic of China on Taiwan originally left the M18 and other US-supplied vehicles in olive drab for many years. In the 1980s, the ROC Army began to adopt a color scheme essentially similar to the contemporary NATO three-color scheme consisting of a base coat of dark green with a pattern of dark brown and black spray painted over this. The vehicle registration number is painted centrally on the hull side in

**The 32nd AAA Battalion decided that it would be more useful to mount their quad .50-cal. machine turret on their M39 prime mover instead of towing it on a trailer. This was one of a number of field-expedient self-propelled weapons built using the M39 AUV in Korea. (MHI)**

white. The Nationalist Chinese sunburst insignia was painted centrally on the bow about 2ft in diameter on the upper panels of the transmission access door.

**D: M18 76MM GMC, 704TH TANK DESTROYER BATTALION, FRANCE 1944**

See plate for full specifications.

**E: M18, SIJAD ALI BRIGADE, ARMY OF BOSNIA HERZEGOVINA, 1995**

The Army of Bosnia and Herzegovina (ARBiH) made some use of M18 tank destroyers in the Yugoslav Civil War, often painting them with elaborate color schemes. Some of the local militias carried this practice to extremes, going to great pains to create very complicated camouflage schemes. On this example, an intricate pattern of yellow, green, pumpkin orange, red brown, and black "leaves" have been spray-painted over dark green using stencils. The vehicle also carries the unit name Brigada Sijad Alic, stenciled in semi-circular fashion on the bow and hull side in yellow.





**ABOVE** The final conversion of the M39 AUV was an attempt to develop a flame-thrower version using the Canadian Iroquois device in 1952. Although a pilot was built, no further conversions were undertaken. (Patton Museum)

**BELOW** Following the retirement of the M18 tank destroyer from US Army service after World War II, a number were transferred to allied armies under the MDAP program. This shows a M18 being unloaded in Naples in April 1950, part of a program to rebuild the Italian Army after the war. (NARA)





**F1: M18, ARMY OF THE SERB REPUBLIC (VRS), BOSNIA, 1995**

The pre-Civil War Yugoslav People's Army (JNA) painted their armored vehicles in a pale gray-green color which remained in widespread use during the 1990s fighting, especially on Serbian vehicles. This vehicle is a typical example, and carries the usual style of JNA tactical number in white on the turret front sides.

**F2: T-55/M18, ARMY OF BOSNIA-HERZEGOVINA (ARBIH), 1997**

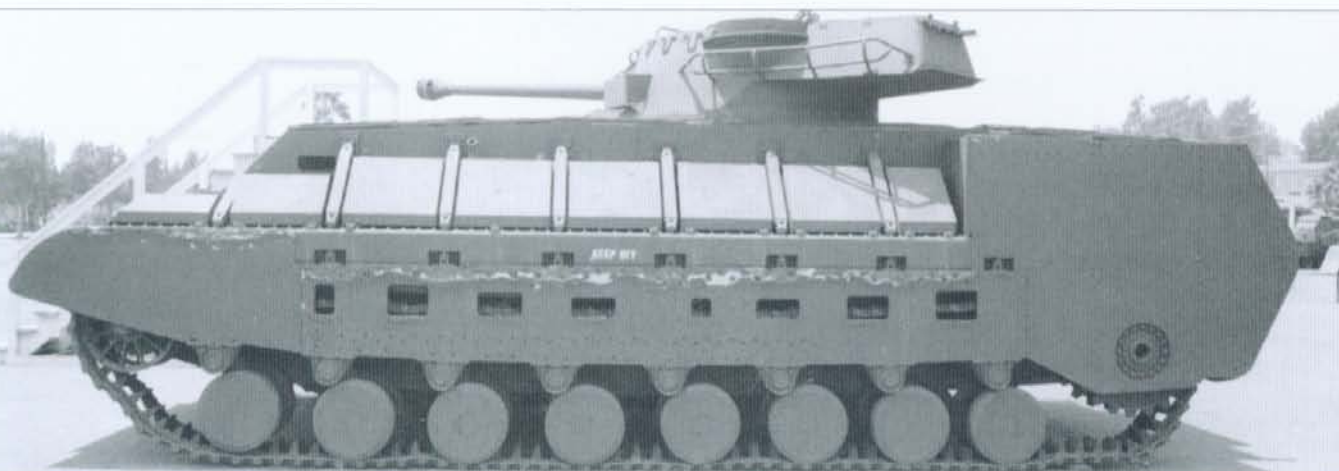
One of the most unusual adaptations of the M18 was this odd combination developed by a Bosnian unit in one of their workshops. It consists of a M18 turret mounted on a T-55 tank hull. Presumably, the T-55 hull lacked a suitable turret, otherwise the combination makes little sense. The workshop added a circular ring to make up the difference in diameter between a T-55 turret and the much smaller M18 turret. The paint scheme is fairly typical of Bosnian vehicles, consisting of a base coat of dark green with an irregular sprayed pattern of dark brown and black with small dots of yellow. Many ARBIH M18 tank destroyers had a form of national insignia painted on the bow with the Bosnia-Herzegovina crest in the center of the insignia.

**G: UPGRADED M18 76MM GMC, BATALION BLINDADA BERMUDEZ NO. 411, VENEZUELA, 1995**

The most extensively upgraded example of an M18 is this vehicle rebuilt for the Venezuelan army by a Yugoslav consortium. The vehicle has a new night vision and fire control suite, a Luna-2 infrared searchlight, thermal sleeve for the gun, additional side skirts and many other features. It was refinished in a pattern of earth brown over green.

**ABOVE** When some of Taiwan's M18 Hellcats reached the end of their service life due to automotive problems, their turrets were transferred to surplus M42 Duster hulls to extend their lives even further. These were deployed on Kinmen, off the coast of China. (Just Probst)

**BELOW** The final derivative of the M18 was the Navy's amphibious 76mm Gun Carrier which used a M18 turret on a new Marmon-Herrington amtrac chassis. Only this partially completed pilot was built in 1951 before being cancelled. (Author)



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